

Dr. Blaxall's report to the local government board on an epidemic of scarlatina in the urban sanitary district of new and old Swindon, and on the sanitary condition of those towns.

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NEW
SWINDON.

epidemic in question might be said to date from August last, the earlier cases occurring in Bath Street, Cromwell Street, and Cambria Place, and the disease subsequently spreading throughout the town. He was unable to furnish me with the names of the houses or families in which the first cases appeared, as he was absent from the district at the time, and his assistant who attended the cases had since left. In fact he could give me definite information only of such cases as were under treatment at the time of my visit, having no record of the previous cases. Under these circumstances I had recourse to the death registers, and upon examination of these I found that deaths from scarlatina dated as far back as the beginning of the year. One such death was recorded in January, four in February, and one in March, then no fresh death until June, from which month till October the disease manifested increased fatality, and has continued to the present time. One death was recorded in June, two in July, three in August, nine in September, 19 in October, 13 in November, and 11 in December, making a total of 58 deaths. It should be stated that three out of the 19 deaths in October took place at Even Swindon in the rural district, just outside the boundary of the urban district; but inasmuch as they occurred in children attending the schools at New Swindon, and moreover free intercommunication existed between the two localities, these cases may properly be included in the epidemic now under consideration.

On the 3rd of July the Medical Officer of Health, in a written communication to the Authority, reported that several cases of scarlatina had occurred in the district during the previous month, but that most of them had been mild, and so far only one had proved fatal. He added, "We have had no fresh case since the last week, and at this moment only one case can be considered serious."

From this date (3rd July) I found no mention of scarlatina till October, when the master of the Board School in Bristol Street applied to the Medical Officer of Health for a list of infected houses. Subsequently the Medical Officer of Health, by letter dated 28th October, directed the attention of the Authority to the danger incurred by clothing being allowed to be taken from the establishment of Messrs. Compton and finished at cottages, scarlatina being present.

Following upon this came a report forwarded to the Local Government Board, and dated 15th November 1879. In this Report the Medical Officer of Health stated that for some years past the district had not been free from occasional cases of scarlatina, but that the attacks had been mild and "the disease kept within bounds;" and that the present epidemic commenced in the preceding August, when it broke out in three separate streets and quickly spread until "every street in the town had been visited and several hundred patients attacked." He attributed the spread of the disease to the utter neglect of the most ordinary care on the part of the public, and went on to state that arrangements had been made with Messrs. Compton so as to prevent their work finding its way into infected houses; also that a list of infected houses had been sent to the schoolmaster. He advised that the Board Schools should not be closed, as under proper regulations children would be safer in them than mixing with others in the streets, and concluded by reporting the disease to be on the decrease both in number of cases and severity.

It will be observed from the foregoing that the Medical Officer of Health dates the epidemic from August last, but, inasmuch as one death from scarlatina was recorded in June, two in July, and he himself in his report dated the 3rd of July stated the disease to have been present in June, I think the beginning of the epidemic may more properly be referred back at least to the month of June.

With regard to the early cases, *i.e.*, in June and July, I could learn no definite particulars as to their origin, but it would seem likely that the disease had continued to exist since the beginning of the year. No death from scarlatina, however, is recorded in April or May.

In all I succeeded in gaining information of 106 infected houses, and about 260 cases, the attacks varying from one to six in a house. Probably this number (260) represents about half the extent of the epidemic, but I forbore to push the inquiry further. The infected houses are situated in various parts of the town, and confirmed in effect the report of the Medical Officer of Health that

the disease had appeared in every street. I visited each of the 106 and made inquiry with reference specially to the *first* attacks in families. It appears that the disease was almost entirely confined to children, and so far as I could ascertain there was nothing to attach suspicion to any other mode of dissemination than intercommunication between the infected and healthy. And although direct personal communication of this kind could only in a few instances be established as a fact, yet there was such abundant evidence of unrestricted commingling in schools and elsewhere of healthy children with children coming from infected houses, if not themselves infected, and children partially convalescent from the disease, as to point strongly to the disease having been chiefly spread by this manner. As illustrative of direct personal communication I would cite the following cases:—

A girl went to her situation on a Tuesday as nurse-maid in a family that had recently had scarlatina; on the following Sunday she returned to her home feeling unwell, and on the Monday manifested marked symptoms of the disease. Five cases followed in this house. In another instance a child went to visit its grandmother, who was living next door to a family just recovering from scarlatina; the child came in contact with one or other of the infected family, went home and in five or six days developed the disease. Again, a little boy went in and out of an infected house, one child lying dead of scarlatina, and a second child ill with it; in due course the boy himself was attacked.

With regard to the schools. To determine precisely the part these played in the dissemination of the disease would necessitate accurate knowledge of the families that suffered, the number of children, school-goers or others, resident in the district, together with the number of each such class attacked, data which I do not possess.

But that the schools were implicated, and this to a considerable extent, may be inferred from the fact that of the 106 primary cases, 74 were children attending one or other of the day-schools up to the date of their being taken ill, and five or six were children attending Sunday schools until similarly attacked. Again, evidence was forthcoming of children from infected houses continuing to frequent school as usual until, being themselves attacked, they were compelled to absent themselves; and inasmuch as the dwellings did not admit of the infected being effectually separated from the healthy even where such separation was attempted (as I am told was occasionally the case), it is obvious that children coming from infected houses might be, though not themselves attacked, a source of danger to others with whom they came in contact. It is highly probable that in this way the disease was communicated to healthy children and conveyed by them to hitherto uninfected localities, as for example, Gooch Street, Mill Street, and Villett Street, where the *first* attacks originated in children in attendance at one or other of the schools. Moreover, some of the mothers told me that their children on being attacked had spoken of having sat next to children at school who were suffering from sore-throat or whose skin was peeling: this latter condition indicating that children had either continued to attend school during their illness or had been allowed to return to school while in an infective condition. Further, as tending to implicate the schools, critical examination of the dates of attack amongst school children went to show that the interval between the occurrence of many of the cases corresponded very closely with the usual incubation period of scarlatina, namely, from three to six or seven days, thereby suggesting connexion of the cases one with another. Further, the fact of certain of the cases occurring simultaneously, a child in attendance at school being the first member of the family to be attacked, in the case of a number of families residing in different streets, would seem to point to the school as the centre of infection.

For example, at Drill Hall School, 10 cases occurred between the 29th of August and the 19th of September, the dates being as follows:—August 29th, September 2nd, 4th, 6th (two cases), 10th, 12th, 17th, and 19th. All these were primary cases, *i.e.*, first cases in a house, with the exception of the two on the 4th and 12th September.

At College Street School there were 13 attacks (all primary) from September the 15th to October 29th; namely, September 15th, 22nd, 23rd, October 1st, 8th, 14th, 15th, 17th (three cases), 19th, 22nd, and 29th.

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At Bristol Street School there were nine attacks (all primary), September 15th, 18th, 25th, 27th, October 31st, November 3rd, 10th, 19th.

Another point deserving consideration is the circumstance that the disease would appear to have been greatly less prevalent during the time that the schools were closed for the holidays from the 11th July to the 4th of August. It is thus that I would explain the Medical Officer of Health assigning August as the month in which the epidemic began.

Here I have instanced only the Board Schools, but many private schools as well as Sunday schools afforded similar evidence of being concerned in the spread of the disease.

Further means of disseminating infection which to some extent were in operation here, were the keeping of the corpses of children dead of the disease in inhabited rooms from two to six days pending burial; allowing children to see the bodies of their schoolfellows after death; and the conveyance of the bodies to the place of burial in public vehicles without due precautions being taken to subsequently disinfect the same.

With regard to the clothing establishment of Messrs. Compton, recognising the danger of scarlatina being carried to distant parts through the medium of clothing sent out to be finished at the cottages, I called at the factory and was informed by one of the members of the firm that they contracted for the supply of clothing to public companies as well as to the army. He assured me that the firm were quite ignorant of the presence of scarlatina in New Swindon until the beginning of November, from which time every precaution had been taken to protect the clothing from exposure to infection. But he admitted that prior to this date, i.e., in September and October, clothing was sent out as usual, adding, however, that, no army clothing was in hand at that time, and he would take steps to insure so far as he could the disinfection of such other clothing as had been delivered. In short, he manifested every desire to adopt any precautionary measures advised, even to closing the factory if necessary, and promised that so long as there was any risk of infection the clothing should not be allowed to be taken to the cottages.

Having now dealt with the particulars of the epidemic as regards extent and manner of spread, I have to report that, beyond supplying the schoolmaster in October and subsequently with lists of infected dwellings, and advising Messrs. Compton in November of the danger incurred by allowing the clothing to be taken to the cottages to be finished, no measures whatever were adopted to arrest the progress of the disease. Thus no attempt was made to secure the isolation of such of the cases as could not be so dealt with in their homes, although the Authority possess an infectious disease hospital, and there can be no reasonable doubt that many of the poor having large families would gladly have availed themselves of the use of it had the danger involved to the rest of the family in keeping the infected at home been clearly explained to them. No efficient means of disinfection were provided, and no steps taken to inform the public of the penalty attaching to the exposure of infected persons and things in a manner to endanger public health; and in no instance were the provisions of the Public Health Act put in force, notwithstanding flagrant instances of disregard of them, such, for example, as the conveying of infected bodies in public vehicles as already mentioned.

Reviewing the foregoing facts as to scarlet fever, it will be observed that (1.) the disease was fatally present in the town in January, February, and March, causing six deaths. (2.) Fresh deaths were recorded in June and July, and the disease has continued to prevail up to the present time, spreading to every street in the town, the schools apparently playing an important part in the dissemination. The scarlatina deaths from June to December inclusive numbered in all 58. (3.) No efficient means were adopted to arrest the progress of the disease; and although the Authority possess an infectious disease hospital no use was made of it.

In view of all the circumstances of the epidemic, as detailed above, I attended the general meeting of the Sanitary Authority held on the 4th of December, when I endeavoured to explain to them the highly contagious nature of the disease, and advised as to the several measures necessary to be adopted in order to prevent its continuance and spread, and I left with the clerk a memorandum of the same.

Mortality in recent Years.

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The subjoined Table, abstracted from the Registrar General's death returns, has been prepared to show the mortality in this district from certain specified diseases, and from all causes, during the six years 1874-79 inclusive.

TABLE 1.—MORTALITY STATISTICS for the URBAN DISTRICT of NEW SWINDON. Mean estimated Population, 11,814.

Year.	Small-pox.	Measles.	Scarlatina.	Diphtheria.	Whooping Cough.	Fever.	Diarrhoea.	Total Mortality from the seven principal Zymotic Diseases.	Phthisis.	Pneumonia and Bronchitis.	Total Mortality from Phthisis, Pneumonia, and Bronchitis.	Total Deaths from the foregoing specified Diseases.	Total Mortality from all Causes.
1874 -	—	15	—	—	14	4	2	35	15	35	50	85	193
1875 -	—	—	2	2	8	14	13	39	14	30	44	83	201
1876 -	—	2	13	—	3	4	2	24	10	31	41	65	149
1877 -	—	1	15	1	2	1	5	25	18	45	63	88	202
1878 -	—	31	—	—	8	5	10	54	25	55	80	134	236
1879 -	—	1	61	—	6	4	2	74	12	42	54	128	230
Total -	—	50	91	3	41	32	34	251	94	238	332	583	1,211

It will be observed that epidemic disease of one sort or another has each year added to the mortality of this district:—measles and whooping-cough prevailing in 1874, enteric fever in 1875, when diarrhoea was also in excess of other years, scarlatina in 1876-77, measles in 1878, and scarlatina again in 1879. Further, enteric fever is annually present, a circumstance which my inspection of the district led me to anticipate, the condition of the sewers and drains being found to be eminently unsatisfactory, owing to deficient ventilation combined with habitual lodgment of faecal matter. With regard to the diseases of the respiratory organs, phthisis caused 94 deaths in the six years, and pneumonia and bronchitis 238 deaths. It may be noted that the diseases here specified are all more or less preventable, enteric fever in the highest degree so, its presence being recognised as indicative of excremental pollution of earth, air, or water: while, in respect of the other diseases, the spread of the most highly contagious of them, such as scarlatina, may be greatly limited by timely adoption of measures of isolation, together with efficient disinfection and the prevention of the exposure of infected persons or things. Measles (also highly contagious), though offering certain obstacles to the adoption of preventive measures owing to the long period of incubation, and the tender age at which children are subject to its attacks, may doubtless be greatly controlled by care on the part of parents, schoolmasters, and others. I would observe that the mortality from measles in New Swindon compares very unfavourably with the mortality from the same cause in the adjoining town of Old Swindon, as will hereafter be specially shown. The prevalence of phthisis in other places has been shown to bear a somewhat close relation to dampness of soil and dwellings; and although evidence is not so clear with respect to pneumonia and bronchitis, still my experience elsewhere has connected excessive fatality from these diseases with conditions of dampness such as are found to exist in this district. It is noteworthy, then, of the foregoing specified diseases that they have caused in the six years 583 deaths out of a total of 1,211, or nearly 49 per cent. of the whole mortality.

Inquiry into the circumstances of the epidemic of scarlatina led to investigation of the conditions and circumstances under which the people live, with the result that many of these were found to be of a character calculated to exercise a prejudicial effect upon health, such as dampness of soil and dwellings, ill-constructed privies, and defective ventilation of sewers.

Conditions affecting Health.

Excrement disposal is mainly effected by means of privies which discharge into the drains, but which are unprovided with means of flushing. Thence

Excrement disposal.

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arises lodgment of excrement in the drains, and the filth decomposing there contributes materially to the pollution of the air of the sewers. Many of the privies were in a very neglected condition. Some are fitted with the usual earthenware pan; others are provided, instead, with an open shaft about 18 inches square, and 5 or 6 feet deep. I observed numerous instances in which these shafts were full of excrement, and it would seem that accumulations of the kind are of no uncommon occurrence, the people stating that when the closets get choked a man comes with an iron rod and clears them. In certain parts of the district, as for instance at Cambria, the old cesspit privies are in vogue. The privies of the Bristol Street School call for special mention as being exceedingly filthy. They discharge into the sewers, but have no provision for flushing; moreover, they are only partially roofed, so that in wet weather the rain drives in, rendering the seats so wet that the children cannot use them. As a consequence, the floors of the privies were in a revoltingly filthy state.

Sewerage.

Sewerage.—Within the last few years the Authority have expended some 15,000*l.* upon drainage works, the money having been obtained on loan sanctioned by the Local Government Board, and recently they have applied for an additional sum to enable them to make extra provision for the carrying off of storm water, and to effect other improvements, especially at the outlet, where the sewage is disposed of on land. This matter having lately been inquired into and reported upon by Mr. Morgan, C.E., under instructions from the Local Government Board, I propose to refer to his report for information on the general subject, only noting that I received frequent complaints of the stinks arising from the sewers, and moreover, was informed by the Surveyor that the only provision for their ventilation consisted in one opening to the outer air at Rodbourne Lane. I learned subsequently, however, that the Railway Company had placed two ventilating shafts in the vicinity of their station. Several instances came under notice of drains from washhouse sinks in direct and sometimes untrapped communication with the sewers, giving rise to great nuisance, and leading in certain cases to the drain openings being purposely stopped up.

An incidental evidence of the generally unsatisfactory condition of the sewers and privies may be found in the fact that chloride of lime is regularly supplied by the Railway Company in large quantities for the purpose of deodorising the privies and drains in that part of the town belonging to them and occupied by their employés.

Water
supply.

The water supply is entirely derived from extraneous sources, it having been found impracticable to obtain water in New Swindon, owing to the clayey nature of the soil and the depth to which the clay extends. The water is supplied by the Swindon Waterworks Company, and the source is situated near Wroughton, about three miles to the south of Swindon, at the junction of the Chalk with the Upper Greensand. Pipes are driven into the Chalk or Greensand, and the water collected in a reservoir, whence it passes to some filtering works, and is then led to a well, from which it is pumped to Old and New Swindon, and distributed throughout the towns. The supply is on the intermittent system, the pumping being discontinued at night, and also on Sundays. Besides the works described above, there is a small storage reservoir at a sufficient high level to admit of the water it contains being distributed by gravitation. The water stored in this reservoir is used on Sundays and in case of fire. The Great Western Railway Works are supplied by the same Company; but the public having a prior claim, their wants in seasons of scarcity receive the first attention. I met with a good deal of complaint of the quality of the water, but upon closer inquiry this was usually found to have reference to a date prior to the establishment of the filtering works. Many persons, in preference to availing themselves of the Company's water, purchase water obtained from a spring on the Wroughton Road, and retailed in the town at so much per bucket. I did not observe any instance of water-mains in direct communication with closets, but seeing that this important point had been apparently overlooked in drawing up the Company's regulations, I directed the attention of the secretary to the omission, and supplied him with an extract of the regulations under the Metropolitan Water Act, 1871, which bear upon the subject.

Scavenging, and the removal of house-refuse, are carried out by the Authority, save for such parts of the town as belong to the Great Western Railway Company, where the duty is done by men in their own employ. When collected, the refuse is deposited for a few days in the Local Board yard, situated in the midst of the town, I received loud complaints of the nuisance caused thereby, but of this I had no personal experience, as at the time of my visit there was little or no accumulation. Still I can quite understand that in hot weather nuisance may arise, and it would be well, therefore, to select as a place of deposit some spot remote from dwellings, and this I understand the Authority have in contemplation. A few instances were met with of undue accumulations of refuse in the vicinity of dwellings, but as a rule the scavenging duties would appear to be satisfactorily performed.

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Scavenging and refuse removal.

The dwellings are mostly cottages of three or four rooms, and in the majority of cases have been run up rapidly, and occupied almost before they were finished. Frequently there is no proper preparation of the foundation, while the floors are close to the ground, with no air-passage between, and I am informed that it is no uncommon thing for the flooring of the lower rooms to rot, owing to the dampness of the soil beneath. An agent told me that he had been compelled to raise the floors of the houses with which he was concerned, and to place ventilators beneath them, with the result of considerable improvement both in the condition of the dwellings and the health of the occupants. The houses generally are thickly peopled; there are a few eight-roomed dwellings which are let out in tenements. Here I noticed a bad arrangement, viz., a family renting a front room downstairs and a back room upstairs, and *vice versa*, whereby they were deprived of the command of through ventilation of their rooms which they would otherwise have.

Sanitary Administration.—The Sanitary Authority in carrying out sewerage works, and providing for the systematic removal of house-refuse, have manifested desire to improve the condition of their district. Further, on the outbreak of small-pox in 1871, they, in conjunction with the Urban Sanitary Authority of Old Swindon, took active measures to prevent the spread of the disease, building the greater portion of the present infectious disease hospital, and using strenuous efforts to secure the isolation therein of the sufferers; and on one or two subsequent occasions when small-pox was again introduced into the town, the action of the Medical Officer of Health doubtless contributed to prevent the spread of the disease. The success which attended the action of the Sanitary Authority in dealing with this infectious disease might well have encouraged them to take similar action at the commencement of the recent epidemic of scarlatina, which even more than small-pox requires isolation to prevent its extension, since we have no safeguard of the nature of vaccination that can be applied to prevent scarlatina. I regret to have to report that the Medical Officer of Health omitted to advise the Sanitary Authority to make use of their hospital for this purpose; and indeed it will have been obvious from previous pages of this report that the Sanitary Authority obtained from this officer no useful help towards dealing with the recent epidemic. I do not hold him excused by the smallness of his salary, but it deserves mention that the stipend of 10*l.* annually paid to him by the Sanitary Authority indicates an equally poor appreciation by themselves of the duties that attach to his office. The Health Officer receives no returns from the Registrar as to the current mortality of his district. With regard to the Inspector of Nuisances, he has received no definite instructions from the Authority; and the Authority themselves have not caused any systematic inspection of the district to be made, as required by section 92 of the Public Health Act, 1875.

Sanitary administration.

OLD SWINDON.

OLD SWINDON.	It has been stated in a former section of this Report that scarlatina being epidemic in Old Swindon, I was instructed to extend my inquiry to that district.
Description (general).	The town occupies a commanding situation about a mile to the south of New Swindon, and at an elevation of 100 feet above that town. It is regularly built, and the streets are fairly broad. Within recent years many cottages have been run up in the direction of New Swindon, so that now the streets are continuous, one side of a street belonging to Old Swindon, and the opposite side to New Swindon. To the west of the town a better class of dwellings is in the course of erection, while on the outskirts are several cottages standing singly or in groups of eight, ten, or more.
Geology.	The geological formation consists of Portland Sand overlying Portland Oolite.
Population.	The population according to the census of 1871 was 4,092, and is now estimated at 4,250.
Industries.	Besides the usual trade vocations of a town, the men are employed at the Great Western Railway Works, also in the quarries, and in agriculture.
Adoption of Local Government Act.	The Local Government Act was adopted in 1864, and Mr. Fry, the present Medical Officer of Health, was appointed in 1871, at a salary of 10 <i>l.</i> per annum. Mr. Davison has held the combined offices of Inspector of Nuisances, Surveyor, and Collector of Rates for the last 15 months, upon a salary of 120 <i>l.</i> a year.

Epidemic of Scarlatina.

Epidemic of scarlatina.	Having regard to the intimate relation that exists between Old and New Swindon, the continuity of their streets, and the free intercourse that goes on between the two towns, it was to be inferred that disease of a highly contagious nature being epidemic in the one town would extend to the other, and this is verified by examination of the death registers, which show 25 deaths to have resulted from scarlatina in Old Swindon since September last. The Medical Officer of Health was unable to furnish me with the particulars of the epidemic, but from medical practitioners and others I heard altogether of 56 households attacked, including about 140 cases. Moreover, there were three or four other families in which the children had manifested suspicious symptoms, and although the parents informed me that these children had not had scarlatina, adding, "No doctor was called in," still it appeared upon inquiry that they had suffered from sore-throat, and I have no doubt, from the account generally, they were mild cases of scarlatina, and as such were probably active agents in spreading the disease, seeing that the children were not prevented from running about at will.
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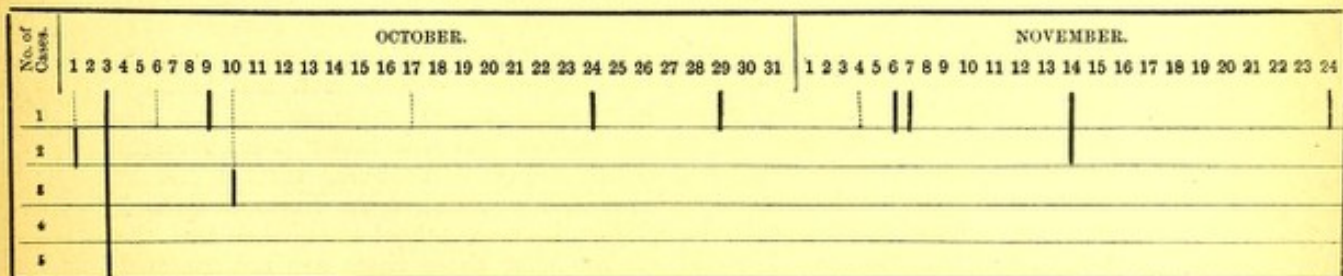
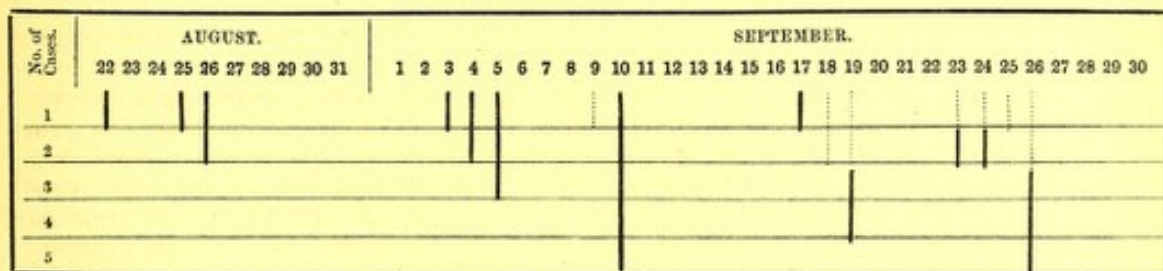
With regard to the history of the epidemic, the first case of which I have any record dates from the 22nd of August, when scarlatina had for some time been more or less prevalent in the adjoining town; other cases quickly followed, and the disease soon became widely diffused. I was unable to gain reliable information as to the precise manner in which the disease was introduced into the town, but inasmuch as the first five or six cases were in children attending the National School at Old Swindon, but residing either within the district of New Swindon, or immediately on its borders, the evidence tends strongly to introduction from New Swindon. With regard to subsequent spread, inquiry here was attended with similar results to that at New Swindon. Thus (1) children were the chief sufferers; (2) the dwellings as a rule did not admit of the isolation of the infected; and (3) no sort of restriction was put upon the intercourse between sick and healthy. The schools here, as in New Swindon, were an important element in the dissemination of the disease; in fact so clearly was this latter point brought out that I think it well to append to this Report in a tabular form a list of 54 cases that occurred amongst children in attendance at the National School, in order to show more readily the relation between school attendance and the progress of the disease. I would explain that these cases are not confined to first attacks in families, but include also those occurring amongst children attending school from infected houses, and who were doubtless greatly concerned in keeping up the infection amongst their schoolfellows.

The particulars as given in the Appendix need little comment. I would merely refer to the following points:—(1.) It will be seen that six cases appeared from the 3rd to the 5th of September inclusive, to any one of which the five cases that followed on the 10th of September may be referable, but suspicion perhaps attaches the more strongly to cases Nos. 7 and 9 as the probable agents, from its being in evidence that these two children suffered from sore-throat a day or so before they gave up going to school. Further, with reference to the five cases on the 10th September, it is noteworthy that they were children residing widely apart, and so far as I could ascertain, in previously uninfected localities; Westcott Cottage indeed being a solitary dwelling about half a mile from the town. (2.) Case 29 (sister previously attacked while in attendance at Eastcott School). This boy is reported to have been taken ill on the 23rd September, but he continued to go to school up to mid-day of the 25th, when he returned home ill, and was kept at home until the 30th September, when he again went to school, but for that day only, being too ill afterwards to resume attendance. Now, coming as this boy did from an infected house, the probability is that he was suffering from scarlatina on the 23rd September, and in that case he was in an infective condition on the two subsequent occasions of his attendance at school, namely, up to the 25th and on the 30th September; and it is noteworthy that following upon each of these dates, at intervals varying from three to six days, fresh attacks occurred simultaneously amongst several of the school children. True, there were other channels of infection to which the cases may have been due, nevertheless the fact stands prominently forward that this boy's presence at the school on three separate occasions was the precursor of an outbreak of cases amongst the school children. In like manner, with regard to the school generally, as the disease progressed there were doubtless many centres of infection established in various parts of the town, to one or other of which subsequent cases amongst these school children may have owed their origin, but the regular sequence of attacks extending over a period of some weeks as shown in the accompanying diagram can hardly be regarded in the light of mere coincidence, but rather justifies the conclusion that the disease was contracted at school through the promiscuous bringing together there of the infected and healthy. The diagram should be studied with the knowledge that the time which usually intervenes between the reception of contagion and the occurrence of definite symptoms of scarlatina is from three or four days to a week.

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DIAGRAM showing the SEQUENCE of CASES of SCARLATINA occurring amongst CHILDREN attending the NATIONAL SCHOOL up to the DATE of ATTACK.

N.B.—The dotted lines indicate the second attacks in families.



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I may state as a matter of interest that I heard of some five or six families in which children were attacked with scarlatina for the second time after a lapse of only three or four years, three such cases occurring in one and the same family, and two proving fatal. This was authenticated by Dr. Maclean, who attended the children on each occasion; and he informed me that on the first attack the disease was well marked, followed by desquamation in all three children. There was evidently in this family inherent predisposition to contract the disease, the mother herself having suffered from two attacks. Dr. Maclean mentioned another family in which he had attended the same children three times for well-marked scarlatina.

In view of the wide-spread and fatal character of the epidemic, it is a grave reflection upon the Sanitary Authority that no steps whatever were taken by them to arrest the progress of the disease, notwithstanding that they possess an infectious disease hospital, in which the cases might with advantage have been isolated on the commencement of the outbreak. The onus of this shortcoming is shared by the Medical Officer of Health, in that he made no recommendations as to the measures necessary to be adopted to prevent the spread of infection. In his report to the Authority, dated the 16th October, he refers to the increase of preventable sickness in the town, especially during the latter part of the quarter ending the 30th September. He states that scarlatina was very prevalent, and had terminated fatally in three cases, and that since September 30th six additional deaths from the same cause had occurred. And he goes on to say, "viewing scarlatina as a completely preventable disease, this excessive mortality is much to be regretted. From the utter carelessness of individuals I do not think any sanitary measures taken by Officers of your Board would prevent scarlatina becoming an occasional epidemic;" "but if only heads of families would be persuaded to carefully carry out the precautions enjoined by their medical attendants much would be done to modify an outbreak both in its fatality and severity." "It is quite possible to check scarlatina if proper means be taken to destroy the emanations of the sick and to isolate from the healthy."

Here it will be observed the Medical Officer of Health displays knowledge of the nature of the disease as regards manner of spread, and indicates the measures calculated to arrest its progress; but the adoption of these he is content to leave to individuals, giving no advice to the Sanitary Authority about the precautions they could enforce, under the powers vested in them by the Legislature for the prevention of the spread of infectious disease; and seeming altogether careless of the fact that many of the community are so circumstanced as to render efficient disinfection, together with the isolation of the sick in their own homes, impracticable; and that it is for cases such as these that hospitals and public means of disinfection are of chief importance. Nor does it appear that since October the Medical Officer of Health has even kept himself informed as to the progress of the disease, for at my interview with him he was surprised to learn how large had been its mortality. He told me that he had to pay the Registrar out of his own pocket for such returns as he considered were needful to the completion of his reports, and therefore he had not recently obtained any returns. He added that his private practice had not brought him in contact with any cases of scarlatina, and thus he was not aware of the actual extent of the epidemic.

Sickness and Mortality.

Sickness and
mortality.

With reference to the health of this district in recent years, the subjoined table, abstracted from the Registrar General's death returns, has been prepared to show the mortality of this district from certain specified diseases and from all causes, during the six years 1874 to 1879, with corresponding statistics for New Swindon. I have been led thus to invite comparison between the two districts from my attention having been arrested by the marked contrast exhibited in the mortality from measles.

TABLE 2.—MORTALITY STATISTICS for the URBAN DISTRICT of OLD SWINDON. OLD Population in 1871, 4,092. Estimated Population in 1879, 4,250. Mean SWINDON. estimated Population, 4,171.

Year.	Small-pox.	Measles.	Scarlatina.	Diphtheria.	Whooping Cough.	Fever.	Diarrhoea.	Total Number of Deaths from the seven principal Zymotic Diseases.	Phthisis.	Pneumonia and Bronchitis.	Total Mortality from all Causes.
1874 -	—	—	—	1	1	1	2	5	4	8	58
1875 -	—	—	—	—	—	6	8	14	6	6	69
1876 -	—	1	13	—	3	3	1	21	4	20	80
1877 -	—	—	2	—	—	—	—	2	5	7	54
1878 -	—	—	2	—	—	4	1	7	13	11	60
1879 -	—	—	25	—	2	—	—	27	5	11	88
Total -	—	1	42	1	6	14	12	76	37	63	404

TABLE 3.—MORTALITY STATISTICS for the URBAN DISTRICT of NEW SWINDON. Population in 1871, 7,628. Estimated Population in 1879, 16,000. Mean estimated Population, 11,814.

Year.	Small-pox.	Measles.	Scarlatina.	Diphtheria.	Whooping Cough.	Fever.	Diarrhoea.	Total Number of Deaths from the seven principal Zymotic Diseases.	Phthisis.	Pneumonia and Bronchitis.	Total Mortality from all Causes.
1874 -	—	15	—	—	14	4	2	35	15	35	193
1875 -	—	—	2	2	8	14	13	39	14	30	201
1876 -	—	2	13	—	3	4	2	24	10	31	149
1877 -	—	1	15	1	2	1	5	25	18	45	202
1878 -	—	31	—	—	8	5	10	54	25	55	236
1879 -	—	1	61	—	6	4	2	74	12	42	230
Total -	—	50	91	3	41	32	34	251	94	238	1,211

It will be observed that enteric fever was present four years out of the six, and was epidemic in 1875, causing six deaths in Old Swindon. The presence of the disease on that occasion was attributed to the drinking of polluted water, and apparently not without reason, for much of the water supply was then derived from local wells, and samples of such water which were subjected to analysis were found to be highly polluted. The spring on the Wroughton Road was also open to suspicion, a circumstance which calls for attention, seeing that this source continues to form part of the water supply of both districts.

It seems probable that sewer-air may also have been implicated in the causation of the fever, for here, as at New Swindon, the sewers and drains are found to be in a very unsatisfactory condition resulting in habitual lodgment of faecal matter and occasional blockage, causing the sewage to burst up, while the ventilation is defective and insufficient.

Scarlatina was epidemic and fatal in 1876 and again in 1879, and here it may be noted that the disease has exhibited similar behaviour in the adjoining town of New Swindon, being fatally present in both towns at the same time. Measles, on the other hand, and this is the point of chief interest, behaves with marked difference as regards the two towns, Old Swindon enjoying almost complete immunity from such mortality (one death in the six years), whereas in New Swindon measles, with one exception, was fatal in each year, assuming epidemic proportions in 1874 and 1878. In all 50 deaths occurred in six years.

I should state that although no death from measles is recorded in Old Swindon in 1878, still the testimony of the medical practitioners in the town is to the effect that several cases came under their notice in that year, but "all were of a mild type." Thus, in view of the highly contagious nature of the disease, it may fairly be presumed that in 1874 when epidemic in New Swindon it was also present in Old Swindon, though not attended with fatal results.

OLD
SWINDON.

Impressed with the marked incidence of measles mortality on New Swindon, I was led to carry my examination of the death registers back to 1870, with the result that in that year measles was shown to have been epidemic in both towns, but attended with far greater fatality in New than in Old Swindon. The deaths amounted to 32 in New Swindon (population at that time about 7,000) against seven in Old Swindon (population then about 4,000). In other words, the rate of measles mortality in New Swindon was four times that of Old Swindon. Further, it is noteworthy that whooping-cough which, like measles, owes much of its fatality to complication of the respiratory organs, has habitually been far more fatal in New than in Old Swindon. So also with regard to deaths registered as from pneumonia and bronchitis, they have been considerably in excess in New Swindon.

The difference in the mortality of the two towns will be readily understood by reference to the subjoined table showing the gross death-rate of six years from various specified diseases in Old and New Swindon per 10,000 of population.

TABLE 4.

District.	Small-pox.	Measles.	Scarlatina.	Diphtheria.	Whooping-Cough.	Fever.	Diarrhoea.	Phthisis.	Pneumonia and Bronchitis.
Old Swindon -	—	2·3	100	2	14·3	33	29	88·7	151·0
New Swindon	—	42·3	77	2	34·7	27	29	79·5	201·4

Comparing the mortality of the two towns it will be observed that the death-rate from measles in New Swindon is 20 times that of Old Swindon, whooping-cough considerably more than double, and pneumonia and bronchitis one-third as much again, whereas Old Swindon shows excess in respect of scarlatina, fever, and phthisis.

The contrast exhibited in the measles mortality of the two towns, and that not simply for a short time but extending over a period of 10 years (1870-1879) including three epidemics (1870, 1874, 1878), points very strongly to some cause in special operation at New Swindon (in contradistinction to Old Swindon), especially affecting the fatality of this disease. Inquiry with a view to elucidate this point went to show that socially the towns differ but little, but topographically Old Swindon possesses many advantages over New Swindon, being situated on a hill with sloping streets offering facility for the free flow of the surface-water, while the highly porous character of the soil (Portland Sand and Oolite) renders the foundations of the houses naturally dry. New Swindon, on the contrary, lies flat, and is, moreover, built on the Kimmeridge Clay, so that the surface-water, instead of draining away, causes dampness to the foundations of the dwellings, as evidenced in the rotting of the floors already remarked upon on page 7 of this Report. It appears to me not improbable that the excessive fatality from measles may be associated with this dampness, at any rate the association suggests a field for future inquiry and observation. Possibly also whooping-cough, pneumonia, and bronchitis may be influenced by the same condition.

[As bearing upon the question, and so possessing interest, I would refer to my own experience at Bridgwater and Plymouth as set forth in my Reports on inspections of those towns some short time since, both towns possessing certain points of resemblance to New Swindon. (1.) Bridgwater (population 12,059) lies flat, and the geological formation is of an impervious character, while the dwellings in many parts are characterised by excessive dampness. Here measles was very prevalent and fatal in the first and second quarters of 1874, causing 118 deaths. (2.) Plymouth possesses certain low-lying streets subject to occasional flooding by sewage, and the soil is often much water-logged, causing considerable dampness to the dwellings. It was shown that in the said streets the rate of mortality from measles was nearly double that of the remainder of the town, being 1·37 per 1,000 of population against 0·75 per 1,000. Whooping-cough mortality bore the same proportion, averaging 1·5 per 1,000 in the selected streets, against 0·8 per

1,000 for the rest of Plymouth. Pneumonia and bronchitis were similarly in excess. Scarlatina and diphtheria, on the other hand, were specially noted as being diseases in respect of which the said streets did not compare unfavourably with the rest of Plymouth, the death-rate per 1,000 from scarlatina being 0·27 in the streets and 0·26 for Plymouth exclusive of the streets.] OLD SWINDON.

Other Conditions affecting Health.

Excrement disposal is effected mainly by outdoor closets which discharge into the sewers, but have no means of flushing other than by hand; the pans are often filthy, and occasionally broken. In the better class of houses the closets are situated indoors, and are provided with service cisterns, but there is no special ventilation of the soil-pipes. As a consequence sewer-air escapes into the closets, rendering them very offensive, the danger thereby involved being increased when the closets are situated, as is sometimes the case, in the centre of the dwelling with no opening to the external air. Cesspit privies are found in various parts of the town, as, for instance, in Newport Street, Cricklade Street; also beyond the limits of the town in connexion with the various cottages. All exhibit in greater or less degree the same unwholesome conditions, the pits, as a rule, being of large size, and the contents allowed to accumulate for an indefinite period. One of the quarrymen informed me that when he cleared out his privy-pit about two and a half years ago, he removed two cart-loads of filth and left quite another load behind. The privies belonging to a cluster of some 10 cottages situated in the quarry, and known as Tout's Folly, call for special mention. They are fitted with earthenware pans and communicate with one large covered cesspit situated at a short distance from the cottages. The cesspit (25 to 30 feet deep) is unventilated, and receives, in addition to the discharge of the privies, slop and waste water, and surface drainage. The contents are said to be removed about once a year and applied to the land. This cesspit arrangement is fraught with considerable danger to the health of the little community, and in the event of the specific contagium of enteric fever being introduced into the cesspit, a localised epidemic would probably result. The cottages, I believe, stand too low to admit of their draining into the sewers, but this difficulty might be met by providing properly-fitted earth-closets for the disposal of the excrement, while the waste water could be received into a well-ventilated catchpit, whence it could be removed at frequent intervals by pumping or other means, and applied to the land. Excrement disposal.

The present system of sewers was commenced in 1872 and the work carried out at considerable cost, the money being provided by loan sanctioned by the Local Government Board. A tunnel was driven under the town from the north to the south side; new sewers were laid in certain localities, and in others the old sewers were utilised. The main sewer passes down the hill on the Marlborough Road, and measures 3 x 2 feet; arriving at the bottom of the hill it discharges into a 15-inch pipe which conveys the sewage to a farm, where it is disposed of on the land. I am informed that the houses on the Marlborough Road are subject to occasional flooding by sewage, and there is frequent complaint of blocking of the drains and sewers in various places, and of nuisance arising from the escape of sewer-air: conditions which plainly indicate faulty construction or want of efficient ventilation of the sewers, or both. As regards construction, I can add little to the inferences that arise from the foregoing dimensions; but the Inspector of Nuisances informed me that on one occasion when called upon to open up a sewer in consequence of a cellar on the north side of the town being flooded, he found the sewer laid at a dead level, and the joints of the pipes not cemented. But with regard to the ventilation I can speak more definitely, having myself noticed stinks in various places from the escape of sewer-air, specially on raising the valves of the closets. Further, a gentleman residing in the Marlborough Road gave me a graphic account of the manner in which his closet was affected by the entrance of storm water into the sewers, stating that the water in the pan of his closet situated indoors rose and fell in proportion to the amount of water in the sewer, and that occasionally the action was so violent as to blow the water out of the pan, thus affording conclusive evidence of the compressed air of the sewer forcing the trap of the closet. It should be stated that in the near vicinity of this house Sewerage.

OLD
SWINDON.

there is what purports to be a ventilator opening to the surface of the road, but it is covered with a charcoal tray, and at the time of the inspection it was choked with mud. This I observed to be the case with other ventilators in the town, the trays being full of water or mud, thus rendering them useless for the purpose of ventilation. Even had no such impediment as the trays existed, the ventilators are too few in number to effectually relieve the sewers, being in some places from 300 to 400 yards apart. In two instances only did I notice ventilating pipes carried from the sewers above the houses. It seems doubtful if the house-drainage of all the town is carried to the sewers, seeing that certain of the houses in Newport Street were pointed out to me as not being included in the general system of sewerage. Whether this was actually the case or not I was unable clearly to ascertain. The matter, however, demands the attention of the Sanitary Authority.

Besides the sewers above described there is a main sewer on the north side of the town to carry off the drainage of 40 or 50 houses that are situated at too low a level to drain into the other sewers. The sewage from these houses is received into tanks situated in a yard belonging to the Local Board, where it undergoes what is called a process of filtration through two layers of gravel and a layer of charcoal. It then crosses the road by means of underground pipes, and after continuing its course under a ditch by the side of the road for a distance of about 400 yards, it again crosses under the road and enters a covered settling tank where the solids precipitate. The effluent sewage is led under the road to a ditch which runs open by the side of the main road and empties into the canal. The sewage cannot be considered sufficiently purified by these processes to justify its discharge into the canal. Moreover, it would appear that much of the sewage, owing to blockage of the sewer at the part where it crosses the road above the tank, goes direct to the open ditch, and so into the canal without having entered the settling tank at all; and I am informed by one of the directors of the Canal Company that at the spot where the ditch discharges into the canal there is considerable deposit. This gentleman lives in the immediate locality, and complains very justly of the nuisance caused by the sewage as it enters the ditch. The sewer and the settling tank are alike unprovided with ventilation, and the process of filtering is attended with much nuisance.

Water
supply.

The *water supply* is derived from three sources: (1.) The reservoir, which supplies New Swindon, particulars of which are given on page 6 of this Report; (2.) The spring on the Wroughton Road; the water here appears at the surface, beneath a meadow on the hill-side, whence it is carted into the town and there retailed; (3.) Local wells. Until recent years these were in general use, but chemical analysis having shown the water of many of them to be highly polluted, and enteric fever having on certain occasions been associated with the drinking of water from them, many of the wells have fallen into disuse.

Refuse
removal.

Street cleansing and refuse removal are effected by men in the employ of the Authority, but the want of systematic action is betrayed by undue accumulation of refuse in various places.

House
accommoda-
tion.

The *house accommodation* includes many good-sized comfortable dwellings, together with shops and other places of business, besides numerous cottages. Some of the latter are old and much wanting in repair, and a notable example of such a cottage is to be found in the following history:—

Westcott Cottage is a solitary dwelling situated about half a mile from the town and occupied by an agricultural labourer, his wife and family. Here three of the children died of scarlatina during the recent epidemic. I visited the cottage and found the ceiling of the bedroom wet. It appeared that rain came in at the roof, and I was told that in winter the walls would run with water, which would sometimes freeze and remain a sheet of ice so long as the frost lasted.

At a meeting of the Authority on the 15th October last this cottage was specially referred to in connexion with the three deaths that had recently taken place in it from scarlatina; and it is reported in the local papers that a member of the Local Board then reminded the Authority that an infant had died in this cottage in the previous March, the death being the subject of a coroner's inquest, adding that if proper action had been

taken at that time for the improvement or closure of the cottage, it was probable that the present deaths would not have taken place. He further proceeded to read the following extract from the report of the inquest:—" Dr. Powne gave it as his opinion that the cause of death was inflammation of the throat, a fact not to be wondered at, he said, looking at the wretched state of the house they [the inhabitants] lived in. The door had no fastening, and could not be shut to keep out the wind, and the water came through the roof in streams. Whilst he (Dr. Powne) was in the bedroom attending to another child, then apparently on the point of death, as much as a couple of buckets of water came through. The mother said she had complained of this for the last six months, but nothing had been done. The jury returned a verdict of death from inflammation of the throat, and strongly advised the mother to make further representations to her landlord as to the state of her house."

OLD SWINDON.

Now this was the condition of things described as existing in March last, and again brought under the special notice of the Authority on the 16th October as unremedied: and yet up to the date of my visit, on the 5th November, no action had been taken to render the cottage fit for habitation; and the family, after having buried four children since the beginning of the year, had the prospect of facing another winter in the cottage in the same dilapidated condition.

Provision for the Isolation of Infectious Diseases.

Reference has been made in the accounts given both of New and Old Swindon to the existence of an infectious-disease hospital at the command of both Sanitary Authorities. This hospital occupies a high open situation in the urban district of Old Swindon, about half a mile to the west of that town, and three-quarters of a mile to the south-west of New Swindon. It consists of two buildings, one of stone and the other of wood, adjoining each other. The stone building dates back for a considerable number of years, having, it is reported, been provided by the parish for the reception of cases of plague; whereas the wooden building is of recent date, having been erected jointly by the Sanitary Authorities of Old and New Swindon for the accommodation of cases of small-pox in 1871. From that time the hospital has been supervised by the parish overseer, who pays the caretaker. I could not learn upon whose account such payment is made, and do not understand how, if the building belongs to the Sanitary Authorities apart from the Poor Law Authority, a Poor Law officer comes to be employed in its administration. The plot of land on which the hospital stands is held from the Lord of the Manor; it is about 140 feet by 80 feet in extent, enclosed by boarding, surrounded by arable land, and there is no house in the immediate vicinity.

Infectious diseases hospital.

The stone building contains a cellar and six rooms, namely, two rooms on the ground floor (one on either side of the entrance door), two rooms on the first floor, separated by a landing 6 feet wide, and two attics with sloping roof. Of these rooms, two are occupied by the caretaker, and the remaining four are available for the accommodation of patients, each room having a capacity for one bed only. There is no provision for through ventilation, the entrance door and windows all facing south.

The wooden building consists of a ground floor only, containing two wards (male and female), nurse's room, and kitchen. Adopting the standard requirements of 2,000 cubic feet and 140 square feet per bed, the capacity of the male ward is barely sufficient for the accommodation of four beds, while that of the female ward is not nearly enough for three beds. Altogether the hospital may be regarded as affording accommodation for nine beds, *i.e.*, four in the stone and five in the wooden building. There is no internal communication between the two buildings, so that two infectious diseases might be received at the same time and treated separately.

Between the male ward and the stone building is a small compartment appropriated to the purpose of an ambulance shed, and serving for a mortuary when required. But for this latter purpose its position in relation to the ward renders it unsuitable.

The hospital is well provided with bedsteads and bedding, which are apparently kept clean and dry, and ready for use at short notice if required.

Water is laid on to the building, but the only provision for the disposal of slop and waste water consists of a drain laid from the kitchen door of the wooden building to a covered cesspit in the garden. There is sufficient ground space in front of the building to admit of temporary extensions if required, but it is desirable that the cesspit, as well as a pigsty now situated on the premises, should be abolished, also that proper provision should be made for drainage, and through ventilation for the stone building secured. Subject to the carrying out of these alterations, I consider the buildings adapted to the purpose of an infectious-disease hospital.

I ascertained from the caretaker that she was formerly a nurse in the Oxford Infirmary, and she expressed herself as quite ready to take charge of any patients that might be brought in; but added that no arrangement of the sort had been made with her, that no patients whatever had been received, and that she got 5s. per week "*for looking after the building.*"

Before leaving I called upon the Chairman of the Sanitary Authority for the purpose of advising the adoption of certain measures to prevent the further spread of the disease, but I did not see him, as he had left home for a few days. I saw the clerk, however, who is also clerk to the Urban Sanitary Authority of New Swindon, and impressed upon him the importance of carrying out the several measures, including isolation of the sick, &c. contained in the Memorandum which I had given him on the occasion of my interview of the New Swindon Authority, as stated on page 4 of this Report.

January 1880.

F. H. BLAXALL.

P.S.—In supplement to the foregoing Report on scarlatina in Swindon, I have to state that, hearing from the Registrar of seven deaths from scarlatina having occurred in Old Swindon subsequently to my first visit, and also observing in the local newspaper a statement that in two instances persons reputed to be suffering from scarlatina had been sent out of the town into the adjoining villages, whereby the disease was spread in those localities, I received instructions to re-visit the town. Accordingly I went there on the 6th January, and found that nothing whatever had been done to give effect to the advice which I had given at my former visit.

There was found to be ground for the statement that scarlatina had extended by means of cases removed from Swindon without any adequate precautions to their homes in certain neighbouring villages previously free from the disease. I therefore called upon the Chairman of the Old Swindon Authority, and explained to him that the infectious hospital was specially designed to meet cases such as these, and that instead of being sent home to endanger others, they should have been removed to that hospital, where they would have been properly cared for. Further, ascertaining that the schools had just been re-opened on the close of the Christmas holidays, I directed his attention to the danger that might accrue through the children being thus brought together again, and supplied him with a copy of the memorandum which I gave to the clerk on my previous visit.

Lastly, hearing that certain alterations had been effected in the hospital, I again visited that building, when I found that the overseer had caused communication to be established between the two buildings by means of doorways placed in the walls of the ambulance compartment (referred to on page 15), and had further converted the said compartment into a washhouse. I would point out that these alterations are much to be regretted, seeing that (1) that they make the wards damp, and (2) they establish communication between the two buildings, and thus prevent efficient isolation of two infectious diseases one from the other.

F. H. B.

Recommendations.

NEW SWINDON URBAN SANITARY DISTRICT.

- (1.) Measures should be taken to secure proper construction of closets and sewers, so as to prevent the lodgment of excrement in soil-pipes and drains. Each closet should be supplied with a properly fitted cistern for flushing purposes. Cesspit privies should, wherever practicable, be abolished, and waterclosets or earth-closets be substituted. The waterclosets should be efficiently trapped, and strict supervision should be exercised to insure all closets being kept in a clean and wholesome condition. For information on the subject of excrement disposal generally the Authority may usefully consult the Report to the Local Government Board on certain Means of preventing Excrement Nuisance in Towns and Villages.
- (2.) All sewers and drains should be thoroughly ventilated. Inlets of drains situated in the immediate vicinity of dwellings should be trapped. Sink and waste-water pipes should not be permitted direct entrance into drains, but should be cut off over trapped inlets.
- (3.) Dwellings which from dampness or other cause are a nuisance or injurious to health (see sections 91 and 97 of the Public Health Act, 1875) should be dealt with by the Authority, who should if necessary seek skilled advice on the subject of this and the preceding recommendation.
- (4.) To enable the Sanitary Authority to secure improvement in the construction of new dwellings, the Model Byelaws (Series 4), having reference to this subject, should be adopted.
- (5.) The Sanitary Authority should strictly enforce the sections of the Public Health Act which have reference to the prevention of spread of dangerous infectious disease, sections 120, 121, 122, and 126 to 129 inclusive.
- (6.) The Medical Officer of Health should be instructed to carry out the important duties of his office as detailed in the order of the Local Government Board, and he should receive adequate salary. The Authority should, in accordance with the Memorandum issued by the Local Government Board with their circular letter of the 18th August 1879, make arrangements with the Registrar of Births and Deaths to provide for the returns of death being regularly sent to the Medical Officer of Health.
The Authority should consider the desirability of consulting with the Urban Sanitary Authority of Old Swindon and the Rural Sanitary Authority of Highworth and Swindon as to the propriety of combining, for the purpose of appointing one Medical Officer of Health for the three districts. The districts are so intimately connected, and the intercourse between them so frequent and free, that the appointment of one officer acting for the whole area would result in much public good.
- (7.) The Inspector of Nuisances should be directed to make systematic inspection of the district (Public Health Act, section 92), and should be instructed to carry out the same duties as are specified in the order of the Local Government Board relating to Inspectors of Nuisances who salaries are partly repaid out of moneys voted by Parliament.

Recommendations—(continued).**OLD SWINDON URBAN SANITARY DISTRICT.**

- (1.) Such measures as are practicable should be taken to secure the abolition of cesspit privies, and the substitution of waterclosets or earth closets. Closets should be carefully supervised to insure their being kept in a clean and wholesome condition. All closets discharging into the sewers should be provided with water for flushing. Closets situated within dwellings should have an opening to the external air, and the efficient ventilation of the soil-pipes should be secured in accordance with the principles laid down for ventilating house drains in the Local Government Board's Model Byelaws as to New Buildings, section 65.
 - (2.) Under the advice of a skilled engineer efficient ventilation should be provided for the sewers and drains. Such parts of the sewers or drains as do not act efficiently, whether by reason of insufficient size, inadequate gradients, defective joints, or other cause, should be taken up and replaced by efficient sewers. Such provision should be made for the carrying off of the storm-water as will prevent the flooding of the houses and the yards on the Marlborough Road. The sewage on the north side of the town should undergo efficient purification before being allowed to enter the canal or any other watercourse.
 - (3.) Where wells are proved to be contaminated, proceedings should be taken under the Public Health Act, 1875, sections 62 and 70, to close them, and to require the use of water supplied by the Water Company. Steps should be taken to secure that the water delivered by the Water Company should be supplied to the town on the continuous system.
 - (4.) Dwellings which from dampness or other cause are a nuisance or injurious to health (sections 91 and 97 of Public Health Act, 1875) should be dealt with by the Authority.
 - (5.) The Sanitary Authority should strictly enforce the sections of the Public Health Act which have reference to the prevention of dangerous infectious disease, sections 120, 121, 122, and 126 to 129 inclusive.
 - (6.) The Medical Officer of Health should be instructed to carry out the important duties of his office in accordance with the order of the Local Government Board, and he should receive an adequate salary. The Authority should, in accordance with the Memorandum issued by the Local Government Board with their circular letter of the 18th August 1879, make arrangements with the Registrar of Births and Deaths to provide for the returns of deaths being regularly sent to the Medical Officer of Health. The Authority should consider the desirability of consulting with the Rural Sanitary Authority of Highworth, Swindon, and the New Swindon Urban Sanitary Authority as to the propriety of combining for the purpose of appointing one Medical Officer of Health for the three districts.
 - (7.) The Inspector of Nuisances should be directed to make systematic inspection of the district as required by the Public Health Act, section 92, and he should be instructed to carry out the same duties as are specified in the order of the Local Government Board relating to Inspectors of Nuisances who salaries are partly repaid out of moneys voted by Parliament.
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APPENDIX.

CASES of SCARLATINA amongst CHILDREN attending the NATIONAL SCHOOL,
OLD SWINDON.

No. of Case.	Residence.	Family.	Date of last Attendance at School and proximate Date of Attack.	Remarks.
1	Union Street	A.	August 22.	—
2	Prospect Place	B.	" 25.	—
3	Eastcott Hill	C.	" 26	Cases 3 and 4 belong to same family and lived in same home, but having left the town, I could learn no particulars beyond the fact that a third case occurred in this family and proved fatal on the 27th September.
4	-	"	" "	
5	8 Victoria Street, N.	D.	September 3	Mild case. Child returned to school on the 29th September.
6	National School	E.	" 4	Schoolmaster's son. Acknowledged communication with Case 1. Two other cases followed in this family.
7	Marlborough Road	F.	" 4	Complained of sore-throat two days before he ceased to go to school; stated that at school he sat next to Case 9, who was suffering from sore-throat. All the children (3) of this family had scarlatina about three years ago, but took the disease again lately, 2 cases proving fatal. The mother also took the disease for the second time.
8	John Street	G.	" 5.	—
9	Prospect Hill	H.	" 5	4 cases in this family within two or three days of each other, 2 proving fatal. All 4 were children attending National School.
10	Belle Vue	I.	" 5.	—
11	Prospect Place	B.	" 9	Brother to Case 2.
12	Devizes Road	K.	" 10.	—
13	Lansdown Road	L.	" 10	2 cases (1 fatal) in this family.
14	Gilbert Hill	M.	" 10	4 cases in this family.
15	Lansdown Road	N.	" 10	Very mild. Ran about all the time; glands subsequently became affected.
16	Westcott Cottage	O.	" 10	3 cases in this family (all fatal). Detached cottage about $\frac{1}{2}$ mile out of the town.
17	Cricklade Street	P.	" 17	3 cases (2 fatal) in this family.
18	Eastcott Hill	C.	" 18	Relative of Cases 3 and 4.
19	" "	"	" 18	Brother to the above.
20	Devizes Road	K.	" 19	Brother to Case 12. Members of this family continued to attend school throughout the illness of the others.
21	Newport Street	Q.	" 19	6 cases in this family.
22	Princes Street	R.	" 19	2 cases in family, 1st case about 7th September.
23	Stanley Street	S.	" 19	2 cases in family, 2nd case about 20th November.
24	Newport Street	Q.	" 23	Sister to Case 21.
25	Lansdown Road	T.	" 23	Parents and 3 children attacked. The latter were at school and attacked between 23rd and 25th September.
26	Newport Street	U.	" 24	2 cases; 1st case not a school-goer, attacked 2 days before Case 26.

No. of Case.	Residence.	Family.	Date of last Attendance at School and proximate Date of Attack.	Remarks.
27	Dammas Lane	V.	September 24	Sore-throat and unwell 2 or 3 days before left school.
28	" "	"	" 25	Brother to above. Sore-throat before he ceased to attend school.
29	Oriel Street	W.	" 30 (Ill on 23rd.)	4 cases in family (1 fatal). 1st case occurred on 18th September in a child who went to school at Estcott Hall. Case 29 ill on 23rd September, but at school on 25th and again on 30th September when he returned home very unwell. Probably had scarlatina on 23rd September.
30	Newport Street	Q.	" 26	} Same family as Cases 21 and 24.
31	" "	"	" 26	
32	Stanley Street	X.	" 26	
33	King John Street	Y.	" 26	4 cases in family; all had scarlatina about 3 years ago.
34	Cetus Buildings	Z.	" 26	Sat at school next to Case 22.
35	Chapel House	A. A.	October 1	Fatal.
36	Stanley Street	X.	" 1	Brother to Case 32. Ill, so kept at home until 6th October when he went to school for one day, after which too ill to resume attendance.
37	John Street	B. B.	" 3	5 cases in family.
38	Marlborough Road	C. C.	" 3	—
39	Cricklade Street	D. D.	" 3	3 cases in family.
40	Albert Street	E. E.	" 3	(Fatal), returned as acute nephritis, but found upon inquiry to have probably been scarlatina.
41	Victoria Street	F. F.	" 3	—
42	Providence Row	G. G.	" 9	(Fatal).
43	" "	"	" 10	Cousin to above, and lived together.
44	Stanley Street	X.	" 10	Sister to Cases 32 and 36.
45	Newport Street	H. H.	" 10	3 cases in family.
46	Cricklade Street	D. D.	" 17	Sister to Case 39.
47	Albert Road	I. I.	" 24	5 cases in family.
48	Canon Street	K. K.	" 29	2 cases in family.
49	Albert Road	I. I.	November 4	Sister to Case 47.
50	King John Street	L. L.	" 6	2 cases in family.
51	Back Lane	M. M.	" 7	—
52	Prospect Hill	N. N.	" 14	—
53	Albert Street	O. O.	" 14	3 cases in family.
54	Newport Street	P. P.	" 24	2 cases in family.

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