Dr. Airy's report to the local government board on the sanitary condition of Lymington (Hants) urban sanitation district.

Dr. Airy's Report to the Local Government Board on the Sanitary Condition of the Lymington (Hants) Urban Sanitary District.

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Assistant Medical Officer,
March 12, 1879.

The Board, having in the last two years received complaints as to the sanitary condition of the town of Lymington, and failing to obtain information of satisfactory action on the part of the Sanitary Authority towards improvement, ordered an inquiry into the matter to be made by one of their medical inspectors. Having been instructed to make this inquiry, I visited Lymington on December 18th, 19th, and 20th, 1878, and now beg to offer the following report:—

The Lymington Urban Sanitary District to which my instructions apply is co-extensive with the parish of that name, and occupies an area of 1,515 acres (including 742 acres of water and foreshore) on the west bank of an estuary opening to the Solent, which in its lower tidal part bears the name of the Lymington river, while above the town it is known as the Boldre river, taking the name of a village on its eastern bank. The little seaport town of Lymington consists principally of one broad main street (High Street) which occupies the crest of a hill about 80 feet high, ranging nearly east and west, and descends steeply to a network of narrower streets near the water's edge. The hill is capped with a stratum of loose angular gravel to a depth of 10 or 12 feet; below this is a bed of blue clay 19 feet deep, and below the clay a bed of fine pure sand of much greater depth than those above it. These beds are well seen in a range of pits immediately to the north of the town, where all three—gravel, clay, and sand—are dug for different purposes. On the Geological Survey Map these strata are referred to the Osborne and Headon beds of the Fluvio-Marine (Isle of Wight) series, belonging to the Eocene formation. The feature of most importance to be noted in relation to health is the porosity of the surface gravel in the higher parts of the town, and the impervious character of the clay bed which underlies it. Under these conditions it would almost necessarily happen that liquid impurities sinking into the porous gravel should be carried laterally into any well that might be sunk in the vicinity. This point will be seen to possess double importance in view of the existing mode of filth disposal and water-supply in Lymington.

In former times the staple industry of Lymington was the manufacture of salt by evaporation of salt water in extensive shallow ponds, or "salterns." The salt mines of Cheshire have supplanted this branch of trade, and the "salterns" have relapsed into marsh. The town now depends chiefly upon the advantages of its position as a yachting station. Thirty or forty yachts may be seen laid up here in the winter, and in the summer the place is much resorted to by yachting parties, for whose accommodation a large number of lodging-houses have been built on low ground by the side of the Lymington river to the south of the town, forming the suburb named Waterford. Here also is a large bathing establishment, and a coastguard station. Large yacht building yards, with coal and brewery wharves, line the riverside, and a wooden jetty gives a landing-place for a service of small steamboats plying between Lymington and the Isle of Wight.

The parish of Lymington, which comprises also the rural villages of Buckland and Woodside, had at the census of 1861 a population of 4,098 persons occupying 802 houses (an average of 5·1 persons per house). In 1871 the population was 4,295, and the number of inhabited houses was 891, giving an average of 4·8 persons per house. To assist me in estimating the probable increase of the population since 1871, the clerk to the Lymington Local Board, Mr. B. G. Burford, has kindly furnished me with a return of the number of inhabited houses in the district, year by year, up to the present time. Applying to these numbers the rate of dwellers per house which prevailed at the last census, viz. 4·8, we obtain, for successive years, the population numbers given below in Table I. Against these I have given from the death registers the yearly mortality, including deaths in the union workhouse, and the corresponding death-rate per thousand of the population.

TABLE I.

Year.	Number of Inhabited Houses.	Estimated Population.	Number of Deaths from all causes.	Annual Death-rate per 1,000.
1870 -	—	4,270 (?)	106	24·8
1871 -	891	4,295	73	17·0
1872 -	910	4,386	72	16·4
1873 -	915	4,410	72	16·3
1874 -	919	4,429	64	14·4
1875 -	926	4,463	95	21·3
1876 -	931	4,487	81	18·0
1877 -	941	4,535	71	15·6
1878 -	961	4,632	49(in first three quarters)	14·0 ?
			Average death-rate -	17·5

The number of deaths due to certain infectious diseases and to phthisis is given below in Table II.

TABLE II.

Year.	Deaths from							
	Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Hooping Cough.	Fever.	Diarrhœa.	Phthisis.
1870 - -	—	1	17	—	1	3	1	13
1871 - -	2	1	—	—	—	—	—	10
1872 - -	—	—	—	1	1	1	—	5
1873 - -	—	—	—	—	—	2	1	10
1874 - -	—	—	—	1	—	2	—	5
1875 - -	—	3	—	—	—	—	3	13
1876 - -	—	—	—	—	1	—	7	11
1877 - -	—	—	1	—	—	—	2	17
1878 - (first three quarters.)	—	—	—	—	—	—	2	5

The above rates indicate that the mortality in the Lymington district (even including all the deaths in the workhouse) in the past eight years has not exceeded the average mortality of a healthy country district.* They must not, however, be taken as giving any security in the future against the consequences of continued neglect of sanitary care.

Water supply.

In several respects the state of the town and district is by no means so satisfactory as the past immunity from fatal epidemic disease would lead one to expect. This is conspicuously the case as regards water-supply. The town depends entirely upon wells, to the number of several hundreds, situated usually in rear of the buildings, and often in close vicinity to privies, pigsties, and other sources of pollution. The wells are sunk to different depths, in different parts of the town: at the lower level, near the riverside, they are shallow, and the water rises to within a few feet of the surface: in the middle and upper parts of the town they are of variable depth, according as they do or do not pass through the bed of clay which I have spoken of as intervening between the gravel above and the sand below. Speaking generally, it is evident that the nature of the supply is of a dangerous kind, for the great bulk of the filth and refuse of the town is committed to the soil, as I shall presently describe, without sufficient precaution against soakage of fluid matter, and the porosity of the soil allows ready passage of fluid towards any natural or artificial depression in the water stratum.†

From a survey of the district, made in 1877 by order of the Local Board, it appears that at that date there were 689 wells, of which 373 were reputed "good," 41 "fair," and 275 "bad." Of 13 of these wells it was noted that they were only three yards from a cesspool. Some were immediately adjoining. There were 132 houses without any private supply, but obtaining water from four or five public pumps and (at Woodside) from a brook.

* In the five quarters ended September 30th, 1878, the average age at death in the parish of Lymington was 54·3 years.

† NOTE.—A well in the garden of the workhouse, used for washing purposes, appeared to me to be in some danger of pollution from several privies not far distant at a higher level on the east side of Buckland Lane.

At Woodside, a little village at the foot of the Lymington hill, there is a public pump, erected in 1875. At the time of my visit this was frozen up, and the cottagers were confessedly drinking from a little brook which flows past the backs of their dwellings, and which half a mile higher in its course receives the drainage of a part of Lymington.

The low-lying suburb of Waterford has also a public pump. Here, however, water is found so near the surface that almost every house has its own shallow well.

Suspicion has arisen with regard to burials in the churchyard as possibly endangering the purity of the neighbouring wells. The churchyard is at the top of the town, and many of the old graves are only a few yards distant from the nearest dwellings. New graves are dug at the further end of the ground, two hundred yards from the street. All the graves are in the porous gravel. The Inspector of Nuisances (who is himself a builder and has been employed in constructing vaults in the churchyard) assures me that the graves are, as a rule, quite dry. The water of a well opposite the churchyard has been analysed and pronounced good and wholesome.

There has long been uneasiness in the town regarding the quality of the water. This feeling has found expression in several attempts on the part of the Local Board towards improvement; but these attempts, owing to want of unanimity, have hitherto produced no practical result. As long ago as the year 1867 a London engineer was called in to advise on the best means of improving the sewerage and water supply. His advice was not adopted, on the score of cost. Again, in 1874, engineering advice was obtained, and on the strength of it in the following year a well was sunk to a depth of forty feet through the gravel and clay and into the fine sand in the upper part of the town in a place which at that time was fairly distant from dwellings but which has since been approached more nearly, and may possibly in time be surrounded with buildings. I do not say that the purity of this water is at present endangered, but there is no security against such danger in the future. However, this well is not used. It was found to yield 2,000 gallons an hour; and this amount, though it would, if made available, have been of great benefit to the town, would yet have been barely sufficient for all domestic purposes. The quality of the water, as tested by Dr. Redwood, in February 1876, was found to be quite satisfactory. With a view to deepening the well, in 1877, a further boring was carried to 117 feet, with little increase in the supply obtained. At this depth the auger broke and the attempt was abandoned. I cannot help thinking it matter of regret that this supply has not been even temporarily utilised.

In September 1878, an engineer from Southampton was invited to examine into the relative merits of several suggested schemes for obtaining water from more distant sources, and reported in favour of a scheme for pumping water from the Boldre river some miles above the town. The Local Board have not yet come to a decision on this point.

Sewerage.

One reason alleged for postponing the question of increased water supply is the incapacity of the existing sewers to carry the larger volume of sewage which such a supply would entail. The existing sewers are of small dimensions, mostly of brick, old and shallow laid, their average depth being little over two feet, and there is reason to believe that in many places they have given way and allowed their contents to escape into the surrounding soil, though in other places where examined their structure has been found good and sound. In the more level streets the sewers do not serve to drain the neighbouring cellars, but in the steep part of High Street the cellars are drained obliquely so as to strike the sewer at a lower point many yards distant from the houses to which they belong. The sewers carry surface water and house drainage, the discharges of one or two waterclosets, and the overflow from several cesspools. In every direction they have a good fall, but it is more than doubtful if they would suffice for their purpose if waterclosets were to be generally introduced. Their destination is various; one from the western end of the town flows direct into the brook which runs by the Woodside cottages, and is sometimes drunk from by their dwellers; two others are conducted into large cemented catchpool tanks, at a distance from any dwellings, the overflow escaping to natural watercourses; another smaller tank receives the drainage of a few houses, and gives its overflow offensively on a meadow close to a public path. The main sewers from the eastern part of the town, including the steep slope of High Street, discharge into the river, one of them immediately beneath the jetty at which passengers land from the steamboats, and another at the quay of a neighbouring brewery. Other smaller drains enter the river at several points lower down. There is much complaint of offensive smell from the sewer outfalls at the jetty and the brewery quay, which are both exposed at low water (except at neap tides). The solid sewage

apparently is not carried away by the tide, but is precipitated by the salt water and accumulates in the form of filthy pale-coloured mud round about the sewer outlets. This is stirred up by the frequent steamers, and gives off gases of decomposition. The outlet pipes of these sewers lie on the mud, and are liable to be silted up. The brewery quay outlet has a relief valve in the quay wall, by which the sewage escapes scarcely below high-water level when the lower mouth is obstructed, and thus there is a foul deposit of sewage mud up to the very foot of the quay wall. The river current at this point is but feeble; the flow of the tide is checked by a causeway and sluice a little higher up, and there is, therefore, but little back-water to carry out the sewage on the ebb tide. The present nuisance might, however, be greatly diminished by carrying the sewer outlet pipes into mid stream.

The sewers are occasionally flushed with the aid of water-carts. They are not, however, ventilated. The roadside gullyholes are all trapped, and the surveyor visits them attentively in dry weather to keep them filled. Probably here and there a rain pipe is in direct communication with a sewer, but there is certainly no effective dilution of the sewer air. On premises where house drains were found ill-trapped there were loud complaints of the foul smell that arose from them, especially at low water, when the mouth of the sewer was exposed, and an east wind was pressing against it.

The engineer whom the Local Board consulted in 1867 proposed to use the existing drains for surface water only, and to convey all the sewage of the town into a catch-drain running parallel to the river below low-water level, thence to be pumped into riverside reservoirs a mile or two below the town, and emitted into the river at ebb tide.

A member of the Local Board has recently brought forward a plan for sewering the town by gravitation without need of pumping. It is a case in which skilled engineering advice will at some time require to be asked and taken. Meanwhile the sewer question appears to me less urgent than the water question. An increased supply of water would not immediately operate to choke the old drains, its first effect would probably be to flush them more thoroughly than they have yet been flushed; some time would elapse before waterclosets were generally adopted in place of the accustomed privies, and not till then, by the increasing quantity of solid matter poured into them, would the old sewers be found wholly inadequate.

Privies and cesspits.

The most serious danger to the health of the district is to be found in the existing mode of excrement disposal, especially when taken in connexion with the present water supply.

With the exception of 40 waterclosets connected with private cesspools or in a few instances with the sewers, and a few earth closets, the ordinary garden privy is in general use throughout the district. At the survey of the district ordered by the Local Board in 1877 it was found that 587 houses had their separate privies, 77 privies served two houses each, 20 served three houses each, 3 served four houses each, and there were two houses without any accommodation of the kind. The privies have open cesspits, which in the better and more modern examples are lined with cement, but in the vast majority are not cemented, and therefore not secure against soakage of their contents through the walls. Their situation in relation to dwellings and wells is often such as to be both offensive and dangerous. I need not dwell upon the nuisances to which this system gives rise, when, as in Lymington, it has been in use from time immemorial. It is only under almost unattainable conditions of original perfection of structure and subsequent maintenance and repair, combined with the most vigilant official inspection, that such a system could be kept free from nuisance and danger.

The state in which many of the privies were found at the time of my visit showed that nuisance inspection, or at least nuisance repression, was by no means strictly carried out.

I noticed especially a privy in a narrow yard at the back of a row of houses in Gosport Street; it was about seven paces from the well, and the cesspool was overflowing under a covering of rubbish, defiling the pathway and soaking the back wall of the nearest dwelling. I was assured that this was a nuisance of long standing, which had already been reported to the Sanitary Authority and by them ordered to be abated. The order had not been obeyed. Structural alteration is required to prevent the recurrence of this nuisance.

I would also draw attention to the state of the privies attached to the National Schools in New Lane. There are three closets for boys and three for girls, back to back, all discharging by a common untrapped pipe into a large cemented, tightly covered unventilated cesspool in the school yard. The pipe is flushed from a cistern every week, except when the cistern is frozen. The only means of escape for the air in the cesspool is by the closet seats. This is in contravention of a byelaw (46) which requires that in every case a pipe or shaft for ventilation shall be carried up from the cesspool or drain leading to it. A ventilation shaft might easily be carried up the wall of the school building. Having regard, however, to the proximity of the closets to the school, and the offensiveness which is unseparable from their present construction, it appears advisable that they should be converted to dry earth closets. In 1876 there were several cases of serious illness at the school, described by the medical attendant as "blood poisoning," and attributed by him to the drinking of water from a well close by these closets. The water was found to be impure. Another well has since been sunk at some distance from the closets.

Scavenging.

The contents of the cesspits, along with ashes and house refuse, are committed to the gardens attached to the dwellings, or are removed by farmers, an arrangement which is always attended with much delay. There is no public provision whatever for this purpose.

The cleansing of the public streets is attended to by two scavengers constantly employed with a horse and cart.

Slaughter-houses.

Complaint has been made of nuisance arising from slaughter-houses in the town. These are five in number, and are situated at different distances in rear of the butchers' shops to which they belong. The principal one is the cleanest of all, and is as well kept as circumstances will permit, but there are dwellings not far off whose inmates are from time to time offended when the wind comes to them from the direction of the butchery yard. The other butcheries are more decidedly nuisances, though their business is smaller. Ill-paved floors, rude catch-pits for washings, neglected drains, filthy pigsties, and dung heaps combine to make them very offensive.

Hospital accommodation.

The condition of the district, as above described, is such as to justify apprehension of an outbreak of enteric fever or other infectious disease. Should another outbreak of infectious disease occur, such as that of scarlet fever in 1870, the only accommodation available for patients who could not with safety to other persons be treated at their own homes, is that afforded by the Workhouse fever wards, which, though designed only for paupers, might, perhaps, under arrangement with the Board of Guardians, become vested in the Sanitary Authority. These wards are two in number, each with three beds, well lighted and ventilated, in a separate block at a safe distance from the main workhouse building, and provided with a kitchen and nurse's room. At present they are very rarely used; for the last 12 months they have been wholly unoccupied.

Sanitary administration.

The authority responsible for the sanitary condition of the district is a Local Board formed in 1867, consisting of 18 members, of whom six retire every year. This board is quite distinct from the Town Council and has a different area of jurisdiction. Their regular meetings are once a month; special meetings are held when necessary.

The Local Board, on their formation in 1867, adopted a code of byelaws which, if strictly enforced, would secure the general external cleanliness of the town. It would be well, however, that these byelaws should be revised in collation with the model byelaws issued by the Local Government Board, especially those which relate to the cleansing of privies and cesspools and the keeping of pigs and other animals.

In 1875 the Local Board appointed Mr. E. F. Chinery, Medical Officer of Health, at a salary of 10 guineas a year, and an additional fee of one guinea on each occasion when his advice should be specially called for by the Board, not accepting the terms of the Order of the Local Government Board of 11th November 1872. The office was only accepted on condition that the officer should not be required to draw out tabulated statistics. Mr. Chinery resigned in October 1878, and the Sanitary Authority now propose that his successor (not yet chosen) shall be appointed under the Board's Order at a salary double that which they have hitherto paid. No arrangement has been made with the Registrar of Deaths to furnish the health officer with weekly returns of mortality, or with immediate information of any death from infectious disease, as recommended by the Board in their circular letter of the 23rd March 1874. Mr. Chinery has reported briefly on special sanitary defects at various times as occasion seemed to require, but has not made any systematic inspection or comprehensive report as to the state of the whole district. He has, however, called the attention of the Authority to the need of improved drainage and improved water supply; and in connexion with the impure condition of the drinking water obtained from wells he brought to the notice of the Authority the outbreak of sickness at the National Schools in 1876, and in the autumn of 1878 he made them cognisant of a prevalence of diarrhœa attended with ulceration of the mouth, both in children and in adults, which he assigned to the use of impure drinking water.

The Inspector of Nuisances, Mr. G. Wort, is also Surveyor of Highways, and receives for the two offices combined a salary of 60*l.* a year. I have already indicated that the duties of this office require to be more stringently performed.

It must, however, be apparent that the best efforts of the sanitary officers will be of little avail unless the Local Board address themselves with more resolution to the improvement of the sanitary condition of their district.

HUBERT AIRY.

Recommendations.

1. The Sanitary Authority should without unnecessary delay decide upon the best mode of providing the district with an ample supply of pure water, and should then forthwith take steps to have the necessary works executed. In the meantime any well that yields water so polluted as to be injurious to health should be closed (under section 70 of the Public Health Act, 1875).

2. Seeing that the introduction of an ample water supply would certainly lead to a large increase in the number of waterclosets, and therefore in the volume of the sewage, the Sanitary Authority should provide for such increase by laying down, under skilled engineering advice, a suitable system of sewers with an outfall at a proper distance from the town.

The existing sewers, supposing them retained for any purpose, should be thoroughly examined and repaired, and should be properly ventilated in accordance with the principles laid down in the Suggestions of the Board's Engineering Department relating to this subject, and steps should be taken to abate the nuisance at the sewer outfall in the river.

The discharge of sewage into the Woodside brook should be stopped.

3. The Sanitary authority should enforce the strict repression of nuisances arising from ill-constructed, ill-placed, or ill-kept privies. In cases where, by fault of position or construction, such nuisance appears likely to recur, they should proceed (under sections 95 and 96 of the Public Health Act, 1875) to enforce its permanent abatement.

They should do all in their power to encourage the adoption of earth-closets, or some suitable form of pail-closet, or water-closet (supposing the water supply to be ample), in place of the offensive and dangerous privies now in use.

It is advisable that the Sanitary Authority should make provision for the frequent and regular emptying of cesspits, either by scavengers in their own employment or by contracting with an employer of labour for that purpose.

4. Provision should be made for the slaughtering of animals outside the town, at a proper distance from human habitations.

5. Arrangement should be made with the Registrar of Births and Deaths to supply the Medical Officer of Health with weekly returns of the deaths and with immediate notice of any death from infectious disease occurring within his sanitary district, in accordance with the Board's circular letter of the 23rd March, 1874.

6. The byelaws of the district should be revised, with a view to the adoption of more effective regulations for the cleansing of privies and cesspools, and the keeping of pigs and other animals. In this connexion the Sanitary Authority should give consideration to the model byelaws issued by the Local Government Board.

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