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Dr. Blaxall's Report to the Local Government Board on the Sanitary Condition of Okehampton (Devon).

EDWARD C. SEATON, M.D.,
Medical Department,
September 18, 1879.

THE present inquiry was instituted by the direction of the Local Government Board, in consequence of it having been reported to them by a ratepayer of Okehampton that the provisions of the Public Health Act were inefficiently administered; that the sewerage of the town was very imperfect; and that conditions calculated to exercise a prejudicial effect upon health generally prevailed.

Preliminary.—Okehampton was formerly a Parliamentary and Corporate Borough in virtue of a charter granted to the town in 1623, by which the government was vested in a mayor, eight principal and eight assistant burgesses, with a recorder and town clerk. This charter was enlarged and renewed in 1684, and is still the governing charter, as although the borough was disfranchised in 1832, it was not included in the Municipal Reform Act of 1835. The burgesses are self elected, and the mayor, ex-mayor, and recorder are justices of the peace and hold general quarter sessions for the borough.

In 1864 the borough adopted the Local Government Act, when the administration of the Public Health Act and relative duties devolved upon the newly constituted Local Board; the corporate body retaining their right to act as justices of the peace, and continuing to exercise their magisterial functions.

A considerable amount of property belonging to the town, and formerly vested in the Corporation, was by direction of the Charity Commissioners transferred to Trustees, who are empowered to pay annually to the Local Board a certain proportion of the income derived from such property, amounting at present to about 200*l.* per annum, but which will increase as certain claims upon the property shall be paid off. A further source of income accruing to the town are the markets, which are let by tender or auction, and realise some 300*l.* or so per annum. This money is not included in the Charity Trust fund, but is entirely at the disposal of the Corporation, who, I am told, have now about 500*l.* or 600*l.* in hand, with which they propose to build a new market.

General Description.—The town of Okehampton is pleasantly situated in a deep valley on the northern confines of Dartmoor, at an elevation of 520 feet above the level of the sea. It is watered by two fine rapid streams, the East and West Okement, which take their rise on the Okement hill of Dartmoor, and after a somewhat tortuous course enter the town at opposite sides; shortly after leaving the town they unite and form the Okement river, which, pursuing a northerly course, joins the Torridge, and ultimately enters the sea at Barnstaple Bay.

The centre of the town is occupied by an open space known as the Parade, whence the principal street, which is rather more than half a mile long, branches out on each side, east and west, crossing over the two rivers, which are bridged for the purpose. The houses at either extremity of the street are about 60 and 90 feet respectively above the Parade.

Geology.—The geological formation belongs to the carbonaceous system, which on the southern border of the district is in intimate relation with the granite of the Dartmoor hills.

Population.—In 1871 the population was returned at 1,900, and is now estimated at about 2,000 persons. A corn and cattle market is held weekly and is largely attended. There is an artificial manure factory just outside the town, but beyond this there is no special industry.

Water supply.—The town is mainly supplied with water derived from underground springs on Dartmoor, but there are two dip-wells situated respectively on the east and west sides of the town, which are more or less used by the people living in their vicinity.

(1.) The water of the springs is collected and conveyed by various earthenware pipes which converge to one 4-inch pipe, through which it flows to a receiver, and thence to a reservoir situated at an elevation of 300 feet above the town. The reservoir is constructed of solid masonry set in tiles and cemented, and consists of two compartments arched over, having together a cubic capacity equal to 120,000 gallons. From the reservoir the water is conducted to the town by 4-inch iron pipes (protected by Angus Smith's varnish), and there distributed on the constant system to various houses, and to seven public stands for the use of the cottagers free of charge. It is

also laid on to several of the closets for flushing purposes, but here I observed many instances in which there was no intervening service box or cistern; thus direct communication was established between the water-closets and water mains, exposing these latter (more particularly when empty) to the risk of the entry of foul air derived from the closet pans and probably from the sewers themselves, together with the possible contingency of excrement being sucked up. I would impress upon the authority that this direct communication between the closets and water-mains is a real danger to public health, widespread epidemics of enteric fever having been traced to the drinking of water contaminated in this way. The water supply is reported to be of good quality and abundant in quantity, but I am told that occasionally, in seasons of drought, it has been found necessary to intermit the supply for a certain number of hours per day. The necessity of this, however, it would seem, might be obviated by a more careful economy of the water, which I noticed in many places is recklessly allowed to run to waste.

(2.) The dip-wells are situated by the roadside and are mere excavations in the rock, their situation suggesting possible risk of contamination by road washings and impurities from the surrounding soil. The well on the west of the town is under a cultivated garden in which there is a foul privy-pit about 90 feet distant from the well and at a higher level; while the houses on Shob Hill in the same vicinity are entirely without drainage. Recently by the judicious advice of the Medical Officer of Health this well has been covered in, and the water conveyed by a pipe to a lower level of the hill, where it is obtained by means of a tap.

The well on the east side is situated under a meadow, and I observed percolations into it through the roof; moreover, the water is got by dipping, thus offering the further risk of fouling by the casual use of dirty vessels.

Under these circumstances it is obvious that the wells cannot be regarded as affording a safe supply. I should state, however, that hitherto the water has been held in high repute; and upon a sample from the western well being subjected to analysis some short time since it was found to be free from impurities. Nevertheless, for the reasons above stated, I would strongly advocate the use of the town water in preference to these wells, that is, provided the dangerous relation already referred to as existing between water-closets and water-mains is abolished.

Excrement Removal and Disposal.—Excrement removal and disposal is effected by means of closets and privies. The closets discharge into the sewers, and many of them are placed within the dwellings, but the soil pipes, with very few exceptions, are unventilated. The arrangements for flushing are for the most part unsatisfactory, for although in some instances the water is properly supplied to the closets through the intervention of service cisterns, in the majority of cases either the water-pipes are led direct to the closet pans, involving danger to the water supply, as already explained; or the washing down is dependent upon hand flushing, which is often altogether neglected, conducing to the lodgment of excrement in the sewers and drains, where, decomposing, it intensifies the pollution of the sewer air.

As regards the privies, these are all of the most objectionable description, differing only in degree of unwholesomeness. Some discharge into open pits, which are mere excavations in the soil, others into closed or partially covered pits, where the contents are allowed to accumulate for an indefinite period, while many of the privies discharge into large receptacles used for the storage of pig and other manure, according to the different animals kept on the premises. Numerous examples of abominable and unsightly nuisances of this description came under observation, while the privy structures generally presented every stage and degree of dilapidation. The insufficient amount of privy accommodation is also to be noted, one privy being common to several families, while from 20 to 30 houses are devoid of any provision of the kind. In short, excremental nuisances, in one form or another, were met with at every stage of this inquiry. In illustration of the foregoing the following examples may suffice:—

- (1.) Shob Hill.—Hodges' privy, stinks abominably, discharges into a foul cesspit, situated within two or three feet of the back door of the dwelling.
- (2.) The privy accommodation for the three houses below Hodges' consists of an old privy which has lost roof, sides, and seat, the four posts only being left standing.
- (3.) The dairyman Kerslake's privy discharges into a receptacle (20 × 8 feet), which, in addition to privy contents, contained pig and other manure.
- (4.) London Inn Yard.—Two privies discharge into a large receptacle, which receives roof-water, and drainage from another privy, and contained, moreover, three or four loads of manure.

- (5.) Fore Street.—Harvey's closet, just outside the dwelling, in direct untrapped communication with the sewer; no provision for flushing; stinks abominably.
- (6.) Lillicrap's Court.—Two closets, used by about 60 people; discharge into the sewers; no flushing arrangement; repulsively filthy. The contents of one closet are obliged from time to time to be baled out of the pan, owing to the drain being blocked.
- (7.) East Hill.—Newcome's privy, seat and floor so much broken as to endanger persons tumbling into the foul cesspit beneath.

Sewerage.—In 1867 the Authority, recognising the unsatisfactory and imperfect condition of the drainage, consulted Mr. Appleton, C.E., on the subject, who at their request drew up a scheme for the improved sewerage of the town, and presented it to the Authority, together with a detailed report of the results of his investigation of the existing sewers and drains, which he described as being "rudely constructed with masonry frequently without mortar, and in some instances without even anything but the natural soil for a bottom, and thus incapable of retaining and conveying the fluid portions of the sewage," and "totally unfit to be incorporated with the new system of drainage," into the detail of which he entered at some length. With regard to the disposal of the sewage he submitted for the consideration of the Authority the advisability of arrangements being made for utilising it on the land. From that time to the present little or nothing has been done to give effect to Mr. Appleton's recommendations. It is to be inferred that the condition of the old sewers has gone on from bad to worse; and although other sewers have been constructed in certain directions a considerable portion of the town still remains unprovided with proper means for carrying off liquid refuse.

According to information furnished me by the Inspector of Nuisances, who is also the town surveyor, the existing sewerage system, designed to carry off surface water and sewage, consists of five main sewers, four of which discharge into the rivers, and the fifth on to a meadow for irrigation purposes. Besides these sewers certain drains from houses and closets go direct to the river. To describe the sewers:—

(1.) The *Church Street sewer* consists of 6-inch glazed pipes laid down Church hill, in communication with a stone sewer which empties into the river just below West-bridge, the outlet being protected by a flap trap.

(2.) *West Street and Rosemary Lane sewer.*—At its commencement this sewer consists of a 6-inch glazed pipe led from the east side of West Bridge along West Street, and so to Rosemary Lane, where it empties into a 9-inch pipe; this latter communicates with an iron pipe which discharges into the river. I am informed that on a recent occasion when an examination was instituted into the West Street sewer, it was found that the pipes were unevenly laid and the joints defective, while a drain in connexion with this portion of the sewer designed to carry off the contents of a privy in George Yard, was often getting blocked, and in seeking the cause it was discovered that the incline of the drain was towards the closet, instead of *vice versa* towards the sewer.

(3.) *Fairplace sewer* is similar in construction to the above, with the exception that it communicates with an old stone sewer which receives also the contents of a sewer from Fore Street, and ultimately discharges into the East Okement below the bridge. Observing during heavy rain that for some time there was no discharge from this sewer, I directed the attention of the Inspector of Nuisances to the fact, who subsequently ascertained that there was considerable leakage some distance above the outlet.

4. *East Hill and North Street sewer.*—On East Hill this sewer has simply the natural rock for its bottom with stone sides and flat top, but in North Street it is said to be oval and built of stone; the discharge is into the East Okement. A large body of water enters this sewer on East Hill derived from a mill leat, and I believe it is compulsory that this stream should be kept up.

5. *Crediton Lane sewer.*—This has been constructed within recent years, and consists of 6-inch glazed pipes said to be imperfectly jointed and unevenly laid; in support of which I may mention that blockage is not unfrequent, and on this occurring it was the custom until recently to break the pipes in places till the exact spot was hit upon, when the sewer was cleared, but the broken pipes were not replaced by new ones. The sewage is discharged on to a meadow, and its fertilising properties are considered to be very great, but the process of irrigation is very imperfectly carried out. Moreover the discharge is too near inhabited dwellings.

No special provision has been made for the ventilation of the sewers, but some of the rain-water pipes are led into the drains, and a few street gullies are open. Thus a slight opportunity is offered for the escape of sewer air; but in certain instances this was found to be so offensive at the street gullies that they were trapped, with the result of driving the foul air into the houses in their vicinity.

As regards the unsewered parts of the town:—Here sewage nuisances are met with of an exaggerated kind. On Shob Hill the blackness of the soil marks the course of the drainage as it trickles along in front of the houses to open gutters, whilst at the back of the dwellings drainage from houses at the high level courses down to those below, creating abominable nuisance, as signally instanced in the house of a Mrs. Geary, where drainage, in part derived from the manure and privy receptacle on Kerslake's premises (referred to on page 2, example 3), finds its way into the sitting-room, sometimes completely flooding the floor, causing a stench so intolerable as to render the whole house unfit for habitation. Again, Rosemary Lane affords examples of house-water stagnating in open, roughly paved, stone gutters.

Piggeries, Slaughter-houses, and other Nuisances.—Pigs are very generally kept, and often in unwholesome relation to dwellings, sometimes even adjoining them, while the sties, in many instances so small that the poor animal has barely room to turn, are usually in a very filthy neglected condition, the floors being sodden with manure.

Cows again are kept in confined sheds, and here I would observe that the dairies are some of them in situations liable to endanger the purity of the milk. There are three slaughter-houses, but I am told very little slaughtering is done save in one of them, which is situated outside the town; none of these houses are properly paved, nor do they in any way fulfil the requirements of the model byelaws.

Street scavenging is carried out by a man in the employ of the authority, but there is no systematic removal of house refuse or manure, which together are allowed to accumulate in large quantities in the precincts of the dwellings.

Dwellings.—Very many of the lower rooms of the cottages are roughly paved with stones set on end, so that they must inevitably hold a great deal of damp whenever the rooms are washed; and it appears to me not improbable that such dampness may be conducive to rheumatism, which the Medical Officer of Health reports as being very prevalent in the town. In other cases these rooms have smooth even floors formed of cement; but this again is cold and therefore not a desirable flooring. Certain of the houses stand greatly in need of whitewashing, and a few are characterised by great dilapidation. While as regards the dwellings generally, from what has already appeared in this Report with reference to the extent to which their precincts are befouled by excremental and other nuisances, it is obvious that the people live in the midst of conditions greatly prejudicial to health. The following case calls for special mention, as not improbably it resulted in fatal consequences. Immediately adjoining the back of a house in No. 2 Court is a filthy pigsty situated just under the bedroom window, and near it a large receptacle for the storage of manure and privy contents, containing at the time of my visit a quantity of water and fæcal matter. The walls of the cottage are sodden with the fluid contents of this receptacle, and the whole house pervaded by horrible stench. In May and June of last year two of the inmates (young girls) were taken ill, and for some days suffered from incessant vomiting, followed by severe head-ache, which resulted in effusion on the brain, and death. These girls were in the habit of complaining of the effect the stink had upon them, adding that they thought it would bring on fever. This marked sensitiveness, together with the nature of the attack, in my opinion points to the nuisance here described as being implicated in the causation of the fatal illness of these girls.

As an instance of dilapidation, a house on East Hill has a thatched roof which is unceiled; the bedroom floor is so broken that a child fell through to the room below; the stairs are rickety; and the floor of the lower room is roughly paved with stone. I may add that there is no privy accommodation, and pigs are kept just outside the door of the dwelling.

Sickness and Mortality.—As regards the health of the town: Reference to the Medical Officer of Health's reports for the past three years 1876-78 shows that the death-rate for the two years 1876 and 1878, was 17 per 1,000, against 12·5 per 1,000 for the intermediate year. He makes special reference to the deaths from heart-disease, which he ascribes to the result of rheumatism, to which the inhabitants of the town are peculiarly subject, and this he attributes to the prevalence of heavy rain-fall and to the neglect of the people to wear flannel clothing. Further he remarks upon the comparative immunity from phthisis in this district. In 1876, whooping cough was

epidemic, causing seven deaths. In 1878, scarlatina was widespread, attacking almost every family, but happily it was of a mild type, and no case proved fatal. I would remark that had the town possessed an infectious disease hospital where the cases could have been isolated on their first appearance, the disease in all probability would not have assumed epidemic proportions. In the same year, three deaths are returned from "fever," the Medical Officer of Health stating that the origin of these cases could not be traced to any known cause. I would observe, however, that two out of the three cases are those of the young girls already referred to on page 4, in connexion with nuisances of the most flagrant character.

Sanitary Administration.—The Local Board appointed Dr. Waters Medical Officer of Health, originally at a salary of 8*l.* per annum, but as the Local Government Board considered this insufficient remuneration and refused to pay any portion of it, the sum was increased to 12*l.*, and subsequently to 16*l.* per annum; but the Local Government Board, for the reason previously stated, still declines to bear any portion of the expense.

Mr. Yeo has held the appointments of Inspector of Nuisances and Town Surveyor since March 1878 at a salary of 20*l.* per annum.

The Medical Officer of Health informs me that he has attended the meetings of the Sanitary Authority and brought under their notice from time to time the existence of nuisances, and in his annual reports he instances occasions on which he has done this, making reference to excremental and other nuisances, which although reported, remained unremedied. Further, he directs attention to the want of privy accommodation, and to the foul cesspits "which ought to be closed;" also to the want of water supply and proper sewerage for the new road: the water has since been laid on, but no sewerage provided. I observe in his report, dated February 1878, that he enters upon the drainage question, and after referring to the Act which prohibits pollution of rivers by sewage, he writes, "looking at the sickness and mortality during the past year, I cannot find a single case I can refer to any defective sanitary arrangement," and he goes on to say, "seeing that the death-rate is only 12·5 per 1,000, I am of opinion that if the Inspector of Nuisances does his work thoroughly, and the Board adopt the dry-earth system in all cases in which drainage is defective, the death-rate may be kept at its present low rate of mortality." Thus he would seem to lose sight of the danger to public health involved in the imperfect condition of the sewers generally, and in the presence of slop nuisances in the unsewered part of the town. And in advocating the adoption of the dry-earth system where drainage is defective, he deals very partially with the important subject of excrement removal and disposal, while he leaves his Board unadvised as to the principles to be kept in view in order to secure this being effected in a wholesome manner.

The Inspector of Nuisances has not kept a report book, but he has submitted written reports monthly to the Authority, and I gather from these that he has repeatedly directed attention to the existence of nuisances, including those already specified in this Report in connexion with Mrs. Geary's house, Lillicrap Court, and No. 2 Court. He also makes special mention of large accumulations of manure existing generally throughout the town. In a few instances certain of the evils have been abated for a while, in others notices issued by the Authority have been suffered to be disregarded. For example, five or six persons were directed to fill up their cesspits and substitute earth closets, with the result that one person only erected a new privy; but this discharged into a foul cesspit, thereby perpetuating nuisance, the stink from the pit, as I can testify, being abominable. The Authority possess byelaws for the prevention of nuisances, &c., but the extent to which these have been suffered to become a dead letter is too patent to need comment.

It has been shown that the Authority have been made officially acquainted with the sanitary state of their town, and while it is to be regretted that the Medical Officer of Health did not explain to them the prejudicial effect upon health which the prevailing insanitary conditions are calculated to exercise, accompanied by recommendations of comprehensive measures for the remedying of the same, such omission on his part can in no wise relieve the Authority of the grave responsibility incurred by them in neglecting to employ the powers vested in them by the Legislature for the preservation of the public health.

I attended a meeting of the Local Board and endeavoured to impress upon them that the comparative immunity from dangerous infectious disease of a fatal character which the town has in recent years enjoyed must not be allowed to lull them into a degree of false security, seeing that the conditions revealed by my recent inspection

as everywhere present in their midst are the very conditions which are recognised as favourable to the development and spread of dangerous infectious disease, specially with reference to enteric fever and cholera, which are mainly dependent for their spread on excremental pollution of earth, air, or water; and I pointed out that these diseases introduced into the town would be liable at any time, in the existing state of things, to become widespread and fatal. It was therefore a matter of vital importance that the Authority should immediately adopt comprehensive measures of improvement.

In concluding this Report, I may observe that this town, as herein-before stated, possesses a not inconsiderable income independent of the rates, the Local Board receiving 200*l.* per annum from the Charity Trustees, and the corporate body 300*l.* per annum for the market rents; and I would suggest, for the consideration of the corporate body, that the money they have at their disposal could not be placed to a better use, in the interest of the town, than by applying it to the various sanitary improvements which are so urgently called for. It appears to me that if the Corporation and Local Board would together approach this subject with an earnest desire of effecting practical public good much real improvement might be achieved without proving burdensome on the rates; but I would impress upon the Authority that there is no real economy short of efficiency.

F. H. BLAXALL.

RECOMMENDATIONS.

(1.) Every precaution should be adopted to protect the water-supply from contamination, and to this end it is imperative that no direct communication should exist between water-mains and water-closets.

(2.) The Sanitary Authority should take into consideration the best means of dealing with the excrement of the population: in place of the unwholesome privies and closets now in use, some such method of excrement removal, whether by water carriage or on the dry principle, should without delay be substituted as would insure this being effected without producing nuisance or injury to health, and with this view the Authority should see that every house is provided with suitable closet or privy accommodation, and should exercise strict supervision to insure the privies being kept in a wholesome condition (Public Health Act, 1875, section 40). Should removal by water carriage be determined upon as the system best adapted to the town, it is essential to insure efficiency that the town should possess a complete system of sewerage, that the sewers should be properly constructed and well ventilated, and that each closet should be supplied with a service cistern and with water for flushing, the soil-pipes of all closets situated within dwellings being well ventilated. For information with regard to this method, as well as for the details and management requiring to be observed for any of the dry systems, the Authority should consult the report to the Local Government Board on certain means of preventing excrement nuisances in towns and villages.

(3.) The sewage should no longer be permitted to pollute the rivers, but a comprehensive scheme should be adopted which should include,—

- (a.) The laying down of sewers and drains in such parts of the town as are at present unprovided, and the reconstructing of such of the existing sewers and drains as may require it.
- (b.) The laying down of a main sewer or sewers for the removal of sewage to a distance from the town where it might be disposed of without producing nuisance.
- (c.) The efficient ventilation of all drains and sewers, the proper trapping of drains in the vicinity of houses, and the preventing of direct communication between indoor sinks and waste water pipes and the sewers and drains.
- (d.) The compelling of all houses to drain into the sewers.

A skilled engineer should be consulted as to the best means of carrying out this recommendation.

(4.) Means should be organised for the systematic removal, at short intervals, of refuse and manure from the vicinity of dwellings. The Sanitary Authority should secure the proper paving and cleansing of courts and yards. Pigs and animals should not be permitted to be kept in situations where they produce nuisance.

(5.) The model byelaws should be substituted for those at present in force. The provisions dealing with the keeping of pigs and other animals, the paving and regulating of slaughter-houses, and the building of privies should be adopted. All the byelaws should be strictly enforced.

(6.) Dwellings which are unwholesome through want of lime-washing, defective ventilation, dampness, dilapidation, or other cause, should be dealt with under the Public Health Act, 1875, sections 46 and 91.

(7.) The Authority should provide a place for use as an hospital for the reception of cases of infectious disease (Public Health Act, 1875, section 131); also a disinfecting chamber and a mortuary (sections 122 and 141).

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