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STAFFORDSHIRE COUNTY COUNCIL.

ANNUAL REPORT

OF THE

MEDICAL OFFICER OF HEALTH,

GEORGE REID, M.D., D.P.H.,

FOR THE YEAR 1904.

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STAFFORDSHIRE COUNTY COUNCIL.

ANNUAL REPORT OF THE MEDICAL OFFICER OF HEALTH,

Presented to the Council at the Quarterly Meeting, November 7th, 1905.

IN this, my Sixteenth Annual Report, I propose to adhere, so far as collating the Reports of District Medical Officers of Health is concerned, to the general plan adopted originally, and deal with the various reports under subject headings, in place of devoting a special summary to each, as is done in some county reports.

Were it not for the fact that the Administrative County contains so many sanitary districts, the latter plan would, possibly, be the better, but, to adopt it under the circumstances, and, at the same time, give sufficient prominence to the more important features of each report under review, would necessitate needless repetition, many remarks being equally applicable to several districts.

I have again indexed the report, so that each question dealt with, whether of general or special significance, may at once be referred to.

I take this opportunity of thanking the Medical Officers of Health, who, almost without exception, have fallen in with my suggestions as to the introduction into their reports of certain details which, from the point of view of the County Council, are of great value.

In the "Summary of the Year's Work of the Sanitary Committee of the County Council," I have endeavoured to convey some idea of what has been done during the year in public health work, more with the view of indicating the lines on which the Committee are proceeding than in the hope that such a condensed account can convey an adequate idea either of the work itself or the good which has attended it.

G.R.

Summary of the Year's Work of the Sanitary Committee of the County Council, with General Comments on Public Health Administration.

As regards the summary of the work of the Sanitary Committee, I would point out that the year embraces a period of twelve months ending June 30th, 1905, as the last summary covered the ground up to the end of June, 1904. So far as that portion of the report which deals with the reports of District Medical Officers of Health is concerned, the period covered embraces 1904 only.

The routine work under the Rivers Pollution Prevention Acts has proceeded on former lines. The systematic work of inspecting existing sewage disposal works, and the collection of samples of sewage effluents, and of river water at fixed points on streams, has been conducted uninterruptedly as far as possible, but, I regret to say, I have again to record a considerable falling off in the number of samples analysed during the year, arising from the increased and increasing work in other departments. In my next annual report, I hope to be able to present a much fuller record than is now possible, as the addition to my office staff lately sanctioned by the Council will allow of more time being devoted to this branch of work. Only 114 analyses have been made compared with 201 the previous year, while my aim is that the annual number shall be about 300. The samples analysed comprised the following :—sewage effluents 75, river waters 36, well waters 3.

It is customary to call the Committee's attention at the time to any irregularities which are noted in the management of sewage works, and the responsible Authorities in such cases are invariably communicated with.

To comment at all fully on the action which has been taken during the year in the matter of rivers pollution would require more space than can well be devoted to one subject in a report of this description. Still, it may be useful to refer, shortly, to the more important questions in this department of the Sanitary Committee's work which have received attention.

I am pleased to be able to state that the improvement previously recorded in the condition of the river Tame at the point where it re-enters the County from Warwickshire is maintained, a circumstance which is mainly attributable to continued progress on the part of the Birmingham Tame and Rea District Drainage Board in improving and extending the sewage disposal works of that Authority. The work which has been done, and is being done, by that Board in the direction of preventing pollution of the Tame renders it all the more incumbent upon Authorities in this County higher up stream to proceed without delay with the improved sewage disposal schemes which most of them have either in hand or under consideration. The Sanitary Committee of the County Council are fully alive to the position, and, during the year which has passed, very strong pressure has been brought to bear on the Authorities in question. I am hopeful, therefore, that in my next annual report I shall be in a position to record a distinct advance in this direction as regards the South Staffordshire Authorities. Circumstances within the knowledge of the Council, for example, the tendency to mining subsidences, which is more general and more pronounced in the South than in the North of the County, have tended to delay progress in the former case compared with the latter, but schemes are now under consideration throughout South Staffordshire with the view of overcoming these and other difficulties and the Authorities generally now realize that radical steps will have to be taken to provide better means of sewage disposal. Certain Authorities, as for example, Wednesbury, have already done a great deal in this direction, while others are on the point of carrying out well-devised schemes. In the North of the County, matters have progressed further, and when the schemes now in hand are completed, a very great improvement will be apparent in the streams which are now so disgracefully polluted.

In my last annual report I mentioned the fact that an action under the Rivers Pollution Prevention Acts against Oldbury Urban District Council was then pending. It is satisfactory to be able to record that the County Council succeeded in their action and obtained an Order restraining

the defendant Authority from causing pollution, the Court allowing a period of fifteen months in which to comply with the Order. As the time allowed expires in June, 1906, I hope to be in a position to comment favourably in my next annual report on the steps which the Oldbury District Council have taken to remedy the existing serious pollution from their district.

It has not been found necessary to hold a meeting of the Joint Committee of this Council and the Birmingham Corporation—the paramount Authority of the Birmingham, Tame, and Rea District Drainage Board—but, should occasion arise, this Committee will again meet; meanwhile, it is satisfactory to know that it still exists, and can be called together at any moment.

In this connection, while giving full credit to the Drainage Board for the good work already done, it is obvious that the artificial filter area must be considerably increased before the provision for dealing with the sewage can be said to be adequate. At the present time, the full works, including land and filter beds, cannot do more than cope with the dry-weather flow of sewage, whereas it should be the aim of the Board to deal with a reasonable volume of storm sewage also. When the work now in progress is completed—about nine months hence—nine-and-a-half acres of artificial filter beds will be available, and this area, it is estimated, will deal with about 7,000,000 gallons of sewage—less than one-third the dry-weather flow. The Board have also in view the construction of additional filters to bring the total area up to 15 acres, but it does not appear that definite arrangements have yet been made for continuing the extension of the plant beyond the nine-and-a-half acres. Even if the full 15 acres of beds were now available, the provision, in my opinion, would not be adequate, hence there is all the greater need for pushing on with the work systematically till its completion, and I think the immediate aim of the Board should be to lay down a filtering area of 20 acres.

I understand that it is the policy of the Board ultimately to provide for the disposal of by far the major portion of the

dry-weather flow by artificial filtration, in order that the land may be rendered capable of dealing with storm sewage. With that policy I entirely agree, and it is to be hoped that the Board will soon determine to actively carry it through to its completion.

In this summary for the past two years I suggested that the County Council—in view of the Third Report of the Royal Commission on Sewage Disposal and possible legislation on the subject of dealing with trade wastes—would do well to suspend any further action under the Sections of the Acts dealing with such matters. So far, the Government have not yet brought forward any Bill based upon the report referred to, and matters are, unfortunately, in the same unsettled state as heretofore.

In this connection, on the initiative of the Staffordshire County Council, an influential Joint Committee, representative of County Councils and the Councils of County Boroughs in the Trent Watershed, was formed last year to watch the progress of events and take such steps as may be deemed necessary in the interest of these Authorities. Several meetings of this Joint Committee were held, and, a general policy having been arrived at, in due course—should occasion arise—steps will be taken to bring the views of the Joint Committee before the notice of those who may be responsible for the framing of any legislative measure dealing with this question.

Perhaps the most important work in relation to sewage disposal which has to be recorded this year, is the completion of the experimental work at the Hanley outfall, and the publication of my detailed report as to the results obtained. Upon this report, complete plans of sewage disposal works have been designed by Messrs. Willcox & Raikes, Engineers, Birmingham, and the Local Government Board have sanctioned a loan for defraying the cost of the plant. I am glad to say that the work is now well in hand, and as each section is completed it will be brought into use, in fact, I anticipate that within a month or two the area of filters in actual operation will be sufficiently extensive to effect a material improvement in the quality of the effluent, and in my next year's

report I hope to be able to record still further progress in that direction.

At the request of the Royal Commission on Sewage Disposal, I have twice given evidence before that body during the year under review. On the first occasion, in December, 1904, my evidence had reference to three special points submitted by the Commission, while on the second occasion, in May last, my evidence embraced the whole question. The summaries of the evidence submitted to the Commission previous to my appearing before them on each occasion has been printed in the form of a report to the County Council ; the evidence itself will no doubt be published in the next report presented by the Commission.

During the year, Local Government Board Inquiries, relating to proposed schemes of sewerage and sewage disposal, have been held in the following districts :—Biddulph, Fenton, Lichfield, Tunstall, and Wolverhampton Urban Districts, and Cannock (Cheslyn Hay), Eccleshall, and Mayfield Rural Districts. This, in itself, demonstrates that considerable progress is being made in this branch of public health work.

As regards the other work under this heading, besides numerous communications with Authorities and consultations with their officers, 29 special reports have been presented to the Sanitary Committee during the year, dealing with questions relating to river pollution. Space, however, will not allow of more than an enumeration of the districts to which these reports had reference, as follows :—Brierley Hill, Burslem (two reports), Fenton, Hanley County Borough (three reports), Lichfield, Longton, Newcastle, Rugeley, Smallthorne, Stoke-on-Trent, Stone, Tettenhall, Tipton, Tunstall, Wednesfield, Wolstanton, Walsall County Borough (three reports), and the following rural districts—Cheadle (two reports), Lichfield (three reports), Mayfield, and Stone.

As regards the general work of the Sanitary Committee, reports have been presented, as the outcome of special inspections and inquiries, affecting various districts in the Administrative County, and having reference to various matters. In addition to these special reports, many matters have been

dealt with arising out of my Annual Report for 1903, and affecting 19 districts, as follows :—Amblecote, Bilston, Brierley Hill, Coseley, Darlaston, Lichfield, Longton, Quarry Bank, Rugeley, Smallthorne, Stoke-on-Trent, Tipton, Wednesfield, and Willenhall Urban Districts, and Cannock, Gnosall, Stone, Tamworth, and Walsall Rural Districts.

As regards the administrative work under the Isolation Hospital Acts, the question of the formation of areas for making provision for the isolation of general infectious cases has, for another year, had to give way to the more pressing question of providing for the isolation of small-pox cases, owing to the continued occurrence of such cases throughout the County, more especially in the northern districts.

The two Joint Hospital Boards recently constituted for the populous areas in the north and south of the County respectively (including the County Boroughs of Hanley and Wolverhampton) have had to continue the use of the temporary provision they made for dealing with small-pox cases. At the same time, the question of permanent provision has engaged the attention of both bodies, and in both cases fully-equipped hospitals are now approaching completion.

Now that a quiet time may reasonably be looked for as regards small-pox outbreaks, the Sanitary Committee will no doubt consider it expedient to again take up the interrupted negotiations with the various Authorities of districts where adequate provision has not been made for dealing with cases of other infectious diseases with the view of efficient hospitals being provided for such cases also.

The Council are again to be congratulated upon the success which has attended the arrangement for the gratuitous bacteriological examinations in suspected cases of diphtheria, enteric fever, and phthisis. In some districts, however, medical practitioners have not availed themselves of this aid to accuracy of diagnosis to the extent to which one had hoped they would.

In the text of this Report, the opinions of many of the District Medical Officers of Health regarding the value of the

scheme are quoted, and in the following table the actual number of specimens examined since the commencement is set forth :—

BACTERIOLOGICAL EXAMINATIONS IN SUSPECTED CASES OF DIPHTHERIA, TUBERCLE, AND ENTERIC FEVER.

	DIPHTHERIA.				TUBERCLE.				ENTERIC FEVER.			
	Positive.	Negative.	Doubtful.	Total.	Positive.	Negative.	Doubtful.	Total.	Positive.	Negative.	Doubtful.	Total.
Commencement of Scheme, Oct. 20, 1898, to June 30, 1899	110	101	1	212	...	...	...	...	...	...	...	...
From July 1, 1899, to June 30, 1900	196	180	2	378	...	...	...	...	...	...	...	...
From Jan., 1900, to June 30, 1900..	...	...	...	...	9	14	...	23	5	4	...	9
From July 1, 1900, to June 30, 1901...	350	350	30	730	30	70	...	100	36	36	2	74
From July 1, 1901, to June 30, 1902...	190	367	14	571	25	67	...	92	26	32	3	61
From July 1, 1902, to June 30, 1903...	247	421	...	668	45	77	...	122	8	41	...	49
From July 1, 1903, to June 30, 1904...	183	324	...	507	41	107	...	148	3	34	4	41
From July 1, 1904, to June 30, 1905...	231	494	22	747	36	100	..	136	8	24	...	32
Totals from commencement of Scheme to June 30, 1905	1507	2237	69	3813	186	435	...	621	86	171	9	266

Much to my regret, the Council, on the recommendation of the Sanitary Committee, have decided to postpone for the present any further steps in providing a sanatorium for persons suffering from pulmonary tuberculosis. As this determination, however, is not, I believe, the outcome of any doubt on the part of the Council regarding the great value of such an institution, and as the generous donor of the site has signified his willingness to allow his offer to remain open for a time, it is to be hoped that circumstances may enable the Council to again take the matter up in the near future.

In my last annual summary I referred to the fact that the policy and procedure under the Midwives Act, 1902, had been under consideration. I have now to record that the needful machinery and staff have been provided, and that the systematic work has been carried on since February last. The Council having determined not to delegate their powers under

the Act to District Councils, but to the Sanitary Committee of the County Council, steps were taken to appoint two lady inspectors to act under my instructions. Accordingly, Dr. Lila S. Greig and Miss Wooldridge, having been selected from numerous applicants for the appointments, the County was divided into two approximately equal areas, the southern area being entrusted to Dr. Greig and the northern to Miss Wooldridge.

The Council have already been informed as to the progress of the work in the two divisions, but the following tabular statement, which I have compiled from official returns and from information supplied by the Inspectors, will indicate the present position of the County as regards the number of midwives on the Register and the number who have notified their intention to practice, as well as the stamp of women who are engaged in such work; also, the amount of work accomplished by the Inspectors from the time of their appointment to the end of June last :—

Number of midwives on Roll up to March 31st, 1905 :—

Administrative County	701
County Boroughs	221
Total	922

Number who have notified their intention to practice :—

Administrative County :	
North	289
South	293
County Boroughs	142
Total	724

Visits of Inspectors during five months, February to June, 1905.

AREA.	No. of Midwives who have notified intention to practise.	Visits during Period.			No. actually interviewed.
		Single.	Duplicate.	Total.	
North	*289	445	57	502	374
South	*293	256	279	535	343
Total	582	701	336	1037	717

Particulars as to Equipment and Efficiency of Midwives Visited.

Division.	No. of Midwives who have notified intention to practise.	Requirements.						No. reasonably clean as to		No. who can read and write.	No. who can		No. with reasonable knowledge as to		No. capable of recognising need for medical help.
		Washing Dresses and Aprons.	Bags Equipped.			Books, &c.					Read Thermometer.	Pass Catheter.	Infant feeding and management.	After treatment of mother.	
			Fully.	Partially.	Nil.	Case Books.	Forms.	Person.	Home.						
North..	*289	154	21	86	...	98	...	220	...	151	79	101	113	183	...
South ..	*293	124	24	111	72	158	157	70	90	86	43	21	92	172	49

* A small proportion of these have notified their intention to practise subsequent to the period covered by the above figures.

It will thus be seen that there are a considerable number of certificated midwives who have not yet notified their intention to practise.

As regards those midwives who reside in County Boroughs and in adjoining Counties who have notified their intention to practise within the Administrative County and *vice versa*, in order to avoid overlapping, I have come to an understanding with the officers of the respective Local Supervising Authorities that only those midwives actually residing within the areas over which they respectively have charge shall be visited by the Inspectors of such areas.

From the Reports of the Inspectors, it is evident that for some time to come the Local Supervising Authority will have to deal very leniently with existing midwives as regards the enforcement of the regulations of the Central Board, and that, meanwhile, the work of the Inspectors will mostly be of a tutorial character, the chief aim being to secure as near an approach to surgical cleanliness on the part of the midwives as is possible. In most cases this will prove to be a hopeless task, but, no doubt, as time goes on, many of the present midwives, from one cause or another, will drop out, and those who take their places will, in accordance with the Act, be properly trained women.

I have to refer, for the first time in this summary, to another important new branch of work which has occupied much of my time during the year under review, as adviser of the Education Committee on all matters pertaining to health which come under their jurisdiction. The Education Act of 1902, by transferring to County Councils the administrative work previously entrusted to School Boards, has already led to important developments which must, in time, prove highly beneficial from a public health point of view.

The Education Committee of this County have from the first realized the importance of inculcating health principles in school management, and have framed certain regulations to be observed by teachers with the view of securing as healthy conditions as possible in existing school buildings. An important initial step has also been taken in the direction of instructing school teachers in domestic and general hygiene,

in anticipation of the inclusion of such teaching in the school curriculum—a policy which, among other benefits, will, in my opinion, prove to be the most efficient means of reducing the present enormous infant mortality rate of the County. During the year under review, courses of lectures and practical demonstrations on such subjects have been given by Miss Curwen at two centres, and the success which has attended the movement has led the Committee to provide for further and more extended courses during the coming autumn and winter.

With reference to the ventilation and general sanitation of existing school buildings, certain principles have been embodied in regulations which shall be enforced as circumstances permit, and in all cases when structural alterations become necessary.

Perhaps the most important work in this direction, however, which the Education Committee have accomplished is the initiation of a radical departure in the type of school building to be erected in the future. In the designing of schools hitherto, more attention seems to have been devoted to educational administrative requirements than to health conditions, especially as regards ventilation, the result being, that, by a gradual process of development on such lines, a type of building has been evolved in which adequate ventilation by natural means is impossible. The chief cause of this has been the introduction of the central hall principle, which has greatly interfered with the cross window ventilation of the classrooms.

In considering plans of new central hall schools submitted to me by the Education Committee, I was quite at a loss to know by what means anything approaching adequate ventilation by natural methods could be secured, and I advised that if such an arrangement was essential on educational grounds the adoption of mechanical ventilation afforded the only solution of the difficulty. This suggestion, I am glad to say, was not approved, so that it became necessary to start as it were *de novo*, and endeavour to arrive at some plan of construction which would prove satisfactory from an

educational point of view, and, at the same time, allow of ventilation by natural means. With this object, the Building Sub-Committee instructed Mr. Hutchings, the Architect of the Education Committee, in consultation with myself, to consider the question and prepare alternate types of plans for their approval. Early in our deliberations it became apparent that even a modification of the central hall principle was impracticable, and, having got thus far, the question became a comparatively simple one, resolving itself into some type of construction on the pavilion system. Ultimately, several designs were submitted to the Committee, with the result that those which Mr. Hutchings and myself favoured most were approved.

It was thought advisable, in view of the proposed radical departure from hitherto established principles, to invite the Board of Education to receive a deputation in order that the views of the Committee on the matter might be clearly explained. This the Board consented to do, and I am happy to say that the interview resulted in the plans being approved, and, very shortly, two such schools will be erected in this County which, I think, will prove to be the forerunners of others of a similar type.

At my request, Mr. Hutchings has been good enough to reproduce the plans in a form convenient for publication, and they will be found at the end of this Report.

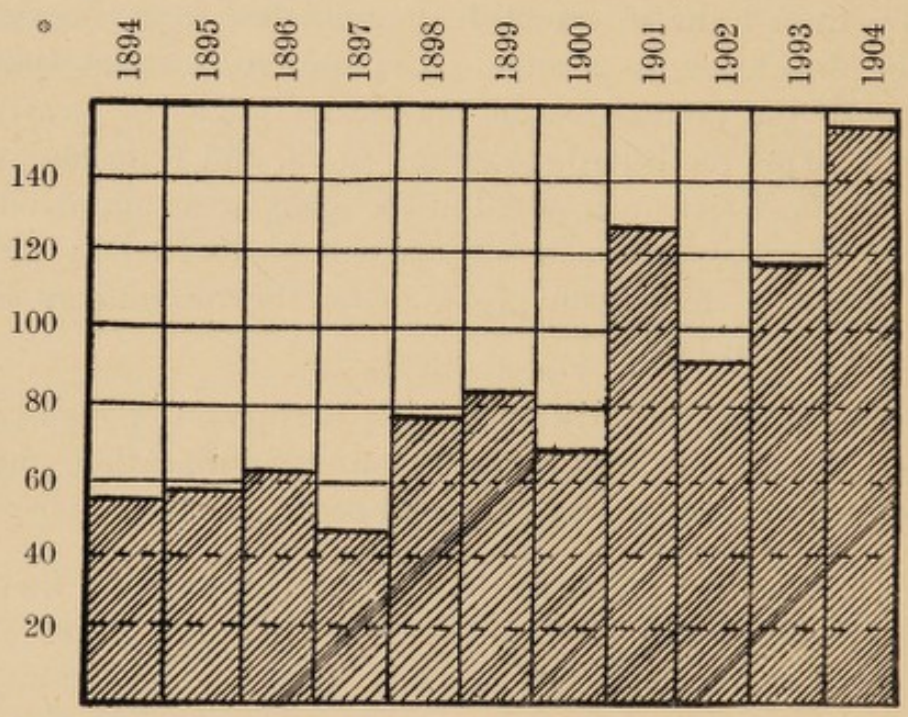
The Education Committee have also stamped with their approval a policy which Medical Officers of Health have advocated for years, namely, the inutility, from an educational point of view, and the unwisdom on health grounds, of the attendance of infants under five at school. It has accordingly been decided to discourage such attendance in future, and, further, in the case of new schools no provision will be made for the accommodation of infants under five.

With reference to the consultation work of the health department which does not necessarily come before the Sanitary Committee or Council, I have been consulted on 157 occasions by Medical Officers of Health and other officers of Local Authorities on special matters of importance which have

arisen, as well as by officers of various other Committees of the County Council. This consultation work occupies a considerable amount of time, and has this year involved 39 visits to different districts, either to make enquiries incidental to the points submitted, or to attend meetings of Local Authorities or committees. It embraces also a careful study of plans and specifications of works and buildings for the purpose of reporting thereon.

It will be seen from the following diagram that the year under review has been a record one as regards this branch of my work :—

DIAGRAM SHOWING CONSULTATIONS WITH OFFICERS OF SANITARY AND OTHER AUTHORITIES, 1894-1904.



Before closing this short summary, I would specially refer to two most important features of this year's district reports, namely, the continued efforts which are being made by many of the Urban Authorities to abolish privies and private wells in favour of water-carriage systems and public water supplies.

As regards the former question, it is to be hoped that the account of this movement recorded in this report will

*Each record covers part of two years, the periods being taken from July 1st in one year, to June 30th the following year.

stimulate those authorities, of urban districts more especially, who are not displaying much energy in this direction, to adopt this excellent policy. As regards the latter question, the remarks which follow under the heading of Water-supply afford ample evidence of the risks attending the continuance of private well supplies, especially in populous districts, and point to the extreme importance of substituting for these, supplies from a public source when such are available, or, failing that, of making every effort to protect wells from surface contamination.

If there is one question, however, which is of more vital importance than another in this County, it is the continued appalling mortality among infants, especially in the urban districts, and it behoves all who are in a position to exercise any beneficent control over the contributory causes of such mortality to let no opportunity pass of doing what is possible to remedy the evil. It is true that the decline in the infant mortality noted in 1902 has been to some extent maintained, but this has arisen from natural causes, namely, climatic conditions, which have lessened the incidence of infantile ailments directly attributable to preventable causes, and not, I fear, to any material progress in the adoption of preventive measures. For years this question has engaged the attention of health officers throughout the country, and again in the text of this report I have set forth the opinions of many of the Medical Officers of Health in the Administrative County.

Of course, there are many contributory causes of excessive infant mortality, most of which are preventable, but there is one which far exceeds all others in potency, namely, the prevailing ignorance among mothers as to the proper feeding of infants. Some Authorities in the County have creditably done what lies in their power to break through this ignorance by appointing women visiting inspectors and providing courses of lectures on health subjects, with the assistance in some cases of the County Education Committee, but, commendable though such efforts are, I fear they are comparatively futile so far as the object aimed at is concerned. Experience compels one to come to the conclusion that it is hopeless to attempt to educate the present race of mothers and overcome the ignorant

tradition of centuries, and it is only by school instruction of the rising generation of both sexes that any real headway can be made.

This is no new doctrine : it has been preached by every health officer for a quarter of a century ; but, so far, those who have had it in their power to put it in practice have, possibly from causes beyond their control, neglected to do so. Now, however, that the Education Authorities throughout the country are the Health Authorities, may we not hope that the long-looked-for day has come when by far the most effective remedy against the present needless sacrifice of infant life will no longer be neglected ?

The question is : How is a beginning to be made ? The obvious answer is that we must first educate the teachers, for, however simple the instruction given to school children may be, it is essential that those who impart such instruction shall be well grounded in the elements of the subject.

In this County, as I have already indicated, a start has been made in this direction by the County Education Committee, and it is to be hoped that a growing desire for a continuance of the work will justify the Committee in extending it, and that the school authorities in those districts which are outside the County education area will determine, as soon as teachers are available, to introduce hygiene teaching into their schools.

Besides the Annual Reports of Medical Officers of Health, I have received 63 special reports during the year, having reference chiefly to outbreaks of infectious disease.

I am pleased to say that all the Annual Reports of District Medical Officers of Health are now printed.

Summary of Reports with Comments.

Area and Population.

While I have no alteration to record in the area of the Administrative County, a re-arrangement of the areas of certain districts has been effected, a new urban district having been formed and certain others having had their areas increased at the expense of the Wolstanton Rural District, which no longer exists as a rural district.

The parishes of Wolstanton, Chesterton, and Silverdale now form the Wolstanton United Urban District with a population (1901 Census) of 22,645.

The whole of the parish of Newchapel, and part of the parish of Goldenhill, have been added to Kidsgrove Urban District, thereby increasing the population of that district by 3,860.

The remaining part of the parish of Goldenhill, together with part of the parish of Chell, have been added to Tunstall Urban District, thus increasing the population of that district by 4,758.

The remaining part of the parish of Chell, and the whole of the parish of Milton, have been added to Smallthorne, thus adding 5,707 to the population of that district.

Although the above re-arrangement did not become operative until March 31st, 1904, for statistical purposes, I have, with the assistance of the local Medical Officers of Health and Registrars, been able to classify the figures for the whole year as if the re-arrangement had come into operation on January 1st, and have thus avoided undesirable complication.

In the following table the actual census figures for 1901, and the estimated population of the Administrative County up to the middle of 1904, are set forth, the urban being distinguished from the rural districts :—

	Census, 1901.	Estimated to middle of 1904.	Increase.
Urban	682,503	721,283	38,780
Rural	193,446	197,534	4,088
Total.....	875,949	918,817	42,868

Births.

The births registered in the Administrative County numbered 29,935, the number in the urban districts being 24,317, and in the rural districts, 5,618.

The mean birth-rates in the whole Administrative County, and in the urban and rural districts respectively, for three quinquennial periods and for 1904 individually, are shown in the following table, in which corresponding rates in England and Wales, and in the large towns in England, taken from the Registrar-General's returns, are included :—

	Districts.	Birth-Rate per 1000 of Population.			
		5 Years 1889-1893.	5 Years 1894-1898.	5 Years 1899-1903.	1904.
Staffordshire	Combined Urban & Rural	34·4	35·4	33·1	32·5
	Urban	36·0	30·5	34·2	33·7
	Rural	30·8	34·0	30·2	28·4
England and Wales.....		30·8	29·7	28·7	27·9
Large Towns in England		31·5	30·7	29·7	29·1

In many of the reports attention is directed to the continuing decline in the birth-rates.

In Burslem, where the rate was 36·1, the Medical Officer of Health notes that this figure was 2·0 below the mean for the past ten years.

In Fenton the rate was 35·5, compared with a mean rate of 39.9 for the past ten years.

The Medical Officer of Health of Stafford points out that this year's birth-rate of 28·7, although under the mean for the previous ten years, is higher than it has been since 1899.

In Tunstall, a rate of 34·8 is referred to as being the lowest recorded during the preceding ten years.

Among the urban districts, in Darlaston, Lichfield, and Uttoxeter, rates are returned which are said to be higher than the means of recent years.

As regards rural districts, in Cannock and Lichfield, rates of 28·0 and 29·6 respectively, are referred to as being the lowest in the experience of the Medical Officers of Health of these districts, and in Walsall a rate of 30·3 is said to be the lowest during the past ten years with the exception of 1898.

Deaths.

The number of deaths registered among persons belonging to the Administrative County amounted to 15,136, the number in the urban districts being 12,282, and in the rural districts 2,854.

In the following table comparative figures for the past 16 years are given, together with the corresponding figures for the country as a whole, and for town and country districts throughout England :—

DEATH-RATE PER 1000 OF POPULATION.

	Staffordshire.			England.		
Year.	*General.	*Urban.	Rural.	General.	Large Towns.	Country Districts.†
1889 ...	18·0	18·9	15·4	17·9	19·2	16·5
1890 ...	19·8	20·0	16·3	19·5	21·6	17·5
1891 ...	19·9	20·7	18·1	20·2	22·4	18·5
1892 ...	18·8	19·2	17·9	19·0	20·6	18·1
1893 ...	18·6	19·5	16·3	19·2	21·5	17·4
1894 ...	16·2	16·5	15·4	16·6	18·0	15·6
1895 ...	18·5	19·1	16·9	18·7	20·5	17·0
1896 ...	17·2	18·0	15·2	17·1	19·2	15·3
1897 ...	17·8	18·6	15·7	17·4	19·1	15·8
1898 ‡...	17·7	18·4	15·5	17·6	18·3	16·0
1899 ‡...	17·2	17·8	15·4	18·3	20·2	16·3
1900 ‡...	18·7	19·3	16·8	18·3	19·5	16·9
1901 ...	17·0	17·6	15·4	16·9	17·7	15·3
1902 ..	15·8	16·3	14·4	16·3	17·4	15·3
1903 ...	15·2	15·8	13·5	15·4	16·3	14·8
1904 ...	16·4	17·2	14·4	16·2	17·2	15·3

* Excluding Brownhills in the case of the year 1897.
† Certain proportion of Urban residents included.
‡ The figures for Burton-on-Trent are taken into account for the three years 1898-1900 only.

The death-rates in urban and rural districts, together with the figures upon which they are based, are shown in the tables at the end of this report. In the following table the figures are given for those urban districts in which the rates this year reach 20·0 per 1,000, together with figures and remarks bearing on the influence which causes, preventable and more or less non-preventable, have had in causing such high rates. The districts are placed in order in accordance with the death-rates, the highest being placed first. The fact must not be overlooked, however, that there are other districts besides those appearing in the table in which the rates were by no means satisfactory, as a glance at the detail tables at the end of this report will show.

DISTRICT.	Death-rate per 1000 of Population.	Population estimated to middle of 1904.	Number of persons to the Acre.	Zymotic death-rate per 1000 of population.	Occupation, &c.	Increase over average of entire districts from the undermentioned diseases, affecting appreciably the general rate.				Position as regards mean death-rate for previous 10 years.
						Measles.	Whooping Cough.	Diarrhœa.	Diseases of Respiratory Organs.	
Darlaston ..	22·5	15,600	19·0	4·93	Working class.	..	Considerable.	Considerable.	..	22·2
Smallthorne	21·6	12,480	4·3	3·36	,,	Considerable.	..	..	..	17·7
Longton ..	21·5	35,293	17·6	3·00	,,	..	..	Considerable.	Considerable.	23·6
Burslem ..	21·0	40,950	21·9	4·34	,,	..	..	Considerable.	Considerable.	21·6
Tunstall ..	20·4	26,420	15·0	2·76	,,	..	..	..	Slight.	22·9
Willenhall	20·1	19,001	15·2	3·68	,,	Slight.	Slight.	Considerable.	Considerable.	20·0

Considering the fact that the general death-rate of the county as a whole, although higher than that of the previous two years, is distinctly a low one, namely 16.4, the above rates must be looked upon as being highly unsatisfactory. At the same time, in the case of Smallthorne, the rate is exceptional, as will be seen from the last column, and it must be remembered that the smaller the population the greater liability to fluctuation and the less significant are one year's figures. As regards the other districts in the table, however, the last column shows them to be high death-rate districts, and it behoves the respective authorities to make every effort in their power to effect a reduction in the rates by strictly enforcing the provisions of the Public Health Acts and local Bye-laws.

In most of the reports under review, reference is made to the death-rates being somewhat higher than those of the previous two years, although lower than the mean for the preceding ten years. In certain districts, on the other hand, for example, Brownhills, Fenton, and Short Heath Urban Districts, and Lichfield and Mayfield Rural Districts, the rates are commented upon as being exceptionally low.

In my report for last year, in referring to the all-round reduction in the death-rates, I pointed out that there were causes to account for it other than could be attributed to improved hygienic surroundings—notably the exceptional climatic conditions, which had the effect of lowering the infant mortality—and I cautioned local authorities against being too sanguine as to the maintenance of the low rates. This year's figures, therefore, need not cause discouragement, as the increased rate is amply accounted for by the higher infant mortality consequent upon the higher temperature during the summer and autumn months.

Infant Mortality.

While the infant mortality of the Administrative County, as a whole, is considerably higher this year as compared with the two preceding years, this, as already indicated, was to be expected, the rates for 1902 and 1903 being exceptional, and the result of climatic conditions which did not conduce to fatality from epidemic diarrhœa. In the urban districts of the county the mean rate was 165, compared with 147 the previous year, while in the rural districts it was 112, compared with 117.

It has been my practice in previous years to compile a table showing the districts in which the infant death-rate had been exceptionally high, and I have usually adopted a rate of 200 and upwards as the qualifying figure for this black list. Owing to the exceptionally low rates for the two preceding years, however, I lowered the standard for the purpose of this table to 170, a figure which, it must be remembered, is only low in comparison with the rates which too often are recorded. This year, owing to the increase in the rate, I have, unfortunately, had to raise the qualifying figure to 190, which brings six of the urban districts into the table.

Deaths among children under one year in certain districts per 1,000 registered births.

	Bilston.	Burslem.	Darlaston.	Longton.	Tunstall.	Uttoxeter.
5 years 1889-93...	203	193	214	225	213	...
,, 1894-98...	207	204	212	247	224	139*
,, 1899-1903	188	198	204	227	200	117
1904...	220	195	196	194	245	192

* Three years 1896-1898.

With the exception of Uttoxeter, it will be noticed that all the districts in this year's table are high infant death-rate districts. In the case of Uttoxeter, much importance need not be attached to this year's high rate, considering the comparatively low mean rates for previous years, and, having regard to the small population, the occurrence may fairly be attributed to accidental or exceptional circumstances. This explanation, however, does not apply to the other districts in the table, and a great responsibility rests upon the respective authorities to make every possible effort in the direction of correcting the defective sanitary conditions in such districts which conduce to infant deaths, and in adopting such other preventive measures as may be specially applicable, under the advice of the respective Medical Officers of Health.

As regards the comments under this heading in the various reports, special reference may be made to the following :—

The Medical Officer of Health of Brierley Hill points out that the rate this year considerably exceeds the decennial average, and says :—" The most unsatisfactory feature about the death returns is the great increase in the infant mortality. It has only once reached such a high rate in the past ten years. It had been steadily declining during the past five years. . . Having failed to do much good in almost every other direction, sanitarians are now looking to the new Education Authorities to help them. I hope those members of the Council who take an active interest in educational matters will do their best to encourage the movement."

The Medical Officer of Health of Coseley writes :—" With regard to the infantile mortality which, unfortunately, remains high, I would recommend that the practice of giving printed instructions on the feeding and management of infants to the parents when the birth is registered, be continued, and also that the Education Committee be asked to provide for the teaching of the elementary rules of health to older scholars in the day schools. To this end, the first step, of course, must be to equip the teachers with the knowledge which it is desired they should impart.

" Improved sanitation alone has failed to bring about a satisfactory reduction in the infantile death-rate, and it is now recognised that the rising generation must be educated to a keen sense of their duty as parents, and to the great importance of such matters as personal and domestic cleanliness, pure air, and the like."

The Medical Officer of Health of Darlaston writes :—" It is a matter for regret that the decrease in the number of deaths among infants recorded in my last report should have given place to a marked increase during the year 1904.

" The conditions classified as tuberculosis, marasmus, and wasting diseases claim the largest total of deaths. There is little doubt but that the crux of the whole question of infantile mortality is atrophy or malnutrition. This, as I have often stated, is brought about by many agencies, of which improper feeding and insanitary environment are the chief.

" A child may have been born healthy but the mother ceases to suckle it perhaps because she works in a factory or has little or no milk, and it at once ceases to thrive : the place of the natural food is taken by foods rich in starchy products, digestive disorders follow, are perpetuated, and it gradually wastes.

" The evil is frequently intensified by life in an over-crowded and therefore ill-ventilated dwelling, and the child eventually becomes a victim to tuberculosis or some other fatal disease."

In Fenton the rate was 185, and the Medical Officer of Health points out that the mean for the previous ten years was 203.

The Medical Officer of Health of Heath Town writes :— " Infantile mortality is largely due to ignorance of mothers in the matter of feeding and general management of infants. I have suggested that the Registrars should be supplied with cards containing instructions for feeding infants, with the request that he should give away a copy with each birth certificate. Your Council has sanctioned the arrangement, which I hope will come into force early next year. The results of the same procedure in Leek and Coseley Urban Districts have been very encouraging.

" During the year a large and influential deputation waited upon Lord Londonderry, urging the importance of making compulsory the teaching of hygiene, with special reference to the action of alcohol and narcotics in all schools. This is the outcome of a persistent propaganda by many of the leaders of the medical profession, and formed the subject of an important discussion at the annual meeting of the British Medical Association at Oxford, at which I was present. The President of the Board of Education, in reply, recognized the importance and necessity of the subject, and regretted that delay would be necessary in putting it into force, but practically promised the deputation that in six years at least their desires would be realized, and meanwhile he encouraged all educational authorities to take immediate steps to have the subject taught in their schools. In the district of Quarry Bank, the subject of infant hygiene was taught in 1903 in the upper standard in the girls' schools, and the Medical Officer (Dr. Tibbetts) states ' the headmasters write me that the subject is greatly appreciated by the children themselves, and much interest is manifested.' I earnestly commend the subject to the attention of the Education Authorities in your district. Such instruction could not fail to produce ultimately a definite reduction in infant mortality."

The Medical Officer of Health of Longton writes :—" I am very pleased to report that the infantile death-rate is the lowest

we have had for at least 20 years, and this in spite of the prevalence of whooping cough and measles throughout the year, and a rather severe epidemic of summer diarrhœa ; hence we may fairly conclude that the labours of the Lady Inspector are beginning to bear fruit. Although this infantile death-rate is improving, we still compare very badly with that for England and Wales. . . . . ."

From the report of the Lady Inspector of Longton, which is embodied in the report from which I have just quoted, I extract the following :—" The new departure in my work in visiting the births, I hope, will be a great factor in reducing the infantile mortality, as I shall be able to influence the mothers in most cases from the first in the right direction on the care and feeding of children, and be able to exercise more vigilance over the negligent and careless. I have at the present time several children under my observation whom I had reason to suspect were being improperly cared for."

The Medical Officer of Health of Quarry Bank writes :— " The question of reducing the infantile death-rate is gaining prominence every year, especially as this seems to be the one problem in preventive medicine which has up to the present defied every effort. The present death-rate is high, exceeding the average of the previous ten years, and the infantile death-rates for both the county and country. In some districts, the establishment of day nurseries or creches have been tried, but parents are not always willing for their children to be taken to them, preferring to leave them with neighbours or with incompetent nurses at home. This, no doubt, is a matter of prejudice, which will be overcome by education and example. A Health Missioner, to visit the homes and give detailed advice on the spot, is also much to be desired, and I hope that in the near future, the County Council will see their way to providing, or at least to subsidising the provision of them in the poorer districts.

" The method of bringing home instruction on the question of infant training, which promises to become more popular, has already been tried in your district. I refer to the teaching of ' Infant Hygiene ' to the girls in the upper classes of your day schools. This has now been done for the past two

years in both your council schools, and from the subjoined statements by the headmasters, you will see that the results are encouraging. The Headmaster of the High Street Schools, reports :—' Nearly 90 of our older girls are now under instruction in infant hygiene. The interest shown in the lessons is still undiminished. The matter is fresh in the minds of children either leaving or about to leave school, and each scholar in the former case carries with her a book from which she has studied. Added to this, the girls promise to carry out what they have learnt, as occasion may arise. Such a leavening influence is calculated to do good, and we may reasonably expect it to gain increasing influence in this respect.'

" The headmaster of Mount Pleasant Schools also reports :—' The children look forward to the lessons with evident pleasure, and fully appreciate the benefits to be derived from having a proper knowledge of the subject. I notice that Sir John Gorst and other leading educationists are advising the more extensive teaching of infant hygiene in our public schools, and it is extremely gratifying to know that you have for some years advocated and encouraged the teaching of the subject in our schools locally.'

" The responsibility of the proper care and culture of children cannot, however, be fully relegated to the domain of school life. It rests primarily with the parents, who, given proper sanitary surroundings and an elementary knowledge of the subject, should be able to do more in this direction than any combination of sanitarians and educationists. I mention proper sanitary surroundings, as without these the efforts of parents and teachers alike are deprived of value, and the provision of sanitary surroundings is the province of the district councils. On you, therefore, I would impress the necessity of adopting all means and appliances for the rapid removal of deleterious substances (*e.g.*, nightsoil, household refuse, &c.) and for the purification of the air and soil around and in dwelling houses and workshops."

The comparatively low rate of 127 is recorded at Sedgley, which, the Medical Officer of Health points out is 17 below the mean for the previous ten years.

The Medical Officer of Health of the Borough of Stafford writes :—" There were 94 deaths of children under a year old, which is equal to a rate of 155 per 1,000 registered births. This is 30·3 higher than the average rate for the preceding ten years, and is, in fact, the highest death-rate since 1893, when it stood at 168. The causes of death were : Measles 1, diarrhœa 14, enteritis 1, tubercular diseases 14, bronchitis 12, pneumonia 1, convulsions 15, meningitis 6, premature birth 6, diseases of digestive system 2, accident 1, marasmus 21. Of the 14 infants who died from diarrhœa only one was said to be breast-fed, and 11 of them died in the two months August and September. In my report for 1898 I pointed out that infantile diarrhœa may be regarded as due almost invariably to contaminated milk, and that it is rare for a baby fed exclusively at the breast to die of diarrhœa. In that year also only one infant out of fifteen who died from diarrhœa was reported as having been breast-fed. Milk is highly putrescible, especially in hot weather, and it should be invariably sterilised immediately before being given to the bottle-fed infant. Among the poorer classes this can be most readily done by boiling, and care should be taken that all vessels used for it are absolutely clean. Bottles should be scoured out with water—boiling when possible—after each meal, and kept in clean water until again required. If these simple precautions were taken throughout the country the infantile mortality would be very appreciably reduced, for, in addition to diarrhœa, many of the deaths attributed to marasmus, enteritis, tubercular diseases of the bowels, convulsions, are caused primarily by improper feedng."

The following extract from the report of the Medical Officer of Health of the Borough of Stoke-on-Trent is not very encouraging :—" The large number of deaths among infants under one year of age is a matter which calls for active measures. From my experience as a general practitioner, I am aware that with proper care and attention, a considerable number of these lives could be saved. In previous reports I have ventured to suggest that some form of general regular inspection of children under a certain age, and in houses under a certain value would be of great use in ensuring better care and attention being bestowed on the rearing of infants. In the absence of such a general inspection, the agency of female

inspectors can be made use of. In 1903 I drew up a report on this matter, and presented it to the Health Committee, but on its being pointed out that it would entail an expenditure of something under £100, the report was not further considered. A considerable portion of that report was included in my last annual report. I regret to say that no further action has been taken in the matter.

"The distribution of leaflets on infant feeding which was introduced four years ago has been regularly carried out by the Registrar of Births and Deaths.

"It is now possible for the Sanitary Authority to obtain the addresses of all births in the Borough from week to week, but such information is of little use without a sufficient staff."

The Medical Officer of Health of the Borough of Tamworth writes under this heading :—"Nine of these deaths were due to prematurity, the infants only surviving their birth for a few hours. Eight were due to diarrhœa, and one to suffocation in bed. The other deaths were largely due to conditions interfering with proper growth and development, such as improper food or feeding, unhygienic surroundings, and neglect leading to a condition of general malnutrition or marasmus. Some attempt has been made to try and lessen the existing evils by the distribution of leaflets, and by lectures to mothers and others interested in the bringing up of children. A more lasting benefit is likely to take place by making a knowledge of hygiene a part of general education in the County Council schools, and in this way laying the foundation of a knowledge which must eventually prove beneficial in the rearing of infants and young children."

The Medical Officer of Health of Tunstall writes :—"The subjoined statistics shew no improvement in the infantile mortality, in fact, a condition of things quite the opposite. The deaths of children under one year of age during 1903 number 226. This number represents an infant mortality of 245 per 1,000 births registered, and with one exception is the highest rate recorded for the past ten years.

"The serious rise thus shewn can be partly explained by prevalence of measles and whooping cough during the year, the complications attending the latter disease having been particularly fatal to young children. The other factors

contributing to the high rate are discussed year after year, and it is very disheartening to find so little progress made. Our efforts must be directed to the instruction of the rising generation in the simple laws of personal hygiene, and to the improving of the houses in which the masses of our population must not only live but rear their children. Conditions which might be possible to a seasoned adult are impossible, or highly prejudicial, to children, to whom the dwelling-house is, next to the parent, the thing of most importance in life."

The Medical Officer of Health of Uttoxeter Urban District writes :—" I have a very sad record to give under this heading, as very nearly one-third of the total deaths registered were infants under one year, giving an infantile mortality of 192 per 1,000 children born."

The same Medical Officer of Health, in dealing with the question of zymotic disease, writes :—" All the deaths from diarrhœa and marasmus, and six from brain diseases, were of infants under one year, and although some of the deaths may have been due to the irritation from teething, I fear the majority of the cases may be attributed to improper feeding, and I am very pleased to find that the Uttoxeter Urban District Committee have accepted the offer from the Staffordshire County Council for a course of six lectures on ' Health and the Care of Children.' I feel sure this is a step in the right direction, and will be productive of much good."

The Council will remember that I conducted an enquiry some years ago into the effect of factory labour on the infant mortality. Previous to 1902 I was obliged to classify the towns according to the number of married women workers upon the best information I could obtain, but two years ago the Registrar-General was good enough to supply me with certain figures, specially extracted from the 1901 Census returns, showing the number of married and widowed females engaged in specified occupations in each town, together with the number of females living at various ages. From these figures I have estimated, in the case of each town, the percentage of married and widowed females engaged in work involving absence from home during the day per total females between the ages of 18 and 50. Had it been possible to work out the rates in each case on the married female population only, the percentages would, of course, have been higher, but I had no data to allow of this

being done. Again, I am obliged to assume, in the absence of corresponding figures from previous Census returns, that the number of married and widowed outworkers to the female population within the specified age limit was the same throughout the 22 years covered by the infant mortality figures as in the last Census year, an assumption which, I think, is justified by the fact that no change has taken place in the special trades carried on in the various towns during the whole period.

On the new basis, I have classified the towns (artisan only) into three groups, placing in the first group those in which the proportion of married and widowed females engaged in work away from home to total females between 18 and 50 reached, and exceeded 12 per cent.; in the second group, those towns in which the proportion was under 12 per cent. and over 6 per cent.; and in the third, those in which the proportion was under 6 per cent.

In the following table the rates in the different groups of towns are given :—

Class according to percentage of Married and Widowed Workers to Female Population between 18 and 50 years.	No. of Towns.	Total Population, 1901 Census.	Deaths of Infants under 1 year per 1,000 registered births.		
			1881-1890	1891-1900	1901-1904
I.—12% and over	5	132,299	195	212	193
II.—Under 12% and over 6%	13	263,868	165	175	156
III.—Under 6% ...	8	131,508	156	168	149

As a matter of fact, the more accurate method of classifying the towns has not caused any appreciable alteration in the relative mortality in the three groups, and I submit that the figures still bear out my contention that, in the absence of any other apparent reason, the excessive mortality in the first group compared with the second and third, and in the second compared with the third, is attributable to the nature of the trades carried on, as affecting the facilities for the employment of women away from home and, as a consequence, the proportion of wholly artificially-fed to entirely or partially breast-fed infants. While I am prepared to admit that the practice of

mothers engaging in factory work, and continuing at work practically up to the time their children are born, may, in itself, prejudicially affect the lives of their children, I maintain that the injury arising from the entire deprivation of mother's milk during the early months of the children's lives is far more serious. No doubt the injury largely results from ignorance on the part of those who have the care of infants as to the proper substitute for mother's milk and the importance of the storage of food under cleanly conditions, and until women are instructed in such matters we must look for a continuance of a needlessly high infant mortality all round, but more especially in those centres of population where the nature of the trade carried on leads, indirectly, to an increase in what may be termed the normal proportion of infants who are entirely dependent on artificial feeding.

I have devoted considerable space to the question of the infant mortality of the county, but not more, I think, than the importance of the subject demands. While it is an undoubted fact that sanitation has effected a marked improvement in the public health, it does not appear that much, if any, progress has been made in reducing the death-rate among infants. The fact is, that no amount of energy on the part of sanitary authorities, in the direction of improving the home surroundings of the people, will have the desired effect in the absence of a determined attempt to break down the gross ignorance which prevails regarding the feeding of infants. It is deplorable to think that nearly 2,000 children end their lives annually in this County within a few weeks or months of their birth from no other cause than improper feeding, and this, not because of wilful neglect on the part of parents, but because, from mistaken kindness in most cases, mothers blindly follow an unfortunate tradition, believing that they must know best what is good for their children, and that what the child likes cannot be bad for it.

It would appear that we cannot hope to make much impression on the present race of mothers, but can we not look a little further ahead and endeavour, by means of simple teaching in schools, to instil into the coming race reasonable ideas regarding everyday matters affecting health, including infant feeding, and so lead to a radical change for the better in the future? As I have pointed out in my preliminary

remarks, the Education Committee of the County Council have taken the initial step in this direction by instituting training classes for school teachers.

Zymotic Death-Rate.

The death-rate from zymotic diseases, including under this heading, according to the Registrar-General's classification, the seven principal ones—viz., small-pox, measles, scarlatina, diphtheria, fevers, whooping cough, and diarrhœa—although higher than it was the two preceding years cannot be said to be excessive.

In the following table the comparative figures are given for the past sixteen years, together with similar figures for England and Wales, and for the larger towns in England :—

Zymotic Mortality per 1000 of Population.

	Districts in Administrative County.			England and Wales.	Large towns in England.
	Urban.	Rural.	Urban & Rural combined.		
1889	2·36	1·17	1·99	2·40	2·72
1890	2·06	1·15	1·77	2·05	2·77
1891	2·00	1·36	1·82	1·83	2·41
1892	2·03	1·10	1·77	1·90	2·63
1893	2·41	1·58	2·17	2·47	3·17
1894	1·68	0·97	1·47	1·76	2·43
1895	2·39	1·15	2·04	2·14	2·82
1896	2·71	1·55	2·39	2·18	2·90
1897	2·91	1·57	2·54	2·15	2·87
1898	3·41	1·68	2·97	2·22	2·85
1899	2·54	1·27	2·22	2·21	2·81
1900	3·04	1·89	2·75	2·00	2·50
1901	2·50	1·39	2·21	2·05	2·68
1902	1·63	0·93	1·44	1·64	2·12
1903	1·63	0·86	1·43	1·46	1·89
1904	2·41	1·15	2·14	1·94	2·49

The following extract from the report of the Medical Officer of Health of Heath Town is worthy of the serious attention of the Education Authorities of this County :—" In most of the districts in this and other counties it is the custom of the Education Authority to assist the Medical Officer of Health, by requiring or encouraging elementary school teachers to send to him stamped printed post cards (supplied by the Sanitary Authority) daily or weekly, containing a list of all absent children, with a note of the cause, if known. In this way the Medical Officer is kept thoroughly informed of the nature and extent of epidemics of non-notifiable infectious disease, and is able to take suitable measures to arrest their spread. When entering upon my duties, I made a formal request to your Educational Authorities that they would arrange for the teachers to send me these weekly returns of absent children. The managers of the voluntary schools promptly acceded to my request, and the returns from the teachers of these schools have been of the utmost value. The managers of the County schools at first acceded to my request, but limited the returns to infectious cases only. I thereupon specified the infectious diseases, with regard to which I particularly desired returns, namely, measles, whooping cough, pneumonia, influenza, diarrhœa, chicken-pox, mumps, and German measles, weekly returns for which the County Medical Officer of Health asks from all Medical Officers in the County ; and up to the next meeting of the Attendance Committee, much valuable information was afforded by County school teachers. At their next meeting they rescinded their former resolution, and resolved that only cases of those diseases compulsorily notifiable by law should be reported to me by teachers. This is practically equivalent to refusing my request altogether, thus those cases are unrecorded whose existence practically cannot be recorded in any other way, and a knowledge of which is so necessary for proper supervision of the public health of the district. These returns are made in 23 urban and 8 rural districts in the County.

" I would call the attention of your Council and of your Education Authority to the grave responsibility which attaches to those who thus withhold information which might be so easily afforded, and which would be of such importance to the

health of the district, and would especially call your attention to the following extract from a memorandum issued by the Local Government Board, which shows that the importance attached to this matter is not due to any idiosyncrasy of your Medical Officer of Health.

[*Extract from Memorandum from the Local Government Board, on the 'Closing of Public Elementary Schools, &c.,' section* 7, *paragraph* 3.]

> 'The attention of school attendance officers and of schoolmasters should also be drawn to the following considerations. Frequently they themselves will obtain the earliest information of the occurrence of infectious disease among scholars, and it is most desirable that such officer or master should without delay communicate the facts to the Medical Officer of Health. Absence of any child from school on the plea that it is suffering under one of the before-mentioned diseases, and absence of several children of one family from school at the same time, no matter what name be given to the complaint that keeps them at home, should be reported to the Health Officer. In practice it has been found that this notification of absentees has materially aided the Local Health Officer in taking measures for the suppression of infectious disease, to the advantage alike of the district and of the school. Furthermore, schoolmasters may properly be asked to take note, especially when an epidemic threatens or is present, of symptoms occurring in any of their scholars that may indicate the commencement of disease, febrile in nature. Besides heat of skin, such symptoms as shivering, headache, and langour, especially if commencing suddenly, vomiting, rashes on the skin, and sore throat. When scarlet fever or diphtheria is about, every trace of sore throat should be looked upon as suspicious. In any case where such symptoms are observed, the safest course will be to exclude the child from school until assurance can be had that it may attend school without harm to itself or danger to other scholars.'

"It is not too much to ask the Committee of the Council schools to reconsider their decision in the light of this important memorandum from the Central Authority."

Special Zymotic Death-Rate.

Small-pox—Again I have to record the occurrence and continual recurrence of cases of small-pox in many districts in the County, more especially in North Staffordshire, but in no case can it be said that the disease assumed epidemic proportions, being confined mostly to spasmodic cases occurring at intervals in different districts, the infection, as a rule, being imported by tramps. That so highly infectious a disease should so often have been introduced into districts which, I fear, are by no means adequately protected by vaccination, and still have been held in check, speaks volumes for the energy of the various health officers. I have been in touch with these officers, and can bear testimony to their energetic action, which, I may state, was not confined to their own particular districts, but included an inquiry into the previous history of the persons introducing the disease, in order that prompt information might be sent to the officers of the districts, no matter in what county, through which the tramp or other infected person may have passed while in an infected state. By this process of mutual assistance, risks were frequently anticipated and guarded against. Credit is also due to the Authorities themselves, who, by allowing their officers a free hand as regards expenditure, enabled the prompt action to be taken which is so essential to success in all such circumstances.

The repeated reintroduction of the disease into districts is most discouraging to Authorities and their officers, having regard to the time and energy which has to be expended, and the cost which has to be incurred, in keeping it in check when introduced. Yet we have in vaccination and re-vaccination a remedy for this if the Government would only provide us with the necessary powers. If, however, for some reason best known to our legislators, a general amending Vaccination Act cannot at present be carried through, might not a partial measure, applicable to the tramp population, be added to the statutes? It seems incredible that tramps should be allowed to wander about scattering disease broadcast among the population when by enforcing re-vaccination in their case the danger would largely be abolished.

I give the following extracts from the reports of the Medical Officers of Health in certain districts where cases occurred, chiefly in order to show the extent to which the tramp population contributed to the spread of the disease in this County during the year :—

The Medical Officer of Health of Cannock Urban District writes :—" Twenty-six cases were notified, four in the Hednesford Ward, and twenty-one in the Chadsmoor Ward, and one a tramp, who was refused admittance to the Cannock Union Workhouse on June 27th, and removed at once to the small-pox hospital, where he died. The disease was first introduced into the district by this tramp, and the last case notified amongst the residents was on August 27th. In October the last patient was discharged from hospital, which was thoroughly disinfected and cleansed throughout. Some of the cases were notified as modified, others as abortive small-pox."

The Medical Officer of Health of Leek Urban District writes :—" As no less than 25 cases were notified during the first four days of the epidemic, it is evident there was one common origin. The large majority of cases were railway workers (and members of their families), who frequented the Green Man Inn, Compton, which is situated in the midst of the infected area ; three of the cases were inmates of the Green Man, and of the remainder the great majority had been in the habit of calling at the same public-house. All investigation to find the primary case proved fruitless, but one of the earliest cases, a railway man, told me (on returning from hospital) that a few weeks before he took ill an old comrade tramped from London and was too ill to work, but was loafing about for several days, he had some spots on his face, and frequently met his mates at the same public-house, evidently infecting them, the proprietor, and his two sons. He subsequently tramped away in search of work and could not be traced."

The Medical Officer of Health of the Borough of Newcastle writes :—" Eight cases were notified during the year to be suffering from small-pox. Immediately after notification, the cases were removed to the small-pox hospital at Bagnall, all possible precautions afterwards being taken to prevent the spread of infection with highly satisfactory results. Un-

fortunately, small-pox broke out at the Union Workhouse, caused by a coloured man on tramp, who was admitted, whilst suffering from small-pox, into the Union Workhouse Infirmary. This entailed a great amount of work, but the results proved very satisfactory."

The Medical Officer of Health of Rugeley writes :—" Two cases of small-pox occurred, one in July, the second in August. The first case, about which I made a special report in July, occurred in Lion Street, to a barber, who had been in close proximity of a tramp suffering from the disease, who called at his shop to be shaved. The tramp, who slept at least one night in the common lodging-house in the town, was discovered at Hednesford next day, from whence he was removed to hospital at Cannock, where he died. The second case was a man in Armitage Road, who had been staying in Hednesford at the time the tramp beforementioned was there, and had probably been in his company. Both these cases were promptly removed to the Urban District Council's small-pox isolation hospital, on Cannock Chase, where both recovered. No further cases have occurred."

In the Borough of Smethwick, it is stated that one case occurred in a man who appears to have been roaming about and who came from Nuneaton.

The Medical Officer of Health of the Borough of Stafford, where the disease broke out on four occasions, there being nine cases in all, writes :—" Of the nine cases referred to, six may fairly, I think, be attributed to the baneful influence of the vagrant. That the vagrant is the cause of spreading disease throughout the country is admitted by everyone ; but, until sanitary and other authorities are given further powers of dealing with this roaming pest there is little hope of effectually stamping out such a disease as small-pox from our towns, and of being sure that it will not recur. This question was considered a few months ago at a conference in London, attended by delegates from one hundred and eleven county boroughs, metropolitan boroughs, and County Councils, and resolutions were adopted expressing the opinion that power should be given to local authorities to detain and isolate any vagrant if there is cause to suspect he is liable to convey

infectious disease. Also, if a vagrant has been exposed to the infection of small-pox in a casual ward or in a common lodging-house, there should be power to enforce vaccination or re-vaccination.

"The making of a false statement, or the withholding of information about small-pox should also be made an offence. I can thoroughly endorse those opinions, for it is only by compulsory powers of vaccination and isolation that we can hope to get rid of the scourge of small-pox."

The Medical Officer of Health of the Borough of Tamworth states that one case occurred, the patient being a tramp, who, according to the investigations which were made, probably contracted the disease in a common lodging-house.

In Cheadle Rural District, where six cases occurred, the Medical Officer of Health points out that the first patient was a navvy who was working on a railway line which was being constructed, and who probably contracted the disease at Leek.

In Stafford Rural District, where two cases occurred, the Medical Officer of Health states that in one of the cases the infection was traced to a tramp, and that in the other the disease was contracted in Blackpool.

Measles.—In the Administrative County 357 deaths occurred from measles, as compared with 249 in 1903, equal to a rate per 1,000 of the population of 0·38, as against 0·27. Of these deaths, 316 occurred in the urban districts, or 0·44 per 1,000, and 41 in the rural districts, producing a rate of 0·20 per thousand.

In the following table corresponding figures are given for three quinquennial periods, and for the past year :—

MEASLES.		Mean for 5 years. 1889-1893.	Mean for 5 years. 1894-1898.	Mean for 5 years. 1899-1903.	1904.
Urban	Number of Deaths...	281	356	260	316
	Rate per 1000.....	0·51	0·59	0·38	0·44
Rural	Number of Deaths...	68	69	40	41
	Rate per 1000.....	0·29	0·30	0·17	0·20

The Medical Officer of Health of Amblecote writes :— " As a rule measles is one of the most fatal of epidemic diseases, and attacks young children of school age. The five deaths all occurred in children under five years of age, the cause of death in each case being some long complication. Mothers do not regard the disease with sufficient seriousness, and the doctor is often sent for when it is too late to prevent serious complications. It spreads very rapidly, and unfortunately is highly infectious before the rash appears, consequently children are sent to school in an infectious condition and the parents are not always to blame, but they are sometimes to blame for the fatal cases, through want of care, when they do know what is the nature of the illness."

In Audley, it appears that a severe type of the disease prevailed, and all the schools were closed for one month.

The Medical Officer of Health of Leek Urban District writes :—" The voluntary notification of the first case of measles in any house adopted last year has certainly been of benefit, having given early indication of the locality of the disease, and enabling measures to be taken to exclude from school all the children from infected houses : the notification has also an educational influence for it impresses the public with the gravity of the disease, which impression is emphasized by serving an infectious disease notice on the parent."

The Medical Officer of Health of Quarry Bank writes :— " It will be observed that in this epidemic we departed from our usual custom of closing the day schools for a month, which would have dated from about May 20th, *i.e.*, the usual fortnight's holiday would have been continued for a further fortnight. It will also be observed that when the schools reopened on June 5th the number of absentees was still greater than on May 20th. It may be argued that this proves that school closure is of no value, but the period was too short, as measles has an incubation period of nearly a fortnight. In the epidemics of July, 1900, and July, 1902 (of which I have a complete record), the schools were closed for a month, and on re-assembling there were practically no cases of measles. It would therefore seem probable that if the holidays had been extended to June 17th, the epidemic would have been checked,

and the subsequent four weeks (June 24th to July 15th) have been free from measles. In future epidemics we shall be more than justified in closing the schools as soon as the disease has seriously affected the school attendance."

The Medical Officer of Health of Wednesbury writes :— " It is curious to observe that measles is regarded much less seriously than scarlet fever ; and yet the latter disease was productive of 49 deaths in five years during a protracted epidemic, whereas measles within three months occasioned no fewer than 50 deaths. The high mortality of this disease is doubtless, in a large measure, due to the fact that the public, for the most part, refuse to regard it in a serious light."

Scarlet Fever.—In the Administrative County, 161 deaths occurred from scarlet fever, as compared with 164 in 1903, equal to a rate per 1,000 of the population of 0·17 as against 0·18. Of these deaths, 136 occurred in the urban districts, or 0·18 per 1,000, and 25 in the rural districts, producing a rate of 0·12 per 1,000. In the following table corresponding figures are given for three quinquennial periods and for the past year :—

SCARLET FEVER.		Mean for 5 years. 1889-1893.	Mean for 5 years. 1894-1898.	Mean for 5 years. 1899-1903.	1904.
Urban	Number of Deaths...	124	133	134	136
	Rate per 1000.....	0·22	0·22	0·20	0·18
Rural	Number of Deaths...	40	37	36	25
	Rate per 1000.....	0·17	0·16	0·15	0·12

The Medical Officer of Hea'th of Bilston writes :—" It is not surprising that scarlet fever is difficult to stamp out in Bilston. In the first place, isolation is impossible in most cases, owing to lack of room and the impossibility of engaging a nurse. Then, too, disinfection of the house is not easy, as it is generally a crowded one, and for clothes and bedding no disinfecting apparatus as yet exists. Moveover, even on the part of medical men, there is at times undue delay in notifying : in one instance at least this happened through doubt as to whether the disease was scarlet fever ; but in another instance doubt does not seem to have been the cause, for a medical

certificate to keep the children away from school six weeks was given seven days before the case was notified."

The Medical Officer of Health of Coseley writes :—" This disease, which is practically endemic in this district, furnished 109 cases during the year, and seven deaths resulted. This is an increased mortality as compared with recent years, and should be taken as a warning that the type of the disease may at any time become more malignant. The type has been so mild during the last six or seven years that it is extremely difficult to get people to observe proper precautions."

The Medical Officer of Health of Darlaston states that the cases were more numerous this year than in any previous year within his knowledge, and that the number of deaths were greater than in any year except 1897, when it was the same.

The Medical Officer of Health of Sedgley writes :—" Fortunately, the disease was of a mild type, as it has been for the past six years. It may, however, at any time become more malignant, and we may expect in the near future a County Council scheme for this and kindred diseases, by which an isolation hospital will be provided, for isolation and trained nursing are impossible in the houses of the working classes. There can be no doubt that economy and efficiency can best be secured by combination with neighbouring authorities, and it is to be hoped that the financial burden will be lightened by combining your district with other larger districts."

Under this heading, the Medical Officer of Health of the Borough of Smethwick points out that a general isolation hospital is about to be provided, and states that—" it will be a great relief to all when the dislocation of work and school attendance, which at present is a serious inconvenience, is reduced, as I believe it will be, when our isolation hospital, which is the natural complement of the Notification Act, becomes an established fact."

The Medical Officer of Health of Lichfield Rural District states that the disease has been far more prevalent than in any year within his knowledge, and says :—" There can be no doubt that scarlet fever, while it is no less infectious and the dangers from sequelæ continue, has of late assumed a much milder type than that of former years. Whether this may,

or may not be, a consequence, or part of, a long periodic wave, we must not lose sight of the important fact that the disease is capable of assuming at any time a more malignant aspect than it now presents, and of causing a high mortality."

The Medical Officer of Health of Seisdon Rural District writes :—" Scarlet fever has again, I regret to say, been exceedingly prevalent, as in last year, only much more so—there being 115 cases as against 63.

" This, perhaps, is not surprising, as in many cases the rash was so slight and lasted so short a time that it was impossible to say whether it was scarlet fever or not, before the desquamation stage, and that in some cases was not characteristic or was much delayed. In some cases it was only because there were other cases in the house that the case was certified at all.

" In the case of one adult, which was certified as scarlet fever, and the diagnosis verified by myself and the nurses, a typical scarlet fever rash developed again a fortnight later, and even then he never desquamated, though kept in nine weeks. Had he not been in a hospital he would certainly have been released long before."

Diphtheria and Membranous Croup.—

In the Administrative County, 203 deaths occurred from diphtheria and membranous croup, as compared with 190 in 1903, equal to a rate per 1,000 of the population of 0·22, as against 0·21. Of these deaths, 175 occurred in the urban districts, or 0·24 per 1,000, and 28 in the rural districts, producing a rate of 0·14 per 1,000. In the following table corresponding figures are given for three quinquennial periods and for the past year :—

DIPHTHERIA.		Mean for 5 years. 1889-1893.	Mean for 5 years. 1894-1898.	Mean for† 5 years. 1899-1903.	1904†
Urban	Number of Deaths...	28	132	230	175
	Rate per 1000.....	0·05	0·22	0·34	0·24
Rural	Number of Deaths...	21	39	72	28
	Rate per 1000.....	0·09	0·17	0·31	0·14

† Including Membranous Croup.

The Medical Officer of Health of Biddulph states that treatment by means of anti-toxin is now generally adopted, and that general practitioners keep their own supply.

The Medical Officer of Health of Brownhills writes :— "I should like the Council to allow me to supply, at its expense, anti-diphtheritic serum to medical men practising in your authority. It is the cure above all others, but too expensive for the people. I understand the Lichfield Authority supplies the same free."

The Medical Officer of Health of Coseley writes :—"I regret that your Council have decided not to supply anti-toxin serum free of charge at present. As far as I know the Local Government Board have not yet declared the strict legality of the practice, which would no doubt influence your decision. I maintain that when used as a curative the serum also acts as a preventive by promptly getting rid of the membrane in the throat caused by the diphtheria bacillus, and thus limiting the spread of the disease."

The Medical Officer of Health of Heath Town writes :— "Several districts have supplied anti-diphtheritic serum gratuitously to patients suffering from this disease. This is an important matter which should engage your attention, especially its use as a prophylactic among those exposed to infection."

The Medical Officer of Health of Leek Urban District writes :—"In view of the increased number of swabs required to be sent by the medical practitioner, and also of the need for compulsory registration of these at the Post Office, your committee wisely decided to refund the cost of postage, which may be looked upon as a good sanitary investment."

The Medical Officer of Health of the Borough of Longton writes :—"Cases of diphtheria and membranous croup were notified during the year, of which 11 died, giving a case rate of 10·3 per cent., which is nearly half the case rate for 1903, when it reached 20 per cent. I think this improvement was partly brought about by your allowing a fee to the medical gentlemen for the injection of anti-toxin in the case of poor patients, and thus more cases were enabled to have the injection than in other years. I would strongly advise you to

continue this fee. There is no doubt also that the disease itself was of a milder type than formerly. I advised you to allow these fees for two seasons—first for the benefit of the patients themselves, and second to save the town expense due to the removal of patients to hospital, and to prevent an epidemic. I believe the result has amply justified my advice."

The Medical Officer of Health of Sedgley writes :—" The anti-diphtheritic serum supplied by this Council was in every case, except one, efficacious in curing the disease, and that case occurred after scarlatina, and was complicated by whooping cough. I beg to recommend that this Council continue to supply the serum to medical men for poor patients, and hope the Local Government Board will soon decide as to the legality of this expenditure. This serum treatment is the best known."

The Medical Officer of Health of the Borough of Smethwick writes :—" It will be gratifying both to the Staffordshire County Council and yourselves to observe the increasing interest which has been displayed by medical practitioners in availing themselves of bacteriological tests. Diphtheria antitoxin has now been supplied by the Corporation free of charge in suitable cases since June, 1903, and a supply of it obtained from the Jenner Institute of Preventive Medicine, and the necessary apparatus are always available for the use of medical practitioners on application to the Medical Officer of Health. Five practitioners have this year requisitioned a supply."

The Medical Officer of Health of the Borough of Stoke-on-Trent states that the number of cases notified this year was larger than in any previous year. Under this heading, in his report, it is disappointing to find the following paragraph :—" In September, in response to a request from the Local Government Board, I reported to the Council fully on the prevalence of this disease in the borough, and made certain recommendations. That report, as far as I am aware, has never been really considered, nor has any action been taken to remedy the deficiencies to which I drew attention."

The following account of the more special preventive measures adopted in the borough is of interest :—" In addition to notification by medical men, post cards, ready printed, were supplied to all schools and Attendance Officers for the

immediate notification of any cases of suspicious illness, such as sore throat, that might come to their knowledge, and where no medical man was in attendance.

"The County Council has continued the arrangements with the Birmingham University for bacteriological examinations, free of charge, of swabs from the throats of suspicious cases. About 21 swabs were sent for examination during the year, and positive results obtained in six. In the previous year positive results were obtained in one-third of the cases, out of 42 swabs which were then sent.

"As in previous years, all cases were visited within a few hours of receipt of notification by the Sanitary Inspector, and enquiries made and noted on printed forms, and steps taken to secure isolation. Printed sheets with directions as to precautions to be taken, and also extracts from the Public Health Acts, were left at each house.

"Post cards were regularly sent to schools notifying the presence of the disease in houses, and requesting the exclusion of all children from such houses till further notice. In such cases the children have been excluded from school until a fortnight after disinfection of the house. Post cards are now being sent to the schools, stating when the children might be admitted.

"Post cards are sent each week to every medical man in the borough, notifying the presence of the disease in the different streets where it has occurred during the week. This is done in the case of all the notified diseases.

"The Health Committee have supplied anti-toxin, free of charge, for prophylactic use in the borough, and pay a fee for its use. It has been made use of to a greater extent during the year than previously.

"From May 8th to December 31st, 174 persons were injected for prophylactic purposes. They had come into contact with 48 cases. None of those injected developed the disease subsequently, except two in one house. They were, I understand, ill at the time of injection. The cost to the borough was £12 4s. 6d."

The Medical Officer of Health of the Borough of Wednesbury writes :—"In this disease we have to deal with one of an

altogether more fatal character ; and it is most unsatisfactory to find that the year furnished no fewer than 81 cases, of which 19 were fatal. The proportion of deaths is not greater than one would expect, but the number of cases is much to be regretted.

" A disturbing feature is that there was never any epidemic due to a discoverable cause, whose removal was followed by the extinction of the disease. On the other hand an examination of the notifications during the year shew that the disease was never more prevalent at one time than another, but that scarcely a week went by without the notification of one or more cases. In fact, diphtheria was endemic throughout the year.

" There were also five cases of membranous croup notified of which four proved fatal. Since, moreover, the great majority of such cases are really diphtheritic in nature, we may consider the total deaths from diphtheria as numbering 23. This is certainly a serious matter, and it is greatly to be hoped that our experience during 1904 was exceptional. I am quite at a loss to suggest an explanation."

The Medical Officer of Health of Cheadle Rural District writes :—" The medical men in the district continue to make free use of the opportunity of having the aid of bacteriological examination of doubtful cases of diphtheria, &c., which is carried on at Birmingham University, by arrangement with the Staffordshire County Council."

Whooping Cough.—In the Administrative County 387 deaths occurred from whooping cough, as compared with 163 in 1903, equal to a rate per 1,000 of the population of 0·42, as against 0·18. Of these deaths, 306 occurred in urban districts, or 0·42 per 1,000, and 81 in rural districts, producing a rate of 0·41 per 1,000. In the following table corresponding figures are given for three quinquennial periods and for the past year :—

WHOOPING COUGH.		Mean for 5 years. 1889-1893.	Mean for 5 years. 1894-1898.	Mean for 5 years. 1899-1903.	1904.
Urban	Number of deaths....	257	240	223	306
	Rate per 1000.....	0·46	0·40	0·33	0·42
Rural	Number of deaths....	54	54	44	81
	Rate per 1000.....	0·23	0·23	0·19	0·41

The Medical Officer of Health of Tipton, where 30 deaths occurred, refers to the great difficulty he experiences in preventing mothers from sending children who are suffering from the disease to school. This is a matter which the School Managers should seriously consider, as with their co-operation steps might be taken which would be of great help to the Medical Officer of Health in his efforts to curtail the spread of the disease.

Enteric Fever.—This disease, which must be looked upon as entirely preventable, caused 94 deaths, as against 97 in 1903, equal to a rate of 0·10 in both cases. Of these, 86 occurred in urban, and 8 in rural districts, equalling a rate respectively of 0·12 and 0·04. In the following table corresponding figures are given for three quinquennial periods and for the past year :—

ENTERIC FEVER.		Mean for 5 years. 1889-1893.	Mean for 5 years. 1894-1898.	Mean for 5 years. 1899-1903.	1904.
Urban	Number of deaths....	98	124	118	86
	Rate per 1000.....	0·17	0·20	0·17	0·12
Rural	Number of deaths....	30	19	22	8
	Rate per 1000.....	0·12	0·08	0·09	0·04

Under this heading, the Medical Officer of Health of the Borough of Longton writes :—" There were 73 cases of typhoid in 44 houses. On visiting these cases, I was at once struck with two facts, viz., that the patient was nearly always nursed in the kitchen, and that the sanitary arrangements were mostly bad, as you will see from the analysis subjoined.

" 11 Privy Cesspools.
" 27 Hand-flush Pans.
" 1 Slop Watercloset.
" 4 Proper Water-closets.

" I would urge you to press forward the addition of the typhoid block at the Bucknall Hospital, as it is not fair to our people to be subjected to this risk of infection which has proved so disastrous in so many poor homes during 1904,

owing to the fact that the patient has been nursed in the kitchen, and by that means other members of the family or neighbours have contracted the disease. We have done everything in our power to check the spread of the disease by instructing the people by word of mouth, and by handbills, and also by collecting the excreta regularly in special pails containing disinfectant, and after a satisfactory exposure to the action of this disinfectant, mixing with ashes and emptying into the destructor. All the bedding and houses have been thoroughly disinfected, and disinfectant has been supplied freely to each house during the attack. I am quite certain if we could have sent to hospital the first cases that occurred, we should not have had an epidemic at all."

The Medical Officer of Health of Tipton writes :—" As we have a pure and practically unlimited water supply, the spread of enteric fever depends much upon the habits of the people. There are plenty of sanitary houses for them to live in at a very low rental, but many prefer to live in insanitary dwellings, where the surrounding earth is thoroughly soaked with drainage, and where the privies are built in such dire proximity to the dwellings that they cannot but be most injurious to the health of those living near them."

The Medical Officer of Health of Walsall Rural District writes :—" When one reflects on the frequent occurrence of cases of enteric fever and diphtheria which occurred in this locality with disagreeable regularity a few years ago, the absence of such diseases can only be attributed to the conversion of a considerable number of the old-fashioned privies into water-closets which has taken place recently in this congested neighbourhood."

Diarrhœa.—In the Administrative County, 758 deaths occurred from diarrhœa, as compared with 425 in 1903, equal to a rate of 0·82, as compared with 0·47. Of these, 713 occurred in urban and 45 in rural districts, equalling a rate respectively of 0·98 and 0·22. In the following table corresponding figures are given for three quinquennial periods and for the past year :—

DIARRHŒA.		Mean for 5 years. 1889-1893.	Mean for 5 years. 1894-1898.	Mean for 5 years. 1899-1903.	1904.
Urban	Number of deaths...	405	581	569	713*
	Rate per 1000.....	0·73	0·97	0·84	0·98
Rural	Number of deaths...	89	93	81	45
	Rate per 1000.....	0·38	0·41	0·35	0·22

* Including 34 deaths from "enteritis" in Burslem.

That the fatality from diarrhœa this year is nearly double that of the previous year is accounted for by the higher summer and autumn temperature, and this is the explanation suggested in most of the reports under review. On comparing the rate for this year with the mean rates for the three preceding quinquennial periods, it will be seen that in the urban districts the comparison is unfavourable, although in the rural districts the reverse is the case.

In his annual report for this year, the Medical Officer of Health of Willenhall devotes considerable space to the causation of this disease, which was very prevalent and fatal in that district during 1904. I extract the following from the report in question :—" There is abundant evidence tending to show that the *fatal* diarrhœa of young children is due to the development of a micro-organism in the soil surrounding dwellings ; that this organism assumes greater vitality as soon as the temperature of the earth reaches 56° Fah. four feet from the surface ; and that it gets abroad from its breeding place, and becoming air-borne, alights on food and drink, and entering the bodies of human beings, sets up mischief therein. In this town, *fatal* diarrhœa amongst children usually commences on or about July 17th, and continues for about eight or ten weeks. It is probable the nature of the sub-soil favours the development of the organism, because it retains for a long time pollution generated by privy cesspits ; large, wet, open ashpits ; want of drainage and leakages from badly-constructed drains ; foul gutters and streets which have never been properly made. The death-rate from diarrhœa in 1904 was 1·7 per thousand per year, and I am satisfied that there might be a diminution of from one-half to three-fourths of the deaths from this

cause, if privy cesspits, large, open ashpits, bad drains, no drains, foul gutters, and unmade streets could be speedily abolished, in favour of wash-down water-closets put in with a higher standard of workmanship than is usual here, of smaller covered ashpits or small covered galvanized iron receptacles to be emptied once a week or oftener, and if, once for all, the drainage of the whole of the town could be satisfactorily completed, the whole of the streets made and taken over by the Council, and no plans were passed in future for the erection of new property, until the streets have been made and taken over by the Council. Much of this can be, and ought to be, accomplished by the Council, and whatever standard the Council attains will re-act by way of education on the people generally. It is sometimes said that the chief cause of infantile diarrhœa is improper feeding, but we have to bear in mind that children are improperly fed all the year round, whilst fatal diarrhœa is almost limited to a few weeks in the year. It is quite true that children who are improperly fed die more readily than others from diarrhœa, but the manner of feeding is not the *main* cause, but the aggravation of the cause. In the year under review, my records are not complete, but more than a third of those who died from diarrhœa were improperly fed. It has also been said that the children of women who work in factories are very prone to diarrhœa. If that be so, it is not work in factories only, but work of any kind and anywhere away from home which predisposes to the disease, and it is probable the only way it does so, is by neglect of the children, due to the absence of the mother from home, and consequent artificial feeding and insufficiency of cleanliness. On this part of the subject, it is said we have to look for instruction in school as the remedy—but writing as a Manager of an Elementary School with nearly 20 years' experience, and having regard to the standard attained in the majority of small manufacturing and agricultural towns, I don't think we have much to hope for in that direction in the near future. We have much more to hope for from extension of the system of nursing at home, that is to say in the beneficent, pervading presence of well-trained, practical teachers and exemplars in the home, rather than in the school. There is one other point worthy of comment. This year, 366 blocked drains have been

opened by the Council's men. As most of these blockages were in waste water-closets, the practical inference is, that however near to perfection and cheapness the waste water-closet may be, in practice it does not work well here. I therefore ask the Council to issue a word of warning, especially through its Surveyor, against the putting in of any more waste water-closets."

Cholera.—No mention is made of this disease in any of the reports under review.

Erysipelas.—Little reference is made to this disease in any of the reports.

Puerperal Fever.—In the Administrative County, 32 deaths were attributed to puerperal fever, as against the same number in 1903. In only a few of the reports is any special reference made to the circumstances attending the cases.

Although, I fear, one may not look for much improvement for a few years to come, as the result of the administration of the recent Midwives Act, gradually, as the present stamp of midwife is replaced by trained women, through the operation of that Act, an improvement will no doubt become apparent, and deaths from this entirely preventable disease will ultimately, it is to be hoped, be few and far between.

In this connection, by way of showing the risks which lying-in women run, through ignorance on the part of the unskilled midwife, I quote the following account from the report of the Medical Officer of Health of Tettenhall, of a case which was admitted into the General Hospital, Wolverhampton :—" A woman with an abscess of the breast was sent in ten days after her confinement. She had been attended by a midwife, and her illness was attributed to the condition of her breast, but I found and removed from the uterus a large piece of retained placenta.

" Fortunately, such cases are not usual, but minor degrees of blood poisoning after child-birth, which interfere with the health and usefulness of mothers, are common, and they are caused by the failure of the attendant to appreciate that an ideal cleanliness is compulsory in midwifery."

Influenza.—Although it would appear from the reports under review that influenza again prevailed in most parts of the County, the cases seem to have been fewer and the type milder as a rule than in previous years.

Diseases of the Respiratory Organs.—Under this heading, which does not include phthisis, 2,809 deaths occurred as compared with 2,544 in 1903. None of the reports contain any remarks regarding these diseases which call for special reference.

Phthisis.—In many of the reports considerable prominence is given to the question of the causation and prevention of phthisis, from which disease no fewer than 757 deaths have resulted during the year.

Under this heading, the Medical Officer of Health of Heath Town writes :—" The destruction of life and public usefulness of a large and promising section of the community at a time when their career of usefulness is about to begin, or has just begun, is a grave social and economic question, not merely a humanitarian one. If you rescue the consumptive bread-winner (or prevent him taking the disease) you save his family from pauperism. A large out-patient practice has convinced me that ordinary hospital work will not suffice, that voluntary effort will not succeed unless we have munificence on a princely scale. It can only be done with public money, and the result produced will amply repay the expenditure. The object of this sanatorium is to take in patients for a short time (compared with the stay at ordinary sanatoria), to thoroughly drill them in details of treatment and prevention, and then to send them forth to continue the treatment in their own homes, and to become apostles to spread the doctrines of open-air life, cleanliness, pure living, and care of the sputum. By this means, in a few years, a large section of the Staffordshire consumptives will have passed through the sanatorium, and a healthy public opinion formed of incalculable value. I urge your Council to take your full share in advancing this most important sanitary and economic procedure.

" Another important measure which should receive your careful attention is the voluntary notification of consumption.

This has been practised in many districts with very satisfactory results.

" One other procedure, not involving much cost, I would urge should be carried out as soon as possible, the thorough disinfection of all houses where an inmate has died of phthisis."

It would appear from the reports of the Medical Officers of Health of Rowley Regis and Tettenhall that in both districts systematic disinfection of houses, &c., is practised in all cases where deaths from phthisis occur.

The Medical Officer of Health of Leek Urban District also writes :—" The phthisis notification post cards from the Registrar to the Sanitary Inspector have been of great service in supplying early information, enabling disinfection to be carried out in every case without delay. I am glad to add that no opposition to this procedure is encountered."

The Medical Officer of Health of the Borough of Tamworth writes :—" The public interest in the question of the early treatment of persons suffering from consumption is fully maintained. That it is a disease whose victims are for the most part taken from the working classes, and from others whose circumstances are often far too limited to allow of proper treatment being begun at the onset of the disease, is much to be deplored, and the question of obtaining the best treatment by modern methods for them, and their isolation where practicable, in the interest of the public health, is one of the utmost importance."

The Medical Officer of Health of Tunstall writes :—" A system of voluntary notification of phthisis might be adopted with advantage, as your Sanitary Inspector would then be in a position to give advice as to the precautions which should be taken in the house of a patient, especially as to the manner in which the sputum should be dealt with, and the disinfection of the house which has been occupied by the patient, either after death or removal."

The Medical Officer of Health of Willenhall devotes considerable space in his report to the subject, and calls special attention to the low mortality from pulmonary consumption in the district compared with England generally. In summing

up the position, he writes :—" The whole study of the matter is a plea for fresh air and plenty of it ; for more out-door life for ourselves, our women and children ; for greater cleanliness in our homes, and open chimneys and windows ; for better ventilation in workshops, clubs, and public houses ; for back doors, open spaces, and the abolition of courts and overcrowding ; for dry house-walls and a drier sub-soil ; for improved and better ventilated cowsheds ; for disinfection of infected bedding and clothing by steam apparatus ; for destruction of the bacilli coughed up ; for all available means to be used which will prevent cows with tubercular teats being milked ; for abattoirs which will lead to the more frequent detection and destruction of tubercular meat ; for sanatoria as a means of education, and to some extent, as a means of isolation ; for compulsory notification of the disease ; and for consideration of the question whether tubercular workmen ought not to have their wages secured by the State, so long as the sufferer is fit for work at all, in order to compel him to keep away from the workshop—and in connection with this side of the question, to consider whether males are in other places attacked in the same ratio to females, as they are here ; and if so, to find, as far as possible, the cause. The chief local change in recent years has been a great development in the casting trades, and the consequent greater use of machinery to revolve at high speed emery, stone, and leather polishing bobs, which not only must generate a fine metallic or mineral dust, but must tend to disseminate any dust containing tubercular bacilli which may be near at hand."

The Medical Officer of Health of Wolstanton United Urban District mentions two cases in which houses were disinfected after fatal cases of phthisis had occurred in them, and expresses the hope that the practice may become more general in future.

The Medical Officer of Health of Tutbury Rural District writes :—" The larger dairies supply milk outside the district, and the milk is frequently inspected and submitted to analysis, but the smaller dairies, which are often kept in a very unwholesome condition and in very unfavourable environment, are entirely free from control, and the milk—which I am sure is often of questionable quality—never submitted to micros-

copic or bacteriological examination. The Sanitary Inspector should be instructed to take samples of milk periodically, and submit the same for analysis, &c., as is done in all large towns. And I would recommend you to appoint a Veterinary Surgeon to inspect the cows in the district from time to time. These matters are of great importance in a district like ours, where the milk trade is the chief industry."

Zymotic Disease Prevention.

Isolation and Disinfection.—In most of the reports, both for urban and rural districts, this question is very fully dealt with.

In the table at the end of this report, headed "Result of the Working of the Compulsory Notification of Infectious Diseases Act," figures are given showing to what extent isolation hospitals are made use of in districts where they exist. It will be noticed that the use made of them varies very considerably, and in most cases it is evident that they can be of little practical value in curtailing epidemics—the chief purpose for which they are intended.

The percentage of infectious cases isolated in urban districts where hospitals are available and have been available during the year, varies very much—from *nil* in Audley, Brierley Hill, Brownhills, Darlaston, Sedgley, Wednesbury Wednesfield (Urban), and Blore Heath and Eccleshall (Rural), to 88·2 in Seisdon Rural District and 84·3 in Leek Urban District.

As pointed out in my introduction to this report, the continuance of small-pox in the county has again compelled the Sanitary Committee to devote their attention, under this branch of public health work, chiefly to securing the provision of adequate accommodation for isolating cases of that disease—efforts which have been attended with marked success—and, for the time being, the question of general isolation hospital provision has been allowed to rest. I anticipate, however, that in my next Annual Report I shall be able to show that considerable progress has been made in the latter direction.

In view, therefore, of the anticipated revival of interest in the question, I propose to quote pretty fully from the reports

under review as to the opinions of the District Medical Officers of Health upon this important subject.

The Medical Officer of Health of Bilston writes with reference to a disinfecting apparatus, as follows :—" The need of an efficient steam disinfecting apparatus, which has constantly been pointed out by me, is therefore greater than ever. Absolute and complete disinfection is of extreme importance as the disease is very easily conveyed and the patients concerned are most susceptible. But notwithstanding this, the rule referred to is at present a dead letter here."

The same Medical Officer of Health also points out that better isolation hospital accommodation is required, as follows:—"The need for a new and better isolation hospital has long been recognised, and two schemes have at different times been before your Council. The one suggested by the County Medical Officer for a large combined area where the hospital would be large enough to require a resident Medical Officer, somewhat on the plan now adopted for small-pox, and the formation of a Conjoint Board for South Staffordshire. The other was one drawn up in 1899 by my colleagues, the Medical Officers of Health for Willenhall and Darlaston, in association with myself for the formation of a hospital district (consisting of the two towns mentioned and Bilston) under the Isolation Hospitals Act, 1893, and the erection of a hospital somewhere conveniently near to the main road from Shepwell Green, Willenhall, and the old Turnpike-gate House, Bilston Neither of these schemes commended itself to your Council, and therefore nothing remained but to look out a suitable site and erect one for Bilston alone. I am pleased to be able to report that a good site, and convenient of access, has been secured in Mountford Lane, and a contract entered into for the erection : the work is now in progress. It will be an iron and timber-framed structure, containing two wards—one for 10 beds, and one for 14 beds—and a third (probationary and inspection ward) that would if necessary serve as a day room, for convalescents ; in addition to nurses' rooms, kitchens, bath rooms, etc. It will be supplied with water from the Council mains, and electric light will be installed from the mains of the Midland Electric Corporation for Power Distribution Ltd."

The Medical Officer of Health of Brownhills points out that the hospital for small-pox cases, which was provided some years ago, has never been used, and he suggests that it might be made use of for the isolation of scarlet fever cases with advantage. As regards a disinfecting apparatus, he says :—" I have to call your attention to the fact that the Midwives Act came into force in the beginning of this month, and the carrying out of which throws certain responsibilities on your Council. In the first place, it will be absolutely necessary that you at once provide stoving apparatus, so that all midwives' dresses, aprons, &c., that have been exposed to puerperal contagion, may be disinfected at your cost. This is a matter that I trust will be carried out as quickly as possible, as no one can foresee the time when same may be needed."

With reference to the present inadequate hospital provision for the Borough of Burslem, the Medical Officer of Health, in his comments upon scarlet fever, writes as follows :— " It is a matter for great regret that we have been able to remove so few cases. I give a table which shows that we have been unable to remove as many cases to the sanatorium during the year as was done in the two previous epidemic years, 1898 and 1899 :—

	No. Notified.	No. Removed.	Percentage.
1898 ..	401 ..	114 ..	28
1899 ..	481 ..	146 ..	30
1904 ..	415 ..	67 ..	16

The Medical Officer of Health of Darlaston writes :— " We still feel the need for means of isolating scarlet fever very much, nor do we possess any apparatus for the disinfection of clothing and bedding.

" Home isolation and the subsequent disinfection in the houses of the poor is practically waste of time since neither can be carried out effectively, until we can separate the sick from the healthy in hospital, we cannot hope to any great extent to influence the prevalence of the disease."

With reference to the temporary hospital at Heath Town, the Medical Officer of Health of that district writes :—" Now that the joint scheme for small-pox has been arranged, this building is used entirely for scarlet fever. It has nearly lasted

its natural life, and future provision will have to be considered in the not distant future for scarlet fever, diphtheria, and enteric fever. By far the best plan would be to erect a joint hospital for several of the surrounding districts, having separate pavilions for the three diseases, but as your larger neighbours have already made their schemes, that cannot be thought of. The only practical alternative is, in the case of scarlet fever, either to make arrangements with Wolverhampton Corporation to take cases into the Borough Fever Hospital, or to erect on another site a permanent building to be used for administration and acute cases, while the present building might be re-erected as an annexe for convalescent cases.

" The site must not be a ' made ' site, like the present one, and it should be reasonably accessible by a properly made road, and should have a water-supply, and gas or electric light, and wash-down water-closets draining into the sewer.

" The arrangements for the diseases of enteric fever and diphtheria rest on an altogether different basis. Owing to the great cost of administration that obtains in cases of these diseases (as compared with those of scarlet fever), a hospital or detached pavilion for these diseases for your district only is not advised. I advise that definite arrangements be made with Wolverhampton General Hospital for the admission of these cases there, and this should continue as long as the hospital is willing to receive them. If this arrangement should ever be determined, the only satisfactory solution would be the erection of a large hospital for several combined districts."

With reference to disinfection, the same Medical Officer of Health writes :—" It is now generally admitted that bedding and thick objects cannot be disinfected by fumigation, and that steam is the only agent for thoroughly penetrating and disinfecting the interior of these thick fabrics. Consequently, the necessity should be faced of either providing a steam disinfector or making arrangements with the Wolverhampton authorities for the use of their disinfector. The disinfection of rooms by means of a powerful spray such as Mackenzie's is now regarded as being more efficient and convenient than the use of fumigation."

The Medical Officer of Health of Leek Urban District writes :—" I am pleased to be able to state that your Surveyor has now in hand plans for increased accommodation up to 18 beds, three of which will be isolated observation wards ; in addition, the plans show a discharging block comprising undressing room, bath, w.c., dressing room, and waiting room for friends of the patients."

The Medical Officer of Health of the City of Lichfield states that a Thresh disinfecting apparatus has been provided for the hospital. He also states that the iron small-pox hospital, which was recently erected, has answered its purpose admirably.

Under this heading, the Medical Officer of Health of Rowley Regis writes :—" Valuable information, otherwise unobtainable, is furnished by the weekly returns from the elementary schools of children absent from school on account of some infectious disease. This information is especially valuable in the unnotified infectious diseases, and I beg to express my thanks to the members of the Education Committee for their kind co-operation in the sanitary work of this district."

The Medical Officer of Health of Smallthorne states that no efficient provision for disinfection has yet been made, and that a disinfecting apparatus is much needed.

With reference to the hospital, which is about to be provided for the Borough of Smethwick, the Medical Officer of Health says :—" It will be a great relief to all when the dislocation of work and school attendance, which at present is a serious inconvenience, is reduced, as I believe it will be, when our isolation hospital, which is the natural complement of the Notification Act, becomes an established fact. The table showing the age periods of attack during the year under notice is again appended."

The Medical Officer of Health of the Borough of Stoke-on-Trent writes :—" The cubic space allowed per patien' at the hospital is about 1,150 feet. Amongst other disadvantages of this small allowance is the impossibility of providing any extra beds in times of epidemic. I have in previous reports

pointed out that the space allowed is less than is usually considered necessary.

"The rule of the Board that the ambulance is not to be asked for after 2 o'clock for removal of cases on the same day except in cases of urgency has not aided in the prompt removal of cases. If the ambulance is disengaged, it ought to be possible to have any case removed after 2 o'clock."

The Medical Officer of Health of Stone Urban District writes:—"A step in advance has been made towards the erection of a new isolation hospital, by the purchase of land by the Conjoint Hospital Board, subject to the consent of the Local Government Board, who have fixed a day for an enquiry at an early date. At the present time only one class of fever can be isolated at one time. The building is therefore used entirely for scarlet fever, but many diphtheria and typhoid cases anxiously call out for hospital treatment without being able to get it, and in two or three instances patients have been sent to hospitals in other sanitary districts where the expense has had to be borne by their friends.

"The present hospital, one of Humphrey's iron buildings, is out of repair, and very cold and draughty in the winter, and should be replaced by a modern building provided as suggested by the County Council scheme. The old building might well be utilized for small-pox."

The Medical Officer of Health of the Borough of Tamworth writes with reference to the joint hospital there:—"Owing to lack of accommodation, none of the 15 cases of diphtheria notified, five of which occurred in the borough and ten in the rural district, could be admitted."

The same Medical Officer of Health also writes:—"It was decided to limit the number of patients in hospital to 30. The staff was increased by an additional probationer. New rules as to visiting, and instructions to parents as to the treatment of children after leaving hospital, were approved. Altogether there has been an improvement effected in the administrative work, the nursing, and the general appearance of the wards.

"A letter was received from the Rural District Council requesting the Joint Hospital Board to consider the advisability of providing a convalescent home for patients on discharge. The Board, having decided that it was necessary to have a convalescent and observation block, purchased one acre of land adjoining the south side of the present grounds, with a frontage of 43 yards to the Warwickshire Moor, from Mr. B. Musson, at a cost of £150."

The following extract from the report of the Medical Officer of Health of Tipton should be seriously considered by the District Council :—"The hospital has been most useful during the year in enabling us to isolate early cases of infectious diseases. Unfortunately, we have not been able to effect the alterations and improvements that were under consideration on several occasions, and which were sanctioned and approved of by the County Medical Officer, Dr. Reid. There are grave objections to having under treatment at the same time and in the same ward cases of different kinds of infectious disease. On several occasions this has been imperative, but every precaution that has been possible has been taken, and no case has been admitted without the full consent of the patients and their nearest relative, after a full explanation has been given to them of the risks that are entailed. In the early part of the year two nurses were attacked, first with scarlatina followed up by typhoid fever. Both were severe and anxious cases, but happily were not fatal. We dispensed with the services of the trained nurse in order to save expense, and appointed her assistant, who has been fully trained under her for over twelve months in the nursing of infectious diseases. This nurse has a full knowledge of the nursing of all such cases, although she has not had the advantage of a three years' course of training in a general hospital. There has been an advantage in having a nurse from the parish who knows the ways of the district, and who understands the patients, &c. I am pleased to report that this change has been quite satisfactory to me.

"As hospital superintendent, I visit the hospital practically every day, and am responsible for the general management of the hospital, and for ordering such food, &c., as are required.

" The great need in connection with the hospital is for a proper ambulance car. The car now in use is unsightly and not fit for the purpose. If the hospital should be as full again as it has been before, I feel sure that the extra cost for a suitable conveyance, over and above what we pay for the use of the present car, will be but very slight, and will be repaid in satisfaction to the patients and their friends, who now complain very much about the present unsightly and uncomfortable carriage used."

With reference to the above quotation, apart altogether from the public health aspect of the question, one would have thought that the serious legal consequences which might follow in the event of patients while in hospital contracting other infectious diseases than those from which they are suffering on admission, would indicate the need for better hospital provision. In such an event, it would be no answer to any legal proceedings which might be brought against the Authority to say that every precaution, under the circumstances, had been taken, as the act, in itself, of placing patients suffering from different infectious diseases in the same ward is quite unjustifiable.

The Medical Officer of Health of Tunstall writes :—" I have been anxious to remove more cases to the hospital, but have been unable to secure further admissions, owing to the limited capacity of the hospital."

The Medical Officer of Health of Wednesfield writes with reference to scarlet fever :—" Seventeen cases were notified, all of which were treated at the homes of the patients, as now the Council has severed its connection with the Heath Town Isolation Hospital, no provision is available for the proper isolation and treatment of this complaint ; and, in view of a future epidemic, it would be well if the Council would consider the advisability of providing such, as well as provision for cases of small-pox, should any arise."

The Medical Officer of Health of Wolstanton United Urban District writes :—" Where isolation is impracticable or imperfect, and especially where there are other children in the house, removal to the sanatorium is urged. Under existing

circumstances, however, it has so frequently happened that there is no room at the sanatorium, that this measure, the most effectual of all for preventing the spread of disease when taken at the commencement, has not been able to be utilized as it otherwise would have been."

With reference to disinfection, the same Medical Officer of Health writes :—" Arrangements have been made with Burslem, by which bedding, articles of clothing, &c., can be disinfected in their steam disinfector."

The Medical Officer of Health of Cannock Rural District writes :—" The epidemic of small-pox in the Cannock Urban District proved that the existing accommodation for the isolation of small-pox is unsatisfactory and insufficient. The Local Government Board have requested the Urban and Rural Councils to consider the provision of improved accommodation. The Joint Small pox Hospital Committee have appointed a sub-committee to deal with this question, either by building upon a suitable site, or the provision of larger premises suitably isolated. This sub-committee, however, has not been able to make any recommendation."

The same Medical Officer of Health, in referring to a new hospital for general infectious cases which has been provided, writes :—" I can only say, in conclusion, that I consider this hospital has rendered excellent service to the district, and parents have invariably expressed to me their gratification in the condition of their children when they got home."

With reference to a new hospital which has been provided for the Cheadle Rural District, the Medical Officer of Health writes :—" The hospital provides accommodation for 16 patients, suffering from scarlatina, diphtheria, and enteric fever, besides an administrative block, wash-house and laundry, disinfecting room and mortuary, &c. The resident staff comprises the Matron, two nurses, ward-maids, &c. The entire cost of the building (over £2,000) has been borne by the District Council. The hospital is in telephonic communication with the town of Cheadle, and the water-supply comes from Cheadle.

"The hospital is at present but a very young institution, and before it can be considered complete and thoroughly efficient for its work, observation and discharge blocks will be required, as well as a steam disinfector for disinfecting the clothing."

With reference to the above quotation, it is difficult to conceive what led the District Council to omit from the provision they have made so essential a requirement as a disinfecting apparatus, seeing that, in other respects, the hospital appears to be well equipped.

The same comment applies in the case of Kingswinford Rural District, as will be seen from the following extract from the report of the Medical Officer of Health of that district :— "The hospital consists of a permanent brick administrative building, containing the usual offices and accommodation for matron and nurses. Attached to this by covered corridors are the wards ; these are built of wood and corrugated iron on brick foundations, and consist of male and female scarlet fever wards, and male and female enteric fever wards ; each ward to contain six beds. In connection with the wards are bath rooms and lavatory accommodation. The wards are heated by hot-water pipes, and hot and cold water is laid on all over the establishment. I think, in his hospital the Council have provided in a most satisfactory manner for the needs of the district, as far as regards care of infectious cases. The only thing which is lacking is a properly appointed steam disinfector, and I would most strongly urge the Council to provide one at the earliest feasible moment. Apart from the disinfection of the patients' and nurses' clothes, it would be of incalculable benefit to the whole district."

With reference to the rules of the Central Midwives' Board regarding disinfection, the Medical Officer of Health of Tutbury Rural District writes :—" In our district we are not provided with an efficient steam disinfecting apparatus which would be available for the necessary disinfection under this rule. There is, however, one at the Workhouse, and some arrangement might perhaps be made by which we should have the use of it when required."

The Medical Officer of Health of Uttoxeter Rural District writes :—" There is still no accommodation made for the reception of small-pox patients, and I have no means of isolating such cases should they arise."

Vaccination.—It would again appear from many of the reports under review that the new Vaccination Act has been instrumental in increasing the number of vaccinated children, and if one could be satisfied that all vaccinated children were efficiently vaccinated, a considerable advance in this department of public health might be recorded. I fear, however, that in many districts the operation is still very inefficiently performed, owing to what one must characterise as dishonesty on the part of certain practitioners. The proportion of such cases, however, is probably not greater than formerly, and, on the whole, it must be admitted that the Act has served a good purpose. At the same time, it is much to be desired that some guarantee should be enforced which would ensure greater efficiency when the operation is performed by private practitioners, and it is to be hoped that when the Legislature again deals with this question, re-vaccination will also be made compulsory.

The Medical Officer of Health of Biddulph writes :—" In 1903, 178 children were vaccinated out of 207 surviving, or 86 per cent. ; whilst if cases medically postponed (an unusually large number), and those removed and traced, were ultimately vaccinated in the same proportion (which I see no reason to doubt), the percentage becomes 98 ; which maintains the high standard of the previous seven years ; and largely explains the district's immunity from small-pox."

The Medical Officer of Health of Bilston writes :—" The difficulty of dealing in Parliament with the whole subject of vaccination and re-vaccination seems to be almost insuperable, but the time has surely arrived when at least power should be given to prevent the spread of this loathsome disease by tramps wandering from one town to another. All will admit that for the public good immediate re-vaccination should be compulsory in persons of this class who are known to have been subjected to the risk of contagion, and further that it should be

possible to retain them until all danger of the further development of the disease is at an end."

The Medical Officer of Health of Darlaston writes :—" It is a matter for regret that nothing can be done to obviate the innoculation of children in one place only, a practice which is still carried on with impunity, and one which in time to come will surely bring the operation into disrepute, by increasing the number of imperfectly protected persons."

The Medical Officer of Health of Leek Urban District writes :—" We cannot ignore the fact that there is a gradually increasing opposition to vaccination, in spite of improved methods, vaccination performed at home, and glycerinated lymph, and also in spite of the presence of small-pox in our midst during part of the year, which resulted in three deaths, two in unvaccinated individuals and one probably unvaccinated, which experience alone certainly ought to lend weight to the argument for vaccination.

" The number of exemptions is over 11 per cent. of the total number of births registered, which is much too high for the safety of the community.

" As far as I am able to judge, vaccination is efficiently performed. It is, however, a matter of regret that the Act does not compel the private practitioner to vaccinate in four places, as the public vaccinator is obliged to do. It would also, in my opinion, improve the efficiency of vaccination if the Government supplied lymph to all practitioners, inspected the work done, and paid the fees."

The Medical Officer of Health of the Borough of Smethwick writes :—" Though the Vaccination Officer's returns for the last few years show by the high percentage of vaccinations that the child population is fairly well protected, there is, unfortunately, a large element of the population in many instances not at all or inadequately protected, the district throughout being thus exposed to the grave danger of a widespread epidemic should the disease be introduced and once gain a footing."

The Medical Officer of Health of the Borough of Wednesbury writes :—" The percentage of successful vaccinations in 1904 was 89·2, as compared with 88·5 in 1903, 84·7 in 1902, and 62·7 in 1901. This indicates very thorough work on the part of the Vaccination Officer. The calf lymph supplied by the Government has again yielded excellent results. Furthermore, very few cases of vaccination in one place have occurred during the year."

The Medical Officer of Health of Wednesfield states that " there is much less reluctance on the part of parents than was the case before calf lymph was employed."

The Medical Officer of Health of Willenhall writes :—" Six hundred and fifty-two children were successfully vaccinated, 19 certificates of exemption were made by Magisterial order, and two certificates of insusceptibility were received. This is the most satisfactory return received for many years, and the increase is due to the fact that a large number of children, above the usual age, but under 3½ years of age, have been vaccinated."

The Medical Officer of Health of Kingswinford Rural District writes :—" I have again to remark that a great number of children in this district are improperly vaccinated. Their parents take them out of the district and have only one vesicle produced on the arm."

Insanitary Dwellings and Overcrowding.

It would appear from some of the reports that progress is being made in the direction of improving dwellings and reducing overcrowding, but, on the other hand, in some of the districts there is evidently room for more energetic action in this direction on the part of Authorities.

In Biddulph, the Medical Officer of Health states that overcrowding remains a permanent difficulty.

The Medical Officer of Health of Coseley writes :—" I am glad to know that your Council have decided to require the demolition of many tenantless, dilapidated houses in the district, and hope to be able to record progress in the matter in my next yearly report."

The Medical Officer of Health of Kidsgrove states that some improvement has taken place as regards the structure of houses, but that there is still room for improvement as regards leaking privies.

In a report of the Surveyor of the City of Lichfield, embodied in the report of the Medical Officer of Health, the following paragraph appears :—" The old insanitary cottages in Upper Saint John Street have been replaced with 14 up-to-date houses by the Corporation under the Housing of the Working Classes Act."

Concerning the question of overcrowding, the Medical Officer of Health of Rowley Regis writes :—" This condition is still prevalent and is in a great measure due to poverty. The bad state of trade making it impossible for many of the poorer class to pay the rent of a house, consequently two or more families combine and occupy a house between them. It has been absolutely necessary to issue orders for abatement of this state of affairs in 19 cases."

The Medical Officer of Health of the Borough of Tamworth states that additional house accommodation is required, and he advocates the exercise of the powers the Corporation possess under the Housing of the Working Classes Acts. He also states that a municipal common lodging-house is urgently needed.

The Medical Officer of Health of Eccleshall Rural District writes :—" There is much room for improvement in the dwelling-houses of the labouring classes throughout the district ; they are generally too small and badly ventilated."

The Medical Officer of Health of Gnosall Rural District writes :—" For a district comprising about 1,000 inhabited houses, this is a somewhat meagre account of work done ; and, from personal observations made in various parts of the district, I consider that if anything like a systematic inspection of dwelling-houses were made from time to time, that a great improvement might be made in their sanitary condition."

The Medical Officer of Health of Walsall Rural District writes :—" The nuisance of overcrowding still continues to

be a common one, for, although there are now plenty of empty dwelling-houses owing to the continuance of trade depression, two families occupy in many cases one house."

Excrement and Refuse Disposal.

I have called attention in my preliminary remarks to the satisfactory advance which has taken place in the system of dealing with the excrement and refuse of districts. This subject has received considerable attention in my previous reports, but as it is one of such supreme importance from a health point of view, I propose to notice, very fully, the paragraphs in the reports under review which deal with it.

In Amblecote it is said that water-closets are gradually being substituted for privies. During the past five years, 105 such conversions have been effected, the number of houses in the district being 656. In the case of all new houses water-closets are required.

The Medical Officer of Health of Bilston writes :—" During the year, 212 houses have been cleansed, 88 repaired and made rain-proof, 24 provided with spouting, and five cases of over-crowding abated. Further, 94 ashpits were roofed over, and 35 below the level of the ground were filled up to three inches above it and paved ; 15 defective yards were paved, 68 privies repaired and cemented, and three cesspools abolished.

" The number of plans approved for new buildings was 88, of which 74 were dwelling-houses, 10 of the warehouse class, three stables, and one the South Staffordshire Joint Small-pox Hospital.

" The supervision of dwellings during construction has been carefully done, and it is now the Surveyor's practice to subject all drains in connection with new buildings to the water test before a certificate is granted."

In Brierley Hill, where the scavenging is done by contract, the Medical Officer of Health states that although improved, it is a long way short of what it should be.

In the Borough of Burslem it is stated that 72 new houses have been erected, 66 with flush water-closets and six

with earthenware cesspools as sanitary conveniences. Fifty houses erected were in the north ward and 22 in the east, five houses in the north and one in the east ward have been re-certified after closing for habitation again."

The following remarks appear in the report of the Sanitary Inspector of the Cannock Urban District, which accompanies that of the Medical Officer of Health :—" I have still to report that a considerable part of my time has been devoted to nuisances arising from foul privy-middens, especially relating to percolation from same, and their nearness to dwelling-houses. In 19 instances owners have cemented or rebuilt, whilst in 24 cases new privies and ashpits have been built."

As regards excrement and refuse disposal in Coseley, the Medical Officer of Health writes :—" This has been carried out as formerly by the Council's own employés under the control of a superintendent.

" The evils connected with the privy cesspit system should be counteracted as much as possible by a more frequent and systematic removal. At the same time, I know that the work is better done than it used to be some years ago, but there are still complaints of delay in removal, and also of failure on the part of the staff to effectually empty some of the cesspits.

" Certain detailed rules have recently been drawn up regarding the work of this department, which will, I hope, bring about better results.

" After removal, the night-soil is tipped on waste ground, and as the ashes are not mixed with it, is covered with straw or straw manure with a view of diminishing nuisance. Some of it is removed by farmers, but much remains, and as there are several of these ' tips ' throughout the district, the general result is highly unsatisfactory from a health point of view, and cannot be defended if it is found possible to provide a better method."

The Medical Officer of Health of Darlaston writes :—" As our sanitary well-being depends probably more upon an intelligent appreciation of the evils of the old conservancy system than anything else, I offer no excuse for urging in each annual

report the importance of substituting the water-carriage method, and of continuing the work with unabated vigour. Until the last few years the old system was perpetuated in most of the newly-erected buildings, but for some considerable time now, no house plans have received the sanction of the Council unless removal by water was guaranteed.

" The remaining examples of the original type must be dealt with before we can hope to record a permanent decline in our death-rate, for there can be no doub that the soil pollution incidental to the existence of so many privy-middens is the most powerful factor in determining our invariably high death-rate.

" During the year, 328 houses have been connected with the main sewer, and in 47 instances water-closets have replaced dilapidated privies.

" There has been very little real opposition to the work on the part of the property owners, who, whatever their attitude on the receipt of the notice, have invariably in the end shown ready compliance; at any rate, there have been no prosecutions during the year.

" The night-soil is promptly removed, and the work is far better done by your own officials than it was originally when in the hands of a contractor, but the most assiduous efforts in this department are neutralized by the soakage that must occur of the liquid residue left behind, and with which it is admittedly difficult to deal.

" Disposal by tipping is still adopted, and in view of the risk of erecting property on the sites of these operations in the future calls for the destruction by fire I have so frequently advocated.

" There has been no abatement in the practice of obstructing the receptacles of water-closets by extraneous articles of all kinds, nor has any greater care been exercised by many householders in their flushing after use.

" I would recommend that a copy of Sect. 21 of the Public Health Amendment Act (which we have adopted) be posted up on premises possessing water-closets, with a view to remedying this indifference.

" Thirty-two houses have been erected in the town during the year, all have been provided with water-closets and are connected with the main sewer."

Under the heading " Diarrhœa," the Medical Officer of Health of Fenton states that privies are rapidly being done away with and water-closets substituted, and that at the present time about two-thirds of the closets are water-closets of some form or other.

As regards Heath Town, the District Council are at present considering improved methods of excrement and refuse disposal.

The Medical Officer of Health of Leek Urban District writes :—" The disposal of refuse consists simply in its being emptied on the ' tip,' and, as in addition to ashes, this refuse contains a mixture of decomposing animal and vegetable matter, the ' tips ' necessarily become a source of danger to the community. This is a matter which calls for the attention of the Council in the near future ; ' tipping ' should be entirely abolished, and a ' destructor ' erected, in which these objectionable matters could be cremated.

" The want of a ' destructor ' is perhaps more keenly felt for the final disposal of ' trade refuse ' accumulating from butchers', fishmongers', provision dealers', greengrocers', fried fish and tripe shops ; this is not collected with house refuse and leads to many cases of nuisance. Of all kinds of refuse this is surely the worst, and requires destruction by fire."

The Medical Officer of Health of the Borough of Longton writes :—" I am pleased to record the fact that you have agreed to negotiate with the Waterworks Company concerning the charge for water, as you mean to insist on the more rapid conversion of the privy cesspools and hand-flush pans into proper water-closets. This is undoubtedly a step in the right direction, and will bear good fruit in a lessened infantile mortality."

The Medical Officer of Health of Quarry Bank writes :— " During 1904 the nightsoil has been removed by contract,

and on the whole satisfactorily, but I am pleased to learn that for economic reasons as well as for efficiency, you have again decided to undertake this work with the Council's teams and under direct control."

The Medical Officer of Health of Rowley Regis writes :— "The provision of water-closets is compulsory in all new houses when water-supply and drainage facilities are available. The old privies and privy-middens are being steadily replaced by water-closets whenever opportunity arises.

"The Sanitary Inspector reports that in the year ending December, 1903, there were 3,362 privies, 2,781 middens, 2,813 water-closets, and 1,186 dry ashpits in the district. He now reports that 'in the year ending December, 1904, there are 3,275 privies, 2,729 middens, 2,971 water-closets, 1,288 dry ashpits, and 29 ash bins.'

"These figures are very satisfactory, as they shew a fairly rapid substitution of the new system of sewage disposal over the old one. The ash bin system has had a trial, and has so far proved satisfactory. I trust it will shortly become general, as the present system of keeping dry ashes and other house refuse in large quantities for a lengthy period cannot be devoid of risk."

The Medical Officer of Health of Sedgley writes :—"The privy system is general throughout the district, the structures providing for the mixing of excreta with house refuse. The excreta mixed with fine ashes are carted to various farms in the district and used for agricultural purposes. The rough coarse refuse is tipped at various suitable places in the district. This work is carried out by the Council's workmen, hired teams being employed. The frequency of removal of excreta and house refuse varies from one to six months. The expense in this department has very slightly increased during the past year owing to development of building in the district. Mr. Wane, your Sanitary Inspector, has charge of this department, and now finds property owners willing to amend sanitary defects without the compulsion of legal proceedings. This result I anticipated in last year's report."

The Medical Officer of Health of Short Heath writes :—"The proportion of covered to uncovered ashpits still increases—a step in the right direction—and I again advise the Council to get every ashpit made water-tight, above and below, as quickly as possible ; for every ashpit which contains water is a nuisance, capable of abatement. Two houses, deemed unfit for habitation, were voluntarily closed after informal notice ; two others were demolished ; and three were rendered fit for occupation. The system of excrement removal is by contract, and the sanitary conveniences are chiefly privy cesspits."

In the Borough of Smethwick, it is stated, steady progress is being made in substituting water-closets for privies, and during the last nine years the conversions have averaged 400 per annum. The present position of the borough is as follows :—Houses on the water-closet system, 10,500 ; on the privy system, 2,500. Concerning the privy system, the Medical Officer of Health writes :—"The privies that remain, though none present the objectionable features that used to be so common years ago, yet are always requiring structural repairs, and property owners will find it a true economy to substitute water-closets for them, notwithstanding the fact that there is a portion of the population who through carelessness and ignorance misuse them. There have been fewer instances, I am glad to say, this year of wilful damage done. By degrees the people will become better educated in this respect.

"I bring this matter here prominently to your notice, as I am sure you will agree with me that it is extremely gratifying to be able to place on record the good work that has been done in respect of what is one of the most important functions of a sanitary authority."

The Medical Officer of Health of Tipton writes :—"In some of the new houses the ashpits and sanitary conveniences are much too near to the living rooms, and if not too near are placed in such a position that access to the houses is practically impossible without passing close to them. This condition of things should not be allowed, and if it is unavoidable should be met by a more frequent adoption of some kind of water-closet."

With reference to excrement and refuse removal, the Medical Officer of Health of Tunstall writes :—" Since this work has been done under the supervision of your Inspector, there has been a vast improvement in the cleanliness of the town. I have occasion, daily, to go through the back entries of the streets, and very rarely have had occasion to complain of accumulations. Attention should be given to the defective arrangements, in many instances, which exist in the new district of Goldenhill, for the depositing of ashes and house refuse, and it would be well to issue a general order to all the landlords of Goldenhill requesting them to see that proper receptacles for ashes are provided for all houses where such are not already supplied."

In discussing the incidence of enteric fever in the district, the Medical Officer of Health of the Borough of Wednesbury writes :—" It must be remembered that in a town like Wednesbury, where the privy-midden system exists, there is always the danger of a typhoid outbreak, if the suitable atmospheric conditions prevail. A large proportion of the premises are saturated with sewage, and it is held by many authorities that a marked fall in the subsoil moisture is very apt to be followed by typhoid fever. Such is probably the explanation in the instance we are now considering. The summer of 1904 was exceptionally dry—and it was succeeded by a dry, bright autumn. When we have had a cool, wet summer, the cases of enteric fever have been very few—a remark which also applies to summer diarrhœa."

The Medical Officer of Health of Wednesfield writes :—" A large number of privies are in a very filthy and insanitary condition, due in the first place to defective construction and proximity to dwelling-houses. Many of them are of large size and pollute the ground for some distance around. It is advisable, now that there exists a complete system of sewerage, that these privies should be done away with at the earliest possible moment, and in their place properly-constructed water or waste-water closets substituted.

" Some of these have been done away with during the year."

The Medical Officer of Health of Wolstanton United Urban District writes :—" During the past year, while the scavenging of Wolstanton and Chesterton has been fairly satisfactory, that of the other three sections has left much to be desired, and numerous complaints have been received. The hours for removal of night soil are from 6 p.m. to 9 a.m. Several complaints have been received of carts being out after 9 a.m. Lime is supplied to the contractors for regular use after emptying ashpits and privies."

The Medical Officer of Health of Walsall Rural District writes :—" I have again pleasure in reporting the fact that a number of earth closets have been replaced by water-closets at Heath End, Pelsall. The landlord, seeing the improvement in the property which had already been so treated, of his own accord, carried out this most desirable alteration.

" Nothing has yet been done by the County Education Committee at the closets at one of the schools at Rushall. I am convinced that the retention of the old midden closets is most undesirable at a school which is attended by so many children, and where the storing for any length of time of excremental matter is certainly a nuisance dangerous to health."

Sewerage and Sewage Disposal.

Apart from the information already in the Council's possession as to general activity on the part of most authorities in improving the various sewerage systems, it is evident, from the prominence given to the subject in most of the reports, that honest, although, perhaps, somewhat tardy efforts are being made to meet the views of the Council. The following summary of the remarks under this heading will serve to show that this is the case :—

In Audley it is stated that the sewage of 40 houses at Hougher Wall, which formerly polluted a stream, is now disposed of on land, and that during the coming year it is proposed to divert the sewage of 150 houses in Butt Lane on to land.

The Medical Officer of Health of Brierley Hill writes :— " With our increasing population and the large number of new houses which have been erected, and become occupied during the last three years, all of which are provided with water-closets, the continued delay in carrying out the sewerage scheme, which has now been under consideration for twelve years, is becoming a serious public danger.

" I regard the ' deadlock ' which has occurred in carrying out the scheme as most unfortunate, and it seems to me there ought to be no difficulty in arriving at a satisfactory settlement of the points which hinder the scheme.

" As for the proposed scheme itself, I am fully satisfied it will meet all the requirements of the district, and have no hesitation in advising you to carry it out. It is the only way in which the sewage can be treated within your own area, and as the difficulties of dealing with it in any other way appear to be insuperable, I want to impress upon you the urgent importance of getting on with the work."

The Medical Officer of Health of Smallthorne writes :— " Behind the village of Brindley Ford runs a brook and this serves the purpose of a sewer for the district, most of the house drains discharging into it with the result that the brook is now nothing but an offensive sewer. Untrapped drains, badly paved back yards and side passages, were common, and, taken altogether, the sanitary condition of the place was entirely bad. . . . . Many nuisances have during the last nine months been abated, and there is at present under consideration a scheme for the sewering and drainage of the district. In time I hope to see this portion of your district in a much more sanitary condition than it is at present."

The Medical Officer of Health of the Borough of Stoke-on-Trent writes :—" As a rule, in the larger houses, and where water-closets are situated in the houses, the drains are ventilated by a pipe continued upwards from the soil pipe, but only in houses specially re-drained within the last few years are the drains disconnected by a trap and inspecting chamber from the sewer. In smaller houses, with the water-closets outside, there is no disconnection of drains from sewers, and in those

that have the drains ventilated, it is done by means of the rain-water fall pipes.

" All houses, under the new bye-laws, have the drains disconnected and ventilated. The sanitary clauses of the new bye-laws are being efficiently enforced.

" A systematic effort should be made to disconnect the rain-water fall pipes from the drains and sewers, and provide proper ventilation."

The Medical Officer of Health of the Borough of Tamworth writes :—" In my last annual report I stated that the Borough Surveyor had prepared by your instructions a report dealing with a scheme of sewerage and sewage disposal for the borough. The report was further considered during the year, and at the end of June the Borough Surveyor was engaged as engineer to prepare a scheme on the lines of his report. Negotiations were entered into by the Town Clerk in respect of various sites considered suitable for sewage disposal works, but as none of the owners would consent to sell any portion of their lands, application was made to the Local Government Board to put into force the powers of the Lands Clauses Consolidation Acts for the compulsory acquisition of land at Dunstall, near Hopwas, in the parish of Wigginton. The necessary plans and particulars were prepared, and notices given to the owners and occupiers of the land. The Borough Surveyor in December submitted to your Sanitary and Streets Committee his plans of a scheme of sewerage and disposal of the sewage of the borough, which were examined by the Committee, and the consideration thereof adjourned.

" This very important question having progressed so far, it is to be earnestly hoped that your Council will lose no time in pressing forward to completion a satisfactory solution of this urgent problem, as the need of a proper system of sewerage and sewage disposal becomes daily more intensified, the growth of the borough is retarded, the erection of much-needed housing accommodation for the working classes delayed, and besides which the present condition of the sewers is a constant menace to the public health, particularly in Bolebridge Street and the lower parts of the town."

The Medical Officer of Health of Tipton writes :—" Most of the drainage is surface drainage. There is a scheme for sewering the whole of the district. A certain portion of the sewage is now treated at the Toll End Sewerage Works, the influx, after being chemically treated, is passed into open filtration tanks, the effluent flowing into the river Tame."

The Medical Officer of Health of Uttoxeter Urban District writes :—" The re-sewering of the town and the new outfall works are practically completed, and nearly ready for the connections of house drains, when all defective and badly-constructed house connections will have to be abolished and replaced by new and properly-constructed drains ; and when the town has an adequate water-supply, the work of privy conversion may be taken in hand, and the general sanitary condition of the town brought up-to-date."

The Medical Officer of Health of Wolstanton United Urban District writes :—" The Holditch Farm is not quite satisfactory owing to the incomplete manner in which the sewage is distributed on the land. This, and a scheme for more efficiently dealing with the Basford sewage, which is also unsatisfactory, are at present under the consideration of the Sanitary Committee."

It would appear from the report of the Medical Officer of Health of Cannock Rural District that considerable progress is being made in the sewerage and sewage disposal of populous localities throughout the district.

In Kingswinford Rural District the new scheme of sewerage and sewage disposal is said to be progressing satisfactorily.

In Lichfield Rural District new sewage disposal works have been constructed at Hazelslade, and a scheme of sewerage and sewage disposal for Chase Terrace has received the sanction of the Local Government Board.

In Newcastle Rural District the sewerage and sewage disposal scheme at Madeley is now completed, and the majority of the houses have been connected with the sewers. The

question of the disposal of the sewage of Betley is now under consideration, and the portion of Silverdale, in the parish of Keele, which previously gave rise to pollution, is now, by arrangement, connected with the sewers of the Wolstanton United Urban District.

The Medical Officer of Health of Stone Rural District writes with reference to sewage disposal at Trentham as follows :—" Though thi necessary work is being carried out at the sole expense of the Duke of Sutherland, yet your Authority should, I think, be consulted and have a voice in the matter, as the sewer is your property, and you are responsible to the County Council for the effluent being of sufficient purity. At the present time, though considerably clarified, it is far from reaching the standard fixed by the County Council."

In Tutbury Rural District, sewerage and sewage disposal schemes have been completed at Barton-under-Needwood and Tutbury which are said to be working satisfactorily. The Medical Officer of Health points out, however, that schemes are necessary for Branstone and Rolleston.

The Medical Officer of Health of Uttoxeter Rural District writes :—" The insanitary condition of the village of Rocester has been the cause of great anxiety for many years, and I am glad your Council have decided to have the sewerage dealt with efficiently. The scheme suggested by Messrs. Willcox & Raikes has been approved of, and will shortly be presented to the Local Government Board for an inquiry to be held.

" The sewerage scheme at Denstone village is practically completed.

" Kingstone, Newborough, and Draycott villages are still causing pollution of streams by emptying their sewerage either directly or indirectly into them. The complaints made by the County Council and by myself have been considered, and although I have advised you as to the best way of dealing with these insanitary conditions no action has been taken by you."

Water-supply.

The following is a summary of the remarks with reference to water-supply in those districts where the subject receives most notice in the reports. The Sanitary Committee of the County Council have frequently had occasion to spur on Authorities in districts where good public supplies are available, but where many old local wells, liable to pollution, are in use.

In Brownhills, it is said that the water-supply has been greatly improved lately, many local wells having been closed.

The Medical Officer of Health of Coseley writes :—" Very good progress has been made in the substitution of the public water-supply in the place of wells, the majority of which in this district are so situated as to become polluted by sewage matter. Two hundred and eighty-four houses, including new houses, have been connected to the public supply. There are still many houses in the district dependent on wells, and this matter should be pressed forward, especially seeing that the above work has been accompanied by a decrease of nearly 50 per cent. in enteric fever cases."

In view of the importance of the matter, the farm in question being a dairy farm, it is disappointing to find that the Medical Officer of Health of Longton again has to make the following appeal to his Authority :—" I must again ask you to urge your landlord the Duke of Sutherland, to provide a fresh water-supply to the Sewage Farm at Blurton."

The Medical Officer of Health of Cheadle Rural District writes :—" The proprietor of two new cottages, at Cheddleton Heath, was summoned for permitting the cottages to be occupied without first having obtained a certificate of a sufficient water-supply from the Sanitary Authority, and a conviction was obtained. In this case the water was obtained from a deep well, situated in a wood, in a very inaccessible situation ; and further, there were no proper means of getting the water out of the well. The Sanitary Authority considered that the well, moreover, was not within a reasonable distance of the cottages within the meaning of the Public Health

(Water) Act of 1872, and notice was served to provide a proper supply; after which, a new supply was found much nearer the houses, and which has been utilized. Storage tanks were also fitted at the houses.

"Referring to the scheme for supplying Ipstones with water, the Local Government Board Inspector visited Ipstones and Foxt in March, and took evidence concerning the details of the scheme."

The Medical Officer of Health of Mayfield Rural District writes with reference to Upper Mayfield as follows:—"This portion of Mayfield is still in great need of water. In my last report I mentioned your Surveyor was making trial holes, and he had found water near to the Leek main road. The yield, however, has been found to be insufficient, and in the dry months the supply entirely failed. As an alternative scheme it was then proposed to pump water by means of a Blake's ram from a spring which enters the river Dove near Birdsgrove. An engineer from Accrington came over to advise as to the cost, &c., of using the ram. Though this scheme cannot be carried out without going to considerable expense, it appears to be the best way out of the difficulty. Since this scheme was proposed, the principal property owners affected have taken the matter into their own hands, but nothing has yet been done."

As regards Waterhouses, the following appears in the same report:—"Now that circumstances which have kept the question of a suitable supply of water to this village in abeyance have been removed, I am glad to find that the matter is now having your consideration. A joint scheme with the Cheadle district would undoubtedly be best, and ought to be fairly considered by the two Councils and carried out jointly."

The Medical Officer of Health of Tamworth Rural District writes:—"At a meeting of the Council, held on June 25th, the Surveyor presented a scheme for supplying the populous parts of the parishes of Edingale and Croxall with water, at an estimated cost of £1,000, and was subsequently directed to supply the Local Government Board with plans, sections, estimates, and other details of the scheme. It was explained

that only the loan of a sum of £300 would, in the first instance, be sanctioned for the purpose of sinking the well, to prove and test the water-supply, and other contingencies. The Surveyor was directed to ascertain the terms on which sinking would be allowed, and, if satisfactory, for the purchase of the land subsequently.

" At a meeting of the Council, held on September 17th, a letter of objection to the scheme, from one of the principal owners, and one from 57 parishioners and ratepayers, were received. The Clerk was directed to inform the objectors that they would have full opportunity for opposing the scheme at the inquiry. The Surveyor was directed to supply the further information asked for by the Local Government Board, and finally it was resolved to ask the Local Government Board to hold an Inquiry previous to any money being spent on the scheme."

Slaughter Houses and Meat Inspection.

Most of the reports refer to the inspection of slaughter-houses, and as a rule they are said to be in a fairly satisfactory state. I am afraid, however, that the standard is not a very high one, and that the favourable comments have reference more to the condition as to cleanliness than to structural fitness in many cases.

Dairies, Cowsheds, and Milkshops.

The work under the Dairies, Cowsheds, and Milkshops Order receives attention in most of the reports.

The Medical Officer of Health of Bilston writes :—" In most cowsheds very little attention is paid to light and ventilation and to cleanliness, and there is rarely adequate cubic space."

The Medical Officer of Health of Brierley Hill hopes that the closure of two badly-kept cowsheds will prove an example in other cases.

The Medical Officer of Health of Darlas on writes :— " Although on the whole the condition of the cowsheds in the district is satisfactory, in several instances ventilation and limewashing require more attention.

" I am able to report a marked improvement at Herbert's Park as regards the class of the animals, which are healthy and in good condition, on the other hand, cleanliness leaves much to be desired, as there is an insufficient supply of water, and its quality is seriously open to question. Under the present circumstances it has to be brought from a distance, and it is obvious that the washing of milk cans is an operation which at present is attended by considerable danger. A continuous supply of pure water should be provided at once."

The Medical Officer of Health of the City of Lichfield states that the Corporation have fixed 800 cubic feet as the space to be required in cowsheds.

The Medical Officer of Health of the Borough of Longton writes :—" I am afraid I cannot report favourably, generally speaking, on the cowsheds. Frequently I have found them dirty, overcrowded, ill-ventilated, and some of them badly constructed, and also the water-supply in many cases not above suspicion. Where wells are the source of supply, I am having an analysis of the water taken. Next year I hope to report more favourably on this question."

Canal Boats.

In a few instances only does the question of canal-boat inspection receive notice in the reports under review, and in none of these are there any remarks which call for special attention.

Lodging-Houses.

The remarks under this heading in the reports do not, as a rule, call for special notice.

The Medical Officer of Health of the Borough of Wednesbury writes :—" Towards the close of the year it was found necessary to give notice for the closing of two common lodging-houses, viz., 33 and 34, High Bullen, owing to the filthy and dilapidated condition of the premises, and the filthy condition of the bedding. During the three weeks they were closed, the owner of the premises had the place cleaned and repaired from top to bottom, and fitted up with 24 new bedsteads,

bedding, cupboards, etc. The building was registered in the owner's name, re-opened, and may now be considered as in a satisfactory condition. In several instances water-closets have been substituted for privies ; and tins, which are collected weekly, substituted for ashpits."

Bakehouses.

Most of the reports mention the fact that the bakehouses are regularly inspected, but few contain any observations under this heading which call for special notice.

As regards underground bakehouses, apparently there are very few in any of the districts of the Administrative County.

Factories and Workshops.

Hitherto, this question has not received much notice in the annual reports of Medical Officers of Health, but since the new Factory Act came into operation, in January, 1902, considerable space has been devoted to the subject, the result of numerous inspections which have been made, in most districts, under the Act. As time goes on, it will no doubt be found that the work will grow, and it behoves Authorities to consider whether the existing staffs in some of the larger urban districts are adequate under the new order of things. It is impossible to summarize at all fully the work which has been done in this department during the year.

The following interesting comments are quoted from the report of the Medical Officer of Health of Brierley Hill :— " In my visits as Certifying Surgeon to the Factories in this and neighbouring districts, I have been very much struck with the remarkable difference there is between the rural and the urban boys at the age of 13. The rural bred boy's development is so much superior to that of the urban, whose physical inefficiency is often most marked. If I were to take the former as a standard of physical development and healthy appearance required before these boys could commence work, I should have to decline a large percentage of the boys who are town bred."

The Medical Officer of Health of Rowley Regis writes :— " There have been 1,370 inspections made of factories, workshops, and work-places by the Council's Inspector, and 10 written notices have been served during the year. No prosecutions have been necessary. Two thousand one hundred and thirty-four workshops, work-places, and bakehouses are now on the register, including 154 domestic workshops."

Mortuaries.

The question of providing mortuaries does not appear to receive that attention in the reports which its importance deserves, considering the inadequate provision which, so far, has been made throughout the County. One does not like to see in accounts of inquests in the daily press severe comments by coroners upon the absence of such provision.

The Medical Officer of Health of Heath Town points out the need for a mortuary for that district.

In the Borough of Stoke-on-Trent, it appears that plans are now being prepared, and the Medical Officer of Health hopes that next year he will be in a position to report that a mortuary is actually available.

The Medical Officer of Health of Uttoxeter Rural District writes :—" Your district is still without a mortuary ; the need for such a building on several occasions has been brought to your notice. I trust that you will, during the ensuing year, find a suitable place where a medical man can perform a *post-mortem* examination under proper sanitary condition."

Bye-Laws.

In a good many districts in the Administrative County either no Bye-laws have been adopted or those in force are out of date. It is most desirable that Bye-laws in accordance with modern ideas should be in force in all districts.

The Medical Officer of Health of Coseley writes :—" In addition to Building Bye-laws recently framed, new Bye-laws dealing with nuisances arising from filth, rubbish, the keeping of animals, the removal of house refuse, the cleansing of sanitary conveniences, &c., are urgently required."

The Medical Officer of Health of Darlaston writes :—" I am glad to be able to say that the much-needed Bye-laws are now in the printer's hands. The draft will be considered by the Council before being submitted to the Local Government Board for perusal and sanction. It is to be hoped that they will not become a dead letter but by their proper enforcement tend greatly to the good government of the community in sanitary matters."

The Medical Officer of Health of Sedgley writes :—" I beg to repeat my sentence from previous reports : ' It is to be hoped that Bye-laws for all purposes will ere long be completed. Had we a Bye-law as to the paving of back yards it would be easier to remedy such defects than at present, when we have to prove the existence of a nuisance. The soil of back yards laden with impurities is a frequent cause of illness, especially in children."

The Medical Officer of Health of the Borough of Tamworth states that revised Bye-laws have been under consideration, a draft having been submitted to the Local Government Board which has been returned with suggested amendments. The Authority are urged to proceed with the matter.

The Tamworth Rural District Council are informed by their Medical Officer of Health that revised Bye-laws are necessary for that district.

GEO. REID,

Stafford, County Medical Officer of Health.
September, 1905.

NOTE.—In the following tables the individual zymotic mortality is given in order to indicate readily the class of disease that has mostly contributed to the gross rate. Apart from this, no accurate deductions can be drawn from such figures for one year only.

URBAN.

Table showing Population, Number of Persons per Acre, Birth and Death-rates, as well as the Death-rates at all ages and among Children under 1 year, and the Death-rates from Zymotic Diseases, Phthisis, Diseases of the Respiratory Organs, &c.

DISTRICT.	Population at all ages.		Number of persons per acre.	Birth-rate per 1000 of population.	General mortality per 1000 of population.	Mortality in children under one year per 1000 registered births.	General zymotic mortality per 1000 of population.	Individual zymotic mortality per 1000 of population.								Phthisis.	Cancer, Malignant Disease.	Bronchitis.	Pneumonia.	Pleurisy.	Other Diseases of Respiratory Organs.	Alcoholism Cirrhosis of Liver.	Premature Birth.
												Fevers.										
	Census, 1901.	Estimated to middle of 1904.						Smallpox.	Measles.	Scarlet Fever.	Whooping Cough.	Diphtheria and Membranous Croup.	Typhus.	Enteric.	Other Continued.	Diarrhœa.							
Amblecote ..	3128	3282	4·9	25·2	16·7	132	1·82	..	1·52	..	..	..	..	..	..	0·30	0·91	2·13	1·82	1·52	..	..	..	0·30
Audley	13683	13800	1·7	37·6	14·5	125	1·08	..	0·50	0·07	0·21	0·07	..	..	..	0·21	0·07	0·36	2·53	0·50	..	0·14	..	0·72
Biddulph	6247	6525	1·2	32·9	15·1	149	0·76	..	0 15	..	..	0·61	.	..	..	..	1·37	0·30	0·91	3·06	..	..	..	0·30
Bilston	24034	24250	12·9	37·0	18·9	220	3·09	..	0·57	0·45	0·41	0·04	..	..	..	1·60	0·74	0·41	3·21	0·90	..	..	0·24	0·45
Brierley Hill..	12042	12640	12·3	30·3	17·1	185	1·89	..	0·07	0·07	0·63	0·16	..	0·24	..	0·71	0·94	0·71	1·66	1·81	..	..	0·47	1·26
Brownhills ..	15252	16754	1·9	37·3	14·7	145	1·49	..	0·59	0·12	0·29	0·05	..	..	.	0·41	0·71	0·29	1·49	1·85	..	..	0·05	0·53
Burslem.....	38766	40950	21·9	36·1	21·0	195	4·34	..	0·51	0·53	0·61	0·34	..	0·31	..	2·02	1·26	0·68	2·24	0·73	0·02	1·05	0·17	0·70
Cannock.....	23974	24000	2·9	38·2	16·3	138	1·16	0·17	..	0·04	0·50	0·17	..	..	..	0·29	0·83	0·77	1·16	1·50	0·12	..	0·33	0·79
Coseley	22219	22250	5·6	33·8	16·8	167	2·02	..	0·31	0·31	0·54	0·04	..	0·22	..	0·58	0·62	0·67	2·38	1·12	0·04	..	0·09	0·71
Darlaston	15395	15600	19·0	42·6	22·5	196	4·93	..	0·51	0·70	1·47	0·25	..	0·19	..	1·79	0·89	0·51	2·05	1·34	..	..	0·25	0·70
Fenton	22742	26000	14·8	35·5	16·2	185	3·42	..	..	0·27	0·07	0·27	..	0·11	..	2·69	0·57	0·42	1·00	1·23	..	..	0·19	0·42
Handsworth ..	52921	61500	16·7	23·3	12·2	133	1·31	..	0·04	0·08	0·35	0·22	..	0·09	..	0·50	0·35	0·56	0·99	0·82	0·04	..	0·19	0·55

URBAN.

Deaths occurring during the year 1904, classified according to Diseases, Ages, and Localities, together with Births registered during the year.

District.	Registered Births.	Deaths from all causes.	Deaths from all causes at subjoined ages.						Deaths from subjoined causes.																										
			Under 1 year.	1 and under 5.	5 and under 15.	15 and under 25.	25 and under 65.	65 and upwards.	Smallpox.	Measles.	Scarlet Fever.	Whooping Cough.	Diphtheria and Membranous Croup.	Croup.	Fevers. Typhus.	Fevers. Enteric.	Fevers. Other Continued.	Epidemic Influenza.	Diarrhœa.	Enteritis.	Puerperal Fever.	Erysipelas.	Other Septic Diseases.	Phthisis.	Other Tubercular Diseases.	Cancer. Malignant Disease.	Bronchitis.	Pneumonia.	Pleurisy.	Other Diseases of Respiratory Organs	Alcoholism. Cirrhosis of Liver.	Venereal Diseases	Premature Birth.	Diseases & Accidents of Parturition.	Heart Diseases.	Accidents.	Suicides.	All other Causes.
Amblecote ..	83	55	11	11	3	..	15	15	..	5	..	..	..	..	..	..	..	..	1	..	.	..	2	3	..	7	6	5	..	..	.	.	1	..	2	1	1	21
Audley	520	200	65	27	11	6	56	35	..	7	1	3	1	1	..	..	..	..	3	2	..	1	..	1	8	5	35	7	..	2	..	..	10	4	11	11	..	87
Biddulph	215	99	32	8	4	4	24	27	..	1	..	..	4	..	..	..	..	..	..	..	..	..	..	9	2	2	6	20	..	..	..	..	2	..	7	2	..	44
Bilston	899	460	198	64	7	8	109	74	..	14	11	10	1	..	..	..	..	7	39	20	..	1	1	18	7	10	78	22	..	..	6	1	11	4	29	20	2	148
Brierley Hill..	383	217	71	20	9	8	62	47	..	1	1	8	2	3	..	3	..	..	9	5	1	..	3	12	7	9	21	23	.	..	6	..	16	1	12	10	1	63
Brownhills ..	626	247	91	38	8	5	59	46	..	10	2	5	1	..	..	..	..	1	7	3	..	5	..	12	..	5	25	31	.	..	1	..	9	4	18	12	..	96
Burslem	1480	861	289	161	50	28	223	110	..	21	22	25	14	2	..	13	..	3	49	34	6	..	3	52	35	28	92	30	1	43	7	1	29	1	57	20	2	271
Cannock	918	393	126	33	12	20	123	79	4	..	1	12	4	..	..	..	..	6	7	12	3	3	1	20	10	18	28	36	3	10	8	1	19	2	23	13	2	147
Coseley	754	374	126	63	21	14	91	59	..	7	7	12	1	..	..	5	..	6	13	16	..	..	..	14	13	15	53	25	1	..	2	..	16	3	19	16	4	126
Darlaston	665	351	131	57	17	9	77	60	..	8	11	23	4	2	..	3	..	8	28	3	1	1	2	14	17	8	32	21	..	..	4	..	11	..	33	6	1	110
Fenton	925	423	172	41	16	7	137	50	..	..	7	2	7	..	..	3	..	..	70	..	..	..	2	15	6	11	26	32	..	6	5	..	11	5	28	15	3	169
Handsworth ..	1436	754	192	64	41	35	224	198	..	3	5	22	14	..	..	6	..	10	31	15	1	..	2	22	33	35	61	51	3	..	12	..	34	3	83	18	1	289

URBAN—continued.

District.	Population at all ages.		Number of persons per acre.	Birth-rate per 1000 of population.	General mortality per 1000 of population.	Mortality in children under one year per 1000 registered births.	General zymotic mortality per 1000 of population.	Individual zymotic mortality per 1000 of population																
													Fevers.										
	Census, 1901.	Estimated to middle of 1904.						Smallpox.	Measles.	Scarlet Fever.	Whooping Cough.	Diphtheria and Membranous Croup.	Typhus.	Enteric.	Other Continued.	Diarrhœa.	Phthisis.	Cancer, Malignant Disease.	Bronchitis.	Pneumonia.	Pleurisy.	Other Diseases of Respiratory Organs.	Alcoholism. Cirrhosis of Liver.	Premature Birth.
Heath Town..	9441	10437	14·1	35·7	16·4	139	3·54	..	0·86	0·28	0·67	..	..	..	..	1·72	0·19	0·86	0·67	1·43	0·09	..	0·09	1·05
Kidsgrove....	8412	8527	2·9	37·6	18·9	149	4·10	..	1·17	..	1·40	0·93	..	0·11	..	0·46	0·46	0·58	1·05	0·93	..	1·17	0·23	0·70
Leek	15484	15921	10·9	26·5	18·1	170	1·63	0·19	0·43	..	0·37	0·06	..	0·12	..	0·43	2·19	0·50	1·13	1·19	..	..	0·37	0·56
Lichfield.....	7902	7902	2·3	27·4	19·2	184	0·50	..	..	..	0·50	..	..	..	..	..	1·51	1·01	1·13	1·51	0·12	..	0·25	1·01
Longton.....	35815	35293	17·6	38·7	21·5	194	3·00	..	0·08	0·02	0·45	0·31	..	0·14	..	1·98	1·53	0·79	2·30	0·79	0·02	1·36	0·25	1·02
Newcastle....	19914	20360	32·8	32·5	15·3	113	0·83	..	0·09	0·24	0·04	0·04	..	0·04	..	0·34	0·49	0·83	1·81	1·03	..	..	0·29	1·13
Perry Barr....	2348	2390	0·5	28·8	12·5	174	2·51	..	..	0·41	1·25	..	..	..	..	0·83	0·41	..	0·83	0·41	..	0·83	..	0·41
Quarry Bank..	6912	6974	7·0	40·0	18·4	154	2·43	..	0·57	0·14	0·57	..	..	..	..	1·14	0·71	0·71	2·00	2·15	..	..	0·28	0·36
Rowley Regis.	34670	36400	9·9	36·1	17·3	164	2·60	..	0·74	0·32	0·71	0·08	..	0·05	..	0·68	0·57	0·71	3·37	1·09	0·02	..	0·13	0·68
Rugeley.....	4447	4450	7·4	25·3	15·5	184	0·44	..	..	..	..	0·44	..	..	..	..	1·34	0·67	0·89	1·34	..	..	0·44	0·67
Sedgley.....	15951	16050	4·2	34·1	15·5	127	1·55	..	..	0·12	0·62	0·37	..	0·12	..	0·31	0·56	0·49	1·49	1·18	..	0·18	0·24	0·68
Short Heath..	3531	3749	3·5	37·6	11·7	99	0·26	..	..	..	..	0·26	..	..	..	..	0·53	..	1·60	1·60	..	0·26	..	0·79
Smallthorne..	11970	12480	4·3	45·6	21·6	184	3·36	..	1·76	0·40	0·40	0·32	..	0·08	..	0·40	1·04	0·80	4·32	1·04	..	0·08	..	1·12
Smethwick....	54539	61000	31·6	32·0	13·2	145	1·24	..	0·01	0·08	0·18	0·08	..	0·11	..	0·76	0·96	0·80	1·21	1·45	..	0·06	0·16	0·76
Stafford	†19495	*21039	20·8	28·7	16·9	155	1·47	..	0·38	0·04	0·04	0·09	..	0·14	..	0·76	1·18	0·42	1·90	0·71	..	0·09	0·23	0·28

* The total estimated population is 22572, but a deduction of 1533 has been made, that being the estimated umber of persons in Public Institutions within the borough, but not belonging to it.

† Excluding Public Institutions.

URBAN—continued.

District.	Registered Births.	Deaths from all causes.	Deaths from all causes at subjoined ages.						Deaths from subjoined causes.																										
			Under 1 year.	1 and under 5.	5 and under 15.	15 and under 25.	25 and under 65.	65 and upwards.	Smallpox.	Measles.	Scarlet Fever.	Whooping Cough.	Diphtheria and Membranous Croup.	Croup.	Fevers. Typhus.	Fevers. Enteric.	Fevers. Other Continued.	Epidemic Influenza.	Diarrhœa.	Enteritis.	Puerperal Fever.	Erysipelas.	Other Septic Diseases.	Phthisis.	Other Tubercular Diseases.	Cancer, Malignant Disease.	Bronchitis.	Pneumonia.	Pleurisy.	Other Diseases of Respirat'y Organs	Alcoholism. Cirrhosis of Liver.	Venereal Diseases	Premature Birth.	Diseases & Accidents of Parturition.	Heart Diseases.	Accidents.	Suicides.	All other Causes.
Heath Town..	373	172	52	33	6	10	37	34	..	9	3	7	..	..	..	..	..	1	18	3	1	1	2	2	9	9	7	15	1	1	1	..	11	..	11	2	1	57
Kidsgrove....	321	162	48	37	13	8	33	23	..	10	..	12	8	..	..	1	..	1	4	..	1	2	..	4	5	5	9	8	..	10	2	2	6	3	14	1	1	53
Leek	422	289	72	27	4	14	97	75	3	7	..	6	1	..	..	2	..	1	7	10	..	..	..	35	1	8	18	19	..	5	6	1	9	3	33	2	..	112
Lichfield.. ...	217	152	40	7	2	4	49	50	..	..	..	4	..	..	..	..	..	..	..	7	..	..	1	12	1	8	9	12	1	..	2	..	8	1	15	1	1	69
Longton	1367	759	266	111	23	30	209	120	..	3	1	16	11	1	..	5	..	..	70	23	..	..	1	54	31	28	81	28	1	48	9	6	36	3	69	20	2	212
Newcastle....	663	311	75	26	12	9	100	89	..	2	5	1	1	..	..	1	..	2	7	15	..	..	..	10	6	17	37	21	..	..	6	..	23	2	31	5	4	115
Perry Barr....	69	30	12	2	3	..	11	2	..	..	1	3	..	..	..	..	..	..	2	3	..	..	..	1	1	..	2	1	..	2	..	..	1	1	2	2	2	6
Quarry Bank..	279	129	43	19	8	5	30	24	..	4	1	4	..	..	..	..	..	..	8	3	2	..	..	5	2	5	14	15	..	..	2	..	6	1	7	3	1	46
Rowley Regis.	1317	631	216	123	22	23	133	114	..	27	12	26	3	..	..	2	..	1	25	6	3	1	1	21	8	26	123	40	1	1	5	..	25	4	37	14	..	219
Rugeley.....	113	69	21	2	9	1	21	15	..	..	..	..	2	..	..	..	..	2	..	..	2	..	..	6	5	3	4	6	..	..	2	..	3	..	10	1	..	23
Sedgley	548	250	70	38	12	3	54	73	..	..	2	10	6	..	..	2	..	2	5	6	1	2	..	9	12	8	24	19	..	3	4	1	11	1	18	4	..	100
Short Heath..	141	44	14	6	..	1	13	10	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	2	..	..	6	6	..	1	..	..	3	1	6	..	..	18
Smallthorne..	570	270	105	54	13	9	54	35	..	22	5	5	4	1	..	1	..	..	5	5	3	..	..	13	16	10	54	13	..	1	..	..	14	2	18	3	..	75
Smethwick....	1956	810	285	78	33	35	241	138	..	1	5	11	5	..	..	7	..	5	47	27	1	3	3	59	24	49	74	89	..	4	10	..	47	2	56	33	4	244
Stafford	605	357	94	35	16	16	110	86	..	8	1	1	2	..	..	3	..	..	16	1	1	1	3	25	23	9	40	15	..	2	5	..	6	..	30	9	3	153

URBAN—continued.

District.	Population at all ages. Census, 1901.	Population at all ages. Estimated to middle of 1904.	Number of persons per acre.	Birth-rate per 1000 of population.	General mortality per 1000 of population.	Mortality in children under one year per 1000 registered births.	General zymotic mortality per 1000 of population.	Individual zymotic mortality per 1000 of population. Smallpox.	Measles.	Scarlet Fever.	Whooping Cough.	Diphtheria and Membranous Croup.	Fevers. Typhus.	Fevers. Enteric.	Fevers. Other Continued.	Diarrhœa.	Phthisis.	Cancer, Malignant Disease.	Bronchitis.	Pneumonia.	Pleurisy.	Other Diseases of Respiratory Organs.	Alcoholism. Cirrhosis of Liver.	Premature Birth.
Stoke-on-Trent	30458	32898	17·9	32·8	15·9	148	2·40	..	..	0·27	0·03	0·76	..	0·15	..	1·18	0·88	0·69	1·55	0·79	0·06	0·03	0·33	1·58
Stone	5680	5720	5·3	29·1	19·9	131	1·74	..	1·22	..	..	0·17	..	..	..	0·34	1·74	1·04	1·74	0·52	0·17	0·17	0·34	0·69
Tamworth....	7271	7631	26·7	30·5	17·0	171	1·70	..	..	0·39	..	..	..	0·26	..	1·04	0·78	0·26	1·44	0·65	..	0·52	0·13	1·17
Tettenhall....	5337	5395	4·4	20·3	12·0	109	0·55	..	..	0·18	0·37	..	..	..	..	..	0·55	0·55	1·11	0·37	..	..	..	0·55
Tipton	30543	31250	14·3	36·6	17·8	162	2·46	..	0·22	..	0·96	0·28	..	0·32	..	0·67	0·83	0·41	2·11	1·08	0·03	0·25	0·06	0·64
Tunstall.....	24250	26420	15·0	34·8	20·4	245	2·76	..	0·56	0·18	0·53	0·11	..	0·11	..	1·24	0·79	0·64	1·89	1·81	..	0·07	0·15	0·90
Uttoxeter	5133	5300	5·1	33·3	17·9	192	3·96	..	0·37	0·18	0·37	1·51	..	..	..	1·51	0·56	0·37	0·94	0·18	..	..	0·37	0·75
Wednesbury..	26554	26700	11·6	34·9	18·8	173	5·39	..	2·13	0·18	0·26	0·86	..	0·29	..	1·64	1·01	0·59	1·46	1·16	..	..	0·11	0·74
Wednesfield ..	4883	5470	2·1	33·2	17·3	154	0·91	..	..	0·18	0·54	..	..	..	..	0·18	0·54	0·36	0·73	1·64	..	..	..	..
Willenhall....	18515	19001	15·2	33·8	20·1	172	3·68	..	0·89	0·05	0·73	0·15	..	0·05	..	1·78	1·05	0·68	2·99	0·89	..	0·21	0·26	0·68
Wolstanton United	22645	24975	4·5	34·4	16·2	126	3·04	..	1·64	0·24	0·20	0·24	..	..	..	0·72	0·80	0·48	1·68	1·64	..	0·16	0·16	0·54
Totals and Averages.	682503	721283	7·3	33·7	17·2	165	2·41	0·01	0·44	0·18	0·42	0·24	..	0·12	..	0·98	0·85	0·62	1·82	1·14	0·02	0·22	0·19	0·70
76 large towns in England, average population.	..	200938	*	29·1	17·2	160	2·49	0·01	0·47	0·12	0·40	0·19	0·10			1·20	*	*	*	*	*	*	*	*

* Not given in Registrar General's Returns.

URBAN—continued.

District.	Registered Births.	Deaths from all causes.	Deaths from all causes at subjoined ages.						Deaths from subjoined causes.																												
			Under 1 year.	1 and under 5.	5 and under 15.	15 and under 25.	25 and under 65.	65 and upwards.	Smallpox.	Measles.	Scarlet Fever.	Whooping Cough.	Diphtheria and Membranous Croup.	Croup.	Fevers. Typhus.	Fevers. Enteric.	Fevers. Other Continued.	Epidemic Influenza.	Diarrhœa.	Enteritis.	Puerperal Fever.	Erysipelas.	Other Septic Diseases.	Phthisis.	Other Tubercular Diseases.	Cancer. Malignant Disease.	Bronchitis.	Pneumonia.	Pleurisy.	Other Diseases of Respirat'y Organs	Alcoholism. Cirrhosis of Liver.	Venereal Diseases	Premature Birth.	Diseases & Accidents of Parturition.	Heart Diseases.	Accidents.	Suicides.	All other Causes.
Stoke-on-Trent	1080	524	160	72	22	20	166	84	..	..	9	1	25	..	..	5	..	2	39	12	2	1	3	29	12	23	51	26	2	1	11	1	16	2	52	8	3	188
Stone	167	114	22	13	3	2	38	36	..	7	..	..	1	..	..	..	..	2	2	5	..	..	..	10	3	6	10	3	1	1	2	1	4	..	12	2	..	42
Tamworth	233	130	40	7	6	6	39	32	..	..	3	..	..	..	..	2	..	..	8	2	..	..	..	6	5	2	11	5	..	4	1	1	9	1	17	3	..	50
Tettenhall	110	65	12	3	3	1	21	25	..	..	1	2	..	1	..	..	..	1	..	1	..	..	1	3	2	3	6	2	..	..	..	..	3	1	12	1	..	25
Tipton	1144	558	186	81	27	17	140	107	..	7	..	30	9	1	..	10	..	5	21	31	..	1	3	26	16	13	76	34	1	8	2	1	20	5	47	8	1	182
Tunstall	922	539	226	101	20	12	126	54	..	15	5	14	3	3	..	3	..	..	33	4	..	2	..	21	8	17	50	48	..	2	4	2	24	12	37	13	1	218
Uttoxeter	177	95	34	16	7	..	18	20	..	2	1	2	8	4	..	..	..	..	8	2	..	1	1	3	1	2	5	1	..	..	2	..	4	..	6	1	..	41
Wednesbury	933	503	162	120	20	11	116	74	..	57	5	7	23	..	..	8	..	7	44	13	..	..	..	27	15	16	39	31	..	..	3	1	20	1	24	10	4	148
Wednesfield	182	95	34	4	4	6	28	19	..	..	1	3	..	..	..	..	..	..	1	4	..	..	..	3	1	2	4	9	..	..	..	..	..	1	13	..	..	53
Willenhall	643	383	111	75	9	15	103	70	..	17	1	14	3	3	..	1	..	1	34	3	1	2	..	20	9	13	57	17	..	4	5	1	13	..	19	1	2	142
Wolstanton United	861	407	109	84	26	11	111	66	..	41	6	5	6	..	..	..	..	..	18	3	..	1	5	20	12	12	42	41	..	4	4	2	14	3	27	10	1	130
Totals	24317	12282	4013	1761	522	413	3298	2275	7	316	136	306	175	22	..	86	..	74	679	299	30	29	40	618	366	447	1316	827	16	163	139	23	505	77	945	301	48	4292

RURAL.

District.	Population at all ages.		Mean area per person per acre.	Birth-rate per 1000 of population.	General mortality per 1000 of population.	Mortality in children under one year per 1000 registered births.	General zymotic mortality per 1000 of population.	Individual zymotic mortality per 1000 of population.								Phthisis.	Cancer, Malignant Disease.	Bronchitis.	Pneumonia.	Pleurisy.	Other Diseases of Respiratory Organs.	Alcoholism. Cirrhosis of Liver.	Premature Birth.
												Fevers.										
	Census, 1901.	Estimated to middle of 1904.						Smallpox.	Measles.	Scarlet Fever.	Whooping Cough.	Diphtheria and Membranous Croup.	Typhus.	Enteric.	Other Continued.	Diarrhœa.							
Blore Heath..	2141	2117	6·4	26·4	15·1	142	1·88	..	0·47	0·47	0·94	..	..	..	..	..	0·94	1·41	0·94	2·36	..	..	..	0·94
Cannock.....	17861	18950	2·7	28·0	13·1	120	1·05	..	0·10	..	0·42	0·21	..	..	..	0·31	0·47	0·84	1·05	0·94	..	0·21	0·10	0·68
Cheadle.....	24657	24657	2·1	31·9	15·4	96	0·73	..	..	0·20	0·28	0·12	..	0·04	..	0·08	1·33	0·48	1·29	0·90	0·04	0·20	0·08	0·64
Eccleshall....	5594	5611	5·8	20·8	13·7	85	0·89	..	0·17	..	..	..	..	0·17	..	0·53	0·89	1·44	1·24	..	..	0·71	0·17	0·53
Gnosall.....	4697	4700	5·5	27·6	11·4	115	0·63	..	..	0·21	0·21	..	..	..	..	0·21	0·21	1·27	0·42	1·48	..	0·21	..	0·42
Kingswinford.	19536	19990	0·2	32·8	17·7	156	2·45	..	1·05	0·10	0·60	0·10	..	0·05	..	0·55	0·45	0·30	2·00	1·05	0·05	0·05	0·30	0·45
Leek.....	13873	13868	4·9	29·9	15·7	115	1·65	..	0·50	0·28	0·43	0·14	..	0·14	..	0·14	0·43	0·64	1·73	2·16	..	..	0·14	0·14
Lichfield.....	*25688	*25985	2·3	29·5	13·3	97	1·03	..	0·07	0·27	0·30	0·15	..	0·03	..	0·19	0·69	0·76	1·42	0·80	..	0·07	0·19	0·57
Mayfield.....	4054	4150	5·8	26·7	13·2	36	0·72	..	..	0·24	0·48	..	..	..	..	..	0·48	0·72	1·68	0·48	..	..	..	..
Newcastle....	6513	6721	2·9	26·0	12·2	114	0·59	..	..	..	0·44	0·14	..	..	..	..	0·44	1·04	1·33	0·74	..	0·14	..	0·14

* Not including 1000 Inmates of Burntwood Asylum.

RURAL—continued.

District.	Registered Births.	Deaths from all causes.	Deaths from all causes at subjoined ages.						Deaths from subjoined causes.																														
			Under 1 year.	1 and under 5.	5 and under 15.	15 and under 25.	25 and under 65.	65 and upwards.	Smallpox.	Measles.	Scarlet Fever.	Whooping Cough.	Diphtheria and Membranous Croup.	Croup.	Fevers.			Epidemic Influenza.	Diarrhœa.	Enteritis.	Puerperal Fever.	Erysipelas.	Other Septic Diseases.	Phthisis.	Other Tubercular Diseases.	Cancer, Malignant Disease.	Bronchitis.	Pneumonia.	Pleurisy.	Other Diseases of Respirat'y Organs	Alcoholism. Cirrhosis of Liver.	Venereal Diseases	Premature Birth.	Diseases & Accidents of Parturition.	Heart Diseases.	Accidents.	Suicides.	All other Causes.
															Typhus.	Enteric.	Other Continued.																						
Blore Heath..	56	32	8	5	..	1	9	9	..	1	1	2	..	..	..	..	..	..	..	1	..	..	..	2	1	3	2	5	..	..	..	..	2	..	6	1	..	5
Cannock.....	531	249	64	24	9	12	61	79	..	2	..	8	4	..	..	..	..	..	6	2	..	..	..	9	2	16	20	18	..	4	2	..	13	..	24	16	2	101
Cheadle.....	789	380	76	38	14	20	104	128	..	..	5	7	3	1	..	1	..	5	2	6	..	2	6	33	9	12	32	23	1	5	2	..	16	2	70	14	2	121
Eccleshall....	117	77	10	8	3	2	21	33	..	1	..	..	..	..	..	1	..	2	3	1	..	..	2	5	4	8	7	1	..	4	1	..	3	1	10	..	..	23
Gnosall.....	130	54	15	4	6	..	11	18	..	..	1	1	..	..	..	..	..	..	1	..	..	..	..	1	5	6	2	7	..	1	..	..	2	..	4	2	..	21
Kingswinford.	657	354	103	68	10	11	84	78	..	21	2	12	2	1	..	1	..	..	11	6	..	1	..	9	4	6	40	21	1	1	6	..	9	3	26	9	2	160
Leek.....	415	219	48	34	8	7	61	61	..	7	4	6	2	..	..	2	..	2	2	4	1	..	..	6	5	9	24	30	..	..	2	..	2	..	22	13	3	73
Lichfield.....	768	348	75	36	18	9	81	129	..	2	7	8	4	..	..	1	..	2	5	4	..	2	2	18	8	20	37	21	..	2	5	1	15	..	35	8	5	136
Mayfield.....	111	55	4	8	..	..	23	20	..	..	1	2	..	..	..	1	..	..	..	..	..	..	..	2	..	3	7	2	..	..	..	..	..	..	10	..	1	26
Newcastle....	175	82	20	9	1	4	24	24	..	..	..	3	1	1	..	..	..	..	..	1	1	1	1	3	2	7	9	5	..	1	..	..	1	..	8	3	1	33
Seisdon.....	322	200	40	13	5	12	50	80	..	3	..	5	..	..	..	..	..	..	4	..	..	2	..	10	1	11	15	18	..	..	4	..	2	2	25	3	5	90

RURAL—continued.

District.	Population at all ages.		Mean area per person per acre.	Birth-rate per 1000 of population.	General mortality per 1000 of population.	Mortality in children under one year per 1000 registered births.	General zymotic mortality per 1000 of population.	Individual zymotic mortality per 1000 of population.								Phthisis.	Cancer, Malignant Disease.	Bronchitis.	Pneumonia.	Pleurisy.	Other Diseases of Respiratory Organs.	Alcoholism. Cirrhosis of Liver.	Premature Birth.
	Census, 1901.	Estimated to middle of 1904.						Smallpox.	Measles.	Scarlet Fever.	Whooping Cough.	Diphtheria and Membranous Croup.	Fevers.										
													Typhus.	Enteric.	Other Continued.	Diarrhœa.							
Seisdon	12897	13341	2·6	24·1	14·9	124	0·89	..	0·22	..	0·37	..	..	..	..	0·29	0·74	0·82	1·12	1·34	..	0·29	0·15
Stafford	10407	10700	4·8	22·8	14·0	134	0·65	..	..	0·18	0·28	..	..	0·09	..	0·09	0·56	0·37	1·12	0·28	..	0·18	0·18
Stoke-on-Trent }	4808	5013	0·8	32·1	12·7	142	1·99	..	0·19	0·19	0·79	0·39	..	..	..	0·39	0·59	..	2·79	1·19	..	0·39	0·19
Stone	8365	8600	4·2	24·6	13·9	66	0·58	..	..	..	..	0·58	..	..	..	..	0·58	1·39	0·81	0·69	..	0·46	0·34
Tamworth ... } Staffs. portion }	4800	4813	4·5	28·2	11·0	80	0·20	..	..	..	..	0·20	..	..	..	..	0·83	0·83	1·86	..	..	0·41	..
Tutbury	9137	9145	2·7	27·3	13·7	80	0·87	..	0·10	..	0·76	..	..	..	..	..	0·54	1·31	0·43	0·87	..	0·10	0·65
Uttoxeter	8128	8280	5·8	25·6	14·9	99	0·84	..	0·12	0·12	0·24	0·24	..	..	..	0·12	1·08	0·84	0·84	1·08	..	0·36	..
Walsall	10230	10393	1·1	30·3	15·3	148	1·92	..	0·09	..	1·00	0·18	..	..	..	0·64	0·82	1·19	1·28	1·19	..	0·09	1·00
Totals and Averages }	193446	197534	3·0	28·4	14·4	112	1·15	..	0·20	0·12	0·41	0·14	..	0·04	..	0·22	0·70	0·77	1·32	0·99	0·01	0·17	0·44

RURAL—continued.

District.	Registered Births.	Deaths from all causes.	Deaths from all causes at subjoined ages.						Deaths from subjoined causes.																												
			Under 1 year.	1 and under 5.	5 and under 15.	15 and under 25.	25 and under 65.	65 and upwards.	Smallpox.	Measles.	Scarlet Fever.	Whooping Cough.	Diphtheria and Membranous Croup.	Croup.	Fevers. Typhus.	Fevers. Enteric.	Fevers. Other Continued.	Epidemic Influenza.	Diarrhœa.	Enteritis.	Puerperal Fever.	Erysipelas.	Other Septic Diseases.	Phthisis.	Other Tubercular Diseases.	Cancer. Malignant Disease.	Bronchitis.	Pneumonia.	Pleurisy.	Other Diseases of Respirat'y Organs	Alcoholism. Cirrhosis of Liver.	Venereal Diseases	Premature Birth.	Diseases & Accidents of Parturition.	Heart Diseases.	Accidents.	Suicides.	All other Causes.
Stafford	245	150	33	8	2	4	45	58	..	..	2	3	..	..	..	1	..	..	1	..	..	..	..	6	9	4	12	3	..	..	2	..	2	1	15	9	2	78
Stoke-on-Trent	161	64	19	11	4	4	10	16	..	1	1	4	2	..	..	..	..	..	2	7	..	..	..	3	2	..	14	6	..	..	2	..	1	..	7	..	..	12
Stone	212	120	14	10	5	6	40	45	..	..	..	..	5	..	..	..	..	..	..	3	..	..	1	5	5	12	7	6	..	3	4	..	3	..	5	5	1	55
Tamworth Staffs. portion	136	53	11	2	2	3	15	20	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	4	2	4	9	..	..	2	..	..	..	..	5	1	1	23
Tutbury	250	126	20	9	5	6	41	45	..	1	..	7	..	..	..	..	..	..	..	4	..	..	..	5	5	12	4	8	..	1	1	..	6	..	13	6	1	52
Uttoxeter	212	124	21	13	3	6	28	53	..	1	1	2	2	2	..	..	..	..	1	..	..	..	..	9	..	7	7	9	..	..	3	..	..	..	17	2	..	61
Walsall	331	167	49	23	9	5	43	33	..	1	..	11	2	..	..	..	..	3	7	3	..	..	1	9	7	13	14	13	..	3	1	..	11	1	14	7	..	46
Totals....	5618	2854	630	328	104	112	751	929	..	41	25	81	28	5	..	8	..	14	45	43	2	8	13	139	71	153	262	196	2	27	35	1	88	10	316	99	26	1116

Table showing Result of the Working of the Compulsory Notification of Infectious Diseases Act.

NOTE.—Cases of Measles and Whooping Cough are only given when these are included in the diseases compulsorily notified. Small-pox, Scarlet Fever, Diphtheria, and Fevers alone are included in the percentage calculation of hospital cases.

Hospitals exist in those districts against which an asterisk is placed.

URBAN.

District, Population, Cost of Notification per 1000 of Population, Percentage of cases treated in Hospital.			Smallpox.	Scarlatina.	Diphtheria.	Membranous Croup.	Typhus Fever.	Enteric Fever.	Continued Fever.	Relapsing Fever.	Puerperal Fever.	Cholera.	Erysipelas.	Measles.	Whooping Cough.
AMBLECOTE.*	Cases	Under 5	..	..	..	..	..	..	..	..	..	..	2		
		5 & upwards	..	..	..	..	..	..	..	..	..	..	..		
3,282.	Deaths	Under 5	..	..	..	..	..	..	..	..	..	..	..	3	
		5 & upwards	..	..	..	..	..	..	..	..	..	..	..	2	
1/6.	Cases treated in hospital	Under 5													
		5 & upwards													
AUDLEY.*	Cases	Under 5	..	18	3	..	..	..	..	..	..	..	1		
		5 & upwards	..	6	2	..	..	3	..	..	..	..	11		
13,800.	Deaths	Under 5	..	1	1	..	..	..	..	..	..	..	..	6	3
		5 & upwards	..	..	..	..	..	..	..	..	..	..	..	1	
7/11.	Cases treated in hospital	Under 5													
		5 & upwards													
Nil.															
BIDDULPH.*	Cases	Under 5	..	4	9										
		5 & upwards	..	10	21	..	..	3	..	..	1	..	2		
6,525.	Deaths	Under 5	..	..	4		..	..	..	..	..	..	..		
		5 & upwards												1	
19/2.	Cases treated in hospital	Under 5	..	..	24										
		5 & upwards													
51·0.															

URBAN—continued.

District, Population, Cost of Notification per 1000 of Population, Percentage of Cases treated in Hospital.			Smallpox.	Scarlatina.	Diphtheria.	Membranous Croup.	Typhus Fever.	Enteric Fever.	Continued Fever.	Relapsing Fever.	Puerperal Fever.	Cholera.	Erysipelas.	Measles.	Whooping Cough.
BILSTON.* 24,250. £1 1s. 0d. 34·1.	Cases	Under 5	..	64	2	2	..	..	..	..	..	..	1		
		5 & upwards	2	91	1	..	..	4	..	..	1	..	36		
	Deaths	Under 5	..	11	1		..	..	..	..	..	..	1	14	10
		5 & upwards													
	Cases treated in hospital	Under 5 / 5 & upwards	2	54											
BRIERLEY HILL.* 12,640. 10/1. Nil.	Cases	Under 5	..	7	1	3									
		5 & upwards	..	14	2	1	..	15	..	..	3	..	5		
	Deaths	Under 5	..	1	2		..	..	..	..	..	..	..	1	8
		5 & upwards	..	..	..		..	3	..	..	1				
	Cases treated in hospital	Under 5 / 5 & upwards													
BROWNHILLS.* 16,754. £1 6s. 6d. Nil.	Cases	Under 5 / 5 & upwards	..	143	3	..	..	2	..	..	2	..	28		
	Deaths	Under 5	..	1	..	..	..	..	..	..	..	..	2	9	5
		5 & upwards	..	1	..	..	..	..	..	..	..	..	3	1	
	Cases treated in hospital	Under 5 / 5 & upwards													
BURSLEM.* 40,950. £1 15s. 7d. 20·1.	Cases	Under 5	2	169	34	..	..	2	..	..	..	..	3		
		5 & upwards	10	246	46	..	..	30	1	..	13	..	27		
	Deaths	Under 5	..	13	8		..	..	..	..	..	..	..	20	24
		5 & upwards	..	9	6		..	13	..	..	6	..	..	1	1
	Cases treated in hospital	Under 5 / 5 & upwards	12	67	15	..	..	15							

URBAN—continued.

District, Population, Cost of Notification per 1000 of Population, Percentage of Cases treated in Hospital.			Smallpox.	Scarlatina.	Diphtheria.	Membranous Croup.	Typhus Fever.	Enteric Fever.	Continued Fever.	Relapsing Fever.	Puerperal Fever.	Cholera.	Erysipelas.	Measles.	Whooping Cough.
CANNOCK.*	Cases	Under 5	1	70	1	2	..	..	..	..	..	..	5		
24,000.		5 & upwards	25	95	4	1	..	3	..	..	6	..	26		
£1 4s. 10d.	Deaths	Under 5	1	1		2	..	..	..	..	..	..	..	..	12
10·0.		5 & upwards	3	..		2	..	..	..	..	3	..	3		
	Cases treated in hospital	Under 5													
		5 & upwards	20												
COSELEY.	Cases	Under 5	..	37	3	2	..	2	..	..	..	..	3		
22,250.		5 & upwards	..	72	10	..	..	27	..	..	1	..	13		
19/1.	Deaths	Under 5	..	5	..	1	..	..	..	..	..	..	..	7	12
Nil.		5 & upwards	..	2	..	..	..	5							
	Cases treated in hospital	Under 5													
		5 & upwards													
DARLASTON.*	Cases	Under 5	..	63	2	2	..	..	..	..	..	..	2		
15,600.		5 & upwards	..	125	3	..	..	17	..	..	5	..	14		
£1 17s. 4d.	Deaths	Under 5	..	8		4	..	..	..	..	..	..	1	6	23
Nil.		5 & upwards	..	3		..	..	2	..	..	1	..	..	2	
	Cases treated in hospital	Under 5													
		5 & upwards													
FENTON.*	Cases	Under 5	..	80	25	..	..	7	..	..	..	..	4		
26,000.		5 & upwards	..	79	47	..	..	21	..	..	1	..	13		
£1 6s. 7d.	Deaths	Under 5	..	4		5	..	1	..	..	..	..	..	..	2
45·1.		5 & upwards	..	3		2	..	2							
	Cases treated in hospital	Under 5	..	86	31										
		5 & upwards													

URBAN—continued.

District, Population, Cost of Notification per 1000 of Population, Percentage of cases treated in Hospital.			Smallpox.	Scarlatina.	Diphtheria.	Membranous Croup.	Typhus Fever.	Enteric Fever.	Continued Fever.	Relapsing Fever.	Puerperal Fever.	Cholera.	Erysipelas.	Measles.	Whooping Cough.
HANDSWORTH.*	Cases†	Under 5	..	69	10	3	..	1	..	..	..	..	3		
		5 & upwards	1	187	45	1	..	18	..	..	1	..	35		
61,500.	Deaths	Under 5	..	2	3		..	..	..	..	..	..	..	3	22
19/4.		5 & upwards	..	3	11		..	6	..	..	1	..	..		
34·7.	Cases treated in hospital	Under 5	1	114											
		5 & upwards													
HEATH TOWN.*	Cases	Under 5	..	22	..	..	..	2	..	..	..	..	1		
		5 & upwards	..	37	2	..	..	10	..	..	..	..	16		
10,437.	Deaths	Under 5	..	3	..	..	..	..	..	..	..	..	..	8	7
£1 1s. 6d.		5 & upwards	..	..	..	..	..	..	..	..	1	..	1	1	
26·0.	Cases treated in hospital	Under 5	..	17	..	..	..	2							
		5 & upwards													
KIDSGROVE.	Cases	Under 5	..	17	47	2	..	4	..	..	2	..	19		
		5 & upwards													
8,527.	Deaths	Under 5	..	..	8	..	..	1	..	..	1	..	..	10	12
£1 6s. 8d.		5 & upwards													
38·2.	Cases treated in hospital	Under 5	..	2	22	..	..	2							
		5 & upwards													
LEEK.*	Cases	Under 5	3	6	2	3									
		5 & upwards	41	33	20	..	..	10	..	..	..	..	5		
15,921.	Deaths	Under 5	1	..	1	..	..	..	..	..	..	..	..	7	6
19/3.		5 & upwards	2	..	..	..	..	2							
84·3.	Cases treated in hospital	Under 5	44	34	12	1	..	7	..	..	..	..	..	1	
		5 & upwards													

† Chicken-pox, 103 cases.

URBAN—continued.

District, Population, Cost of Notification per 1000 of Population, Percentage of cases treated in Hospital.			Smallpox.	Scarlatina.	Diphtheria.	Membranous Croup.	Typhus Fever.	Enteric Fever.	Continued Fever.	Relapsing Fever.	Puerperal Fever.	Cholera.	Erysipelas.	Measles.	Whooping Cough.
LICHFIELD.*	Cases †	Under 5	..	5	3	..	..	1	..	..	1	..	9		
7,902.		5 & upwards	1	3	7										
17/1.	Deaths	Under 5	..	..	..	..	..	..	..	..	..	..	..	..	4
70·0.		5 & upwards													
	Cases treated in hospital	Under 5	1	5	8										
		5 & upwards													
LONGTON.*	Cases	Under 5	..	27	28	5	..	8	..	..	..	..	1		
35,293.		5 & upwards	..	41	72	2	..	65	..	..	..	..	34		
£1 0s. 0d.	Deaths	Under 5	..	..	9		..	1	..	..	..	..	..	3	16
21·7.		5 & upwards	..	1	2		..	4							
	Cases treated in hospital	Under 5	..	20	34										
		5 & upwards													
NEWCASTLE.*	Cases	Under 5	8	212	5	..	..	10	..	..	1	..	18		
20,360.		5 & upwards													
£1 11s. 2d.	Deaths	Under 5	..	3	..	..	..	..	..	..	..	..	..	..	1
32·3.		5 & upwards	..	2	1	..	..	1	..	..	..	..	..	2	
	Cases treated in hospital	Under 5	8	68											
		5 & upwards													
PERRY BARR.*	Cases	Under 5	..	12											
2,390.		5 & upwards	..	38	..	..	..	1	..	..	1	..	5		
£2 19s. 7d.	Deaths	Under 5	..	..	..	..	..	..	..	..	..	..	..	..	3
68·6.		5 & upwards	..	1											
	Cases treated in hospital	Under 5	..	35											
		5 & upwards													

† Chicken-pox, 24 cases.

URBAN—continued.

District, Population, Cost of Notification per 1000 of Population, Percentage of Cases treated in Hospital.			Smallpox.	Scarlatina.	Diphtheria.	Membranous Croup.	Typhus Fever.	Enteric Fever.	Continued Fever.	Relapsing Fever.	Puerperal Fever.	Cholera.	Erysipelas.	Measles.	Whooping Cough.
QUARRY BANK.*	Cases †	Under 5	..	14	1										
		5 & upwards	..	19	1	..	..	8	..	..	2	..	3		
6,974.	Deaths	Under 5	..	..	1	..	.	..	..	..	..	..	..	4	4
18/3.		5 & upwards	..	1	..	..	..	..	..	..	2				
4·6.	Cases treated in hospital	Under 5	..	..	..	..	..	2							
		5 & upwards													
ROWLEY REGIS.*	Cases	Under 5	..	89	7	2	..	.	..	..	..	..	3		
		5 & upwards	2	122	14	2	..	7	..	..	5	..	41		
36,400.	Deaths	Under 5	..	7	3		..	..	.	..	..	..	..	26	26
£1 0s. 2d.		5 & upwards	..	5	..		..	2	..	..	3	..	1	1	
0·8.	Cases treated in hospital	Under 5													
		5 & upwards	2												
RUGELEY.	Cases	Under 5	..	2	1										
		5 & upwards	2	11	2	1	..	..	..	..	3	..	1		
4,450.	Deaths	Under 5	..	..	1										
12/10.		5 & upwards	..	..	1	..	..	..	..	..	2				
11·1.	Cases treated in hospital	Under 5													
		5 & upwards	2												
SEDGLEY.*	Cases	Under 5	..	58	27	9	..	15	..	..	1	..	29		
		5 & upwards													
16,050.	Deaths	Under 5	..	2	4		..	..	..	..	..	..	..	..	9
£1 1s. 7d.		5 & upwards	..	..	2		..	2	..	..	1	..	..	..	1
Nil.	Cases treated in hospital	Under 5													
		5 & upwards													

† Chicken-pox, 2 cases, for 9 weeks only.

URBAN—continued.

District, Population, Cost of Notification per 1000 of Population, Percentage of Cases treated in Hospital.			Smallpox.	Scarlatina.	Diphtheria.	Membranous Croup.	Typhus Fever.	Enteric Fever.	Continued Fever.	Relapsing Fever.	Puerperal Fever.	Cholera.	Erysipelas.	Measles.	Whooping Cough.
SHORT HEATH.	Cases	Under 5	..	2	1										
		5 & upwards	..	2	..	..	..	..	..	..	..	..	5		
3,749.	Deaths	Under 5													
		5 & upwards	..	..	1										
6/7.	Cases treated in hospital	Under 5													
		5 & upwards													
Nil.															
SMALLTHORNE.	Cases	Under 5	..	60	8	..	..	..	..	..	..	..	1		
		5 & upwards	2	63	18	..	..	5	..	..	3	..	10		
12,480.	Deaths	Under 5	..	5	4		..	1	..	..	3	..	..	22	5
		5 & upwards													
£1 14s. 0d.	Cases treated in hospital	Under 5	2	3	8	..	..	1							
		5 & upwards													
9·6.															
SMETHWICK.*	Cases	Under 5	..	59	5	1	..	2	..	..	..	..	2		
		5 & upwards	1	136	32	..	..	21	..	..	2	..	34		
61,000.	Deaths	Under 5	..	3	2		..	..	..	..	..	..	2	1	10
		5 & upwards	..	2	3		..	7	..	..	1	..	1	..	1
12/1.	Cases treated in hospital	Under 5													
		5 & upwards	1												
0·4.															
STAFFORD.*	Cases	Under 5	..	3	3	..	..	1							
		5 & upwards	9	9	9	..	..	7	..	..	1	..	15		
21,039.	Deaths	Under 5	..	1	2	..	..	..	..	..	..	..	..	8	1
		5 & upwards	..	..	..	..	..	3	..	..	1				
6/9.	Cases treated in hospital	Under 5													
		5 & upwards	9	12											
51·2.															

URBAN—continued.

District, Population, Cost of Notification per 1000 of Population, Percentage of cases treated in Hospital.			Smallpox.	Scarlatina.	Diphtheria.	Membranous Croup.	Typhus Fever.	Enteric Fever.	Continued Fever.	Relapsing Fever.	Puerperal Fever.	Cholera.	Erysipelas.	Measles.	Whooping Cough.
STOKE-ON-TRENT.*	Cases	Under 5	..	76	34	6	..	..	..	..	..	..	2		
		5 & upwards	1	152	122	..	..	12	..	..	3	..	39		
32,698.	Deaths	Under 5	..	6	18		..	..	..	..	..	..	1	..	1
£1 13s. 11d.		5 & upwards	..	3	7		..	5	..	..	2				
52·8.	Cases treated in hospital	Under 5	1	113	90	3	..	6							
		5 & upwards													
STONE.*	Cases	Under 5	..	2	11	..	..	..	..	..	..	..	1		
		5 & upwards													
5,720.	Deaths	Under 5	..	..	..	..	..	..	..	..	..	..	..	6	
6/1		5 & upwards	..	..	1	..	..	..	..	..	..	..	..	1	
7·6.	Cases treated in hospital	Under 5	..	1											
		5 & upwards													
TAMWORTH.*	Cases†	Under 5	..	28	2	..	..	1							
		5 & upwards	1	66	3	..	..	5	..	..	..	..	8		
7,631.	Deaths	Under 5	..	1											
£2 7s. 6d.		5 & upwards	..	2	.	..	..	2							
80.	Cases treated in hospital	Under 5	1	80	..	..	..	4							
		5 & upwards													
TETTENHALL.*	Cases	Under 5	..	11											
		5 & upwards	..	32	2	..	..	..	..	..	..	..	4		
5,395.	Deaths	Under 5	..	1	..	..	..	..	..	..	..	..	..	..	2
£1 2s. 8d.		5 & upwards													
68·8.	Cases treated in hospital	Under 5	..	31											
		5 & upwards													

† Chicken-pox, 31 cases.

URBAN—continued.

District, Population, Cost of Notification per 1000 of Population, Percentage of Cases treated in Hospital.			Smallpox.	Scarlatina.	Diphtheria.	Membranous Croup.	Typhus Fever.	Enteric Fever.	Continued Fever.	Relapsing Fever.	Puerperal Fever.	Cholera.	Erysipelas.	Measles.	Whooping Cough.
TIPTON.*	Cases	Under 5	..	67	4	7	..	3	..	..	..	..	4		
31,250.		5 & upwards	3	74	20	3	..	49	..		5	..	42		
£1 2s. 5d.	Deaths	Under 5	..	..	7		..	1	..	..	..	..	1	7	26
37·2.		5 & upwards	..	..	2		..	9	..	..	1	..	2	..	4
Nil.	Cases treated in hospital	Under 5	3	51	..	..	..	28							
		5 & upwards													
TUNSTALL.*	Cases	Under 5	2	79	6	3	..	..	..	..	..	..	2		
26,420.		5 & upwards	5	100	29	..	..	19	..	..	1	..	18		
£1 4s. 11d.	Deaths	Under 5	..	4	3		..	..	..	..	..	..	..	14	13
22·5.		5 & upwards	..	1	..		..	3	..	..	..	..	2	1	1
Nil.	Cases treated in hospital	Under 5	7	39	4	..	..	4							
		5 & upwards													
UTTOXETER.	Cases	Under 5	..	5	2	4									
5,300.		5 & upwards	..	5	9	1	..	..	..	..	.	..	2		
13/2.	Deaths	Under 5	..	1	5		..	..	..	..	..	..	..	2	2
Nil.		5 & upwards	..	..	3		..	..	..	..	..	..	1		
	Cases treated in hospital	Under 5													
		5 & upwards													
WEDNESBURY.*	Cases	Under 5	..	99	81	5	..	54	..	..	4	..	20		
26,700.		5 & upwards													
£1 4s. 7d.	Deaths	Under 5	..	4	18		..	1	..	..	..	..	..	55	7
Nil.		5 & upwards	..	1	5		..	7	..	..	..	..	..	2	
	Cases treated in hospital	Under 5													
		5 & upwards													

URBAN—continued.

District, Population, Cost of Notification per 1000 of Population, Percentage of cases treated in Hospital.			Smallpox.	Scarlatina.	Diphtheria.	Membranous Croup.	Typhus Fever.	Enteric Fever.	Continued Fever.	Relapsing Fever.	Puerperal Fever.	Cholera.	Erysipelas.	Measles.	Whooping Cough.
WEDNESFIELD.*	Cases	Under 5	..												
		5 & upwards	..	19	1	..	..	..	..	..	..	..	4		
5,470.	Deaths	Under 5	..	..	..	..	..	..	..	..	..	..	..	..	3
		5 & upwards	..	1											
10/11.	Cases treated in hospital	Under 5													
		5 & upwards													
Nil.															
WILLENHALL.*	Cases	Under 5	..	7	3										
		5 & upwards	..	32	4	1	..	5	..	..	1	..	12		
19,001.	Deaths	Under 5	..	1	1	..	..	..	..	..	..	..	..	17	13
		5 & upwards	..	..	2	..	..	1	..	..	1	..	2	..	1
8/6.	Cases treated in hospital	Under 5													
		5 & upwards	..	..	..	..	..	3							
5·8.															
WOLSTANTON.*†	Cases	Under 5	..	34	15	..	..	.	..	..	..	..	1		
		5 & upwards	1	71	22	..	..	8	..	..	2	..	14		
24,975.	Deaths	Under 5	..	2	4		..	..	..	..	..	..	..	38	5
		5 & upwards	..	4	2		..	.	..	..	..	..	1	3	
£1 5s. 2d.	Cases treated in hospital	Under 5													
		5 & upwards	1	37	11	..	..	3							
34·4.															

† May to December.

RURAL.

District, Population, Cost of Notification per 1000 of Population, Percentage of Cases treated in Hospital.			Smallpox.	Scarlatina.	Diphtheria.	Membranous Croup.	Typhus Fever.	Enteric Fever.	Continued Fever.	Relapsing Fever.	Puerperal Fever.	Cholera.	Erysipelas.	Measles.	Whooping Cough.
BLORE HEATH.*	Cases	Under 5	..	10											
		5 & upwards	..	47	1	..	..	..	..	..	..	..	2		
2,117.	Deaths	Under 5	..	1	..	..	..	..	..	..	..	..	..	1	2
		5 & upwards													
£3 10s. 0d.	Cases treated in hospital	Under 5 / 5 & upwards	..	2											
3·4.	Cases	Under 5	..	6	3	1	..	..	..	..	..	..	1		
		5 & upwards	..	31	8	1	..	3	..	..	1	..	16		
CANNOCK.*	Deaths	Under 5	..	..	3		..	..	..	..	..	..	..	1	4
		5 & upwards	..	..	1		..	..	..	.	..	..	..	1	4
18,950.	Cases treated in hospital	Under 5 / 5 & upwards	..	26	3										
8/-	Cases	Under 5	6	170	32	..	..	9	..	..	2	..	11		
		5 & upwards													
56·8.	Deaths	Under 5	..	3	1	..	..	..	..	..	..	..	1	..	7
		5 & upwards	..	2	2	..	..	1	..	..	..	..	1		
CHEADLE.	Cases treated in hospital	Under 5 / 5 & upwards	6	49	5										
24,657.	Cases	Under 5	..	..	1										
		5 & upwards	..	14	1	..	..	1	..	..	..	..	2		
£1 3s. 3d.	Deaths	Under 5	..	..	..	..	..	..	..	..	..	..	..	1	
		5 & upwards	..	..	..	..	..	1							
27·6.	Cases treated in hospital	Under 5 / 5 & upwards	..	7											
ECCLESHALL.*															
5,611.															
8/5.															
41·1.															

RURAL—continued.

District, Population, Cost of Notification per 1000 of Population, Percentage of Cases treated in Hospital.			Smallpox.	Scarlatina.	Diphtheria.	Membranous Croup.	Typhus Fever.	Enteric Fever.	Continued Fever.	Relapsing Fever.	Puerperal Fever.	Cholera.	Erysipelas.	Measles.	Whooping Cough.
GNOSALL.	Cases	Under 5	..	5											
4,700.		5 & upwards	..	63	..	..	...	..	..	..	1	..	1		
£1 17s. 2d.	Deaths	Under 5	..	..	..	..	..	..	..	..	..	..	..	..	1
Nil.		5 & upwards	..	1											
	Cases treated in hospital	Under 5													
		5 & upwards													
KINGSWINFORD.*	Cases	Under 5	..	16	..	2	..	..	..	..	..	..	2		
19,990.		5 & upwards	..	16	3	..	..	17	..	..	1	..	14		
8/10	Deaths	Under 5	..	2	2		..	..	..	..	..	..	1	17	12
71·1.		5 & upwards	..	..	..		..	1	..	..	..	..	..	4	
	Cases treated in hospital	Under 5	..	26	..	..	..	11							
		5 & upwards													
LEEK.*	Cases	Under 5	..	8	1										
13,868.		5 & upwards	1	29	17	..	..	1	..	..	2	..	6		
11/8.	Deaths	Under 5	..	4	..	..	..	..	..	..	..	..	..	7	6
40·3.		5 & upwards	..	..	2	..	..	2	..	..	1				
	Cases treated in hospital	Under 5	1	22											
		5 & upwards													
LICHFIELD.*	Cases	Under 5	..	80	6	..	..	..	..	..	..	..	2		
26,985.		5 & upwards	2	151	13	..	..	6	..	..	2	..	10		
£1 5s. 2d.	Deaths	Under 5	..	3	1	..	..	..	..	..	..	..	..	2	8
17·4.		5 & upwards	..	4	2	..	..	1	..	..	..	..	2		
	Cases treated in hospital	Under 5	2	41	2										
		5 & upwards													

RURAL—continued.

District, Population, Cost of Notification per 1000 of Population, Percentage of cases treated in Hospital.			Smallpox.	Scarlatina.	Diphtheria.	Membranous Croup.	Typhus Fever.	Enteric Fever.	Continued Fever.	Relapsing Fever.	Puerperal Fever.	Cholera.	Erysipelas.	Measles.	Whooping Cough.
MAYFIELD.	Cases	Under 5	..	12											
4,150.		5 & upwards	..	31	2										
£1 7s. 1d.	Deaths	Under 5	..	1	..	..	..	..	..	..	..	..	..	..	2
Nil.		5 & upwards													
	Cases treated in hospital	Under 5													
		5 & upwards													
NEWCASTLE.	Cases	Under 5	..	8											
6,721.		5 & upwards	..	39	5	..	..	1	..	..	2	..	7		
£1 3s. 0d.	Deaths	Under 5	..	..	..	..	..	..	..	..	..	..	..	..	3
1·8		5 & upwards	..	..	1	..	..	..	..	..	1	..	1		
	Cases treated in hospital	Under 5	..	1											
		5 & upwards													
SEISDON.*	Cases	Under 5	..	24											
13,341.		5 & upwards	..	91	3	..	..	1	..	..	1	..	10		
£1 4s. 4d.	Deaths	Under 5	..	..	..	..	..	..	..	..	..	..	1	3	4
88·2.		5 & upwards	..	..	..	..	..	..	..	..	..	..	1		
	Cases treated in hospital	Under 5	..	105											
		5 & upwards													
STAFFORD.*	Cases	Under 5	..	8	2			3	..	..	..	..	3		
10,700.		5 & upwards	2	17	2	..	..								
8/7.	Deaths	Under 5	..	1	..	..	..	..	..	..	..	..	..	..	3
70·5.		5 & upwards	..	..	..	..		1							
	Cases treated in hospital	Under 5	2	22											
		5 & upwards													

RURAL—continued.

District, Population, Cost of Notification per 1000 of Population, Percentage of Cases treated in Hospital.			Smallpox.	Scarlatina.	Diphtheria.	Membranous Croup.	Typhus Fever.	Enteric Fever.	Continued Fever.	Relapsing Fever.	Puerperal Fever.	Cholera.	Erysipelas.	Measles.	Whooping Cough.
STOKE-ON-TRENT.*	Cases	Under 5	..	7	11	..	..	..	..	..	..	..	1		
		5 & upwards	..	7	18	..	..	1	..	..	..	..	4		
5,013.	Deaths	Under 5	..	1	..	..	..	..	..	..	..	..	..	1	4
£1 4s. 5d.		5 & upwards	..	..	2										
45·4.	Cases treated in hospital	Under 5 / 5 & upwards	..	8	12										
STONE.*	Cases	Under 5 / 5 & upwards	..	30	23	..	..	3	..	..	..	..	5		
8,600.	Deaths	Under 5	..	..	2										
17/8.		5 & upwards	..	..	3										
33·9.	Cases treated in hospital	Under 5 / 5 & upwards	..	19											
TAMWORTH.*	Cases†	Under 5	..	14	..										
		5 & upwards	..	36	3	..	..	..	..	..	..	..	3		
4,813.	Deaths	Under 5													
£1 11s. 8d.		5 & upwards	..	..	1										
64·1.	Cases treated in hospital	Under 5 / 5 & upwards	..	34											
TUTBURY.*	Cases‡	Under 5	..	3											
		5 & upwards	..	16	..	..	..	..	..	..	..	..	3		
9,145.	Deaths	Under 5	..	..	..	..	..	..	..	..	..	..	..	1	7
13/1.		5 & upwards													
36·8.	Cases treated in hospital	Under 5 / 5 & upwards	..	7											

† Chicken-pox 5 Cases.

‡ Chicken-pox, 26 cases.

RURAL—continued.

District, Population, Cost of Notification per 1000 of Population, Percentage of cases treated in Hospital.			Smallpox.	Scarlatina.	Diphtheria.	Membranous Croup.	Typhus Fever.	Enteric Fever.	Continued Fever.	Relapsing Fever.	Puerperal Fever.	Cholera.	Erysipelas.	Measles.	Whooping Cough.
UTTOXETER.	Cases	Under 5	..	4	5										
8,280.		5 & upwards	..	14	12	..	..	1	..	..	..	..	1		
11/2.	Deaths	Under 5	..	1	2	..	..	..	..	..	..	..	..	..	2
Nil.		5 & upwards	..	..	..	..	..	..	..	..	..	..	..	1	
	Cases treated in hospital	Under 5													
		5 & upwards													
WALSALL.	Cases	Under 5	..	4	2	..	..	..	..	..	..	..	2		
10,893.		5 & upwards	..	14	3	1	..	2	..	..	1	..	10		
8/11.	Deaths	Under 5	..	..	2		..	..	..	..	..	..	..	1	11
Nil.		5 & upwards	..	..											
	Cases treated in hospital	Under 5													
		5 & upwards													

Summary of Sanitary Inspectors' Work.

URBAN.

District and Population.		Dwelling-houses and Schools.				Lodging-houses.	Dairies and Milkshops	Cowsheds.	Bakehouses.	Slaughter-houses.	Canal Boats.	Ashpits and Privies.	Deposits of refuse & manure.	Water-closets.	House drainage.			Water supply.	Pigsties.	Animals improperly kept.	Offensive trades.	Smoke nuisances.	Other nuisances.	Totals.	Food supply & water.					Precautions against infectious disease.					
		Foul conditions.	Structural defects.	Overcrowding.	Unfit for habitation.										Defective Traps.	No disconnection.	Other faults.								Seizures of unwholesome food.	Samples of food taken for analysis.	Samples of food found adulterated.	Samples of water taken for analysis.	Samples of water condemned as unfit for use.	Lots of infected bedding disinfected or destroyed.	Houses disinfected after infectious disease.	Schools disinfected after infectious disease.	Prosecutions for not notifying existence of infectious disease.	Convictions for not notifying existence of infectious disease.	Prosecutions for exposure of infected persons or things.	Convictions for exposure of infected persons or things.
Amblecote. 3,282.	Inspections & observations made	8	..	2	..	..	..	8	3	2	..	25	4	34	19	..	..		10	10	..	5	37	167	..	..	..	..	..	..	3					
	Formal notices by authority	8	..	2	..	..	..	8	3	2	..	25	4	34	19	..	..	..	10	10	..	5	37	167											
	Nuisances abated after notice	8	..	2	..	..	..	8	3	2	..	25	4	34	19	..	..	..	8	8	..	5	37	163											
Audley. 13,800.	Inspections & observations made	4	27	4	5	..	11	13	..	..	..	39	1	..	6	..	45	2	5	8	..	..	4	174											
	Formal notices by authority	..	..	..	..	..	..	..	..	..	..	..	..	..	..	.	..	..	..	..	..	..	..	..											
	Nuisances abated after notice	4	21	4	5	..	11	7	..	..	..	39	1	..	6	..	45	2	5	8	..	..	4	162	.	..	..	..	..	..	4					
Biddulph. 6,525.	Inspections & observations made	103	81	2	..	..	..	68	36	12	..	92	5	..	68			18	40	5	..	..	..	530											
	Formal notices by authority	10	19	..	..	..	..	4	..	..	..	11	..	..	8			8	..	..	..	..	..	60											
	Nuisances abated after notice	10	19	..	..	..	..	4	..	..	..	11	..	..	8			.	..	..	..	..	..	52	..	..	..	..	..	8	15					
Bilston. 24,250.	Inspections & observations made	212	206	5	10	38	60	64	77	85	45	20975	13	..	..	..	23	..	4	8	..	..	121	21946											
	Formal notices by authority	8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8											
	Nuisances abated after notice	218	206	5	..	..	..	..	..	..	..	..	13	..	..	..	..	..	4	8	..	..	..	454	..	..	..	..	..	1	Yes					
Brierley Hill 12,640.	Inspections & observations made	146	7	21	256	87			61	58	79	912	18	15	295			65	36	35	15	..	..	2106											
	Formal notices by authority	29	7	4	85	5			10	..	37	92	9	2	89			14	..	4	..	..	..	387											
	Nuisances abated after notice	29	7	11	85	5			11	..	37	92	9	2	79			8	..	4	..	..	..	379	..	..	..	9	9	14	56	6				

URBAN—continued.

District and Population.		Dwelling-houses and Schools.				Lodging-houses.	Dairies and Milkshops.	Cowsheds.	Bakehouses.	Slaughter-houses.	Canal Boats.	Ashpits and Privies.	Deposits of refuse & manure.	Water-closets.	House drainage.			Water supply.	Pigsties.		Offensive trades.	Smoke nuisances.	Other nuisances.	Totals.	Food supply & Water.					Precautions against infectious disease.					
		Foul conditions.	Structural defects.	Overcrowding.	Unfit for habitation.										Defective Traps.	No disconnection.	Other faults.			Animals improperly kept.						Seizures of unwholesome food.	Samples of food taken for analysis.	Samples of food found adulterated.	Samples of water taken for analysis.	Samples of water condemned as unfit for use.	Lots of infected bedding disinfected or destroyed.	Houses disinfected after infectious disease.	Schools disinfected after infectious disease.	Prosecutions for not notifying existence of infectious disease.	Convictions for not notifying existence of infectious disease.	Prosecutions for exposure of infected persons or things.	Convictions for exposure of infected persons or things.
Brownhills. 16,754.	Inspections & observations made	Suggested form of Inspector's Return not received.																															
	Formal notices by authority																																
	Nuisances abated after notice																																
Burslem. 40,950.	Inspections & observations made	127	58	30	20	120	300		200	360	341	4300	36	714	358	62	200	62	12	14	12	60	129	7515										
	Formal notices by authority	19	58	14	5	..	4		6	4	53	244	19	357	36	35	179	31	6	7	4	6	129	1216										
	Nuisances abated after notice	19	58	14	5	..	4		6	4	53	244	19	357	36	35	179	31	6	7	4	6	129	1216	7	..	..	..	..	1260	366	12 *11				
Cannock. 24,000.	Inspections & observations made	15		2	..	80	30	73	50	845	..	400	10	50	860			..	80		64	..	..	2559										
	Formal notices by authority	..		..	..	.	..	4	..	2	..	19	..	..	97			..	..		..	..	..	122										
	Nuisances abated after notice	15		2	..	..	..	21	20	20	..	35	10	12	268			..	8		2	..	..	413	11	..	..	..	..	36	86	1				
Coseley. 22,250.	Inspections & observations made	2275		29	29	..	84		45	19	250	156	14	1	8	..	84	284	19	4	..	..	15	3316										
	Formal notices by authority	254		5	29	..	16		14	7	23	39	14	1	8	..	84	284	9	1	..	..	15	803										
	Nuisances abated after notice	1754		5	125	..	13		13	5	17	68	14	1	8	..	84	284	7	1	..	..	15	2414	..	..	..	8	8	1	48	..	..	..	1	1
Darlaston. 15,600.	Inspections & observations made	5	46	12	..	..	43	48	42	50	112	3401	7	12	11	144	6	..	5	6	..	..	3	3953										
	Formal notices by authority	5	46	12	..	..	..	..	..	..	..	..	7	12	11	144	6	..	5	6	..	..	3	257										
	Nuisances abated after notice	5	46	12	..	..	..	..	..	..	..	..	7	12	11	144	6	..	5	6	..	..	3	257	..	..	..	..	..	..	83				

* Other premises, &c.

District and Population.		Dwelling-houses and Schools.				Lodging-houses.	Dairies and Milkshops.	Cowsheds.	Bakehouses.	Slaughter-houses.	Canal Boats.	Ashpits and Privies.	Deposits of refuse & manure.	Water-closets.	House drainage.			Water supply.	Pigsties.	Animals improperly kept.	Offensive trades.	Smoke nuisances.	Other nuisances.	Totals.	Food supply & water.					Precautions against infectious disease.						
		Foul conditions.	Structural defects.	Overcrowding.	Unfit for habitation.										Defective Traps.	No disconnection.	Other faults.								Seizures of unwholesome food.	Samples of food taken for analysis.	Samples of food found adulterated.	Samples of water taken for analysis.	Samples of water condemned as unfit for use.	Lots of infected bedding disinfected or destroyed.	Houses disinfected after infectious disease.	Schools disinfected after infectious disease.	Prosecutions for not notifying existence of infectious disease.	Convictions for not notifying existence of infectious disease.	Prosecutions for exposure of infected persons or things.	Convictions for exposure of infected persons or things.
Fenton. 26,000.	Inspections & observations made	125	34	15	..	..	87	50	53	56	62	415	4	161	97	45	119	..	..	36	..	12	17	1388											
	Formal notices by authority	29	9	7	..	..	1	1	..	..	5	36	2	53	18	17	47	..	..	11	..	..	9	245											
	Nuisances abated after notice	29	8	7	..	..	1	..	..	..	5	33	2	53	18	17	47	..	..	9	..	..	9	238	1	..	..	..	..	221	230	1				
Handsworth 61,500.	Inspections & observations made	230	442	43	..	..	232	75	116	127	..	1953	221	957	987	150	1584	14	..	278	..	42	271	7722											
	Formal notices by authority	7	12	3	..	..	..	..	..	..	..	56	8	36	31	4	31	..	..	17	..	2	7	214											
	Nuisances abated after notice	60	183	8	.	..	3	8	11	7	..	247	59	389	259	31	491	2	..	75	..	6	58	1897	..	..	..	..	..	291	318					
Heath Town 10,437.	Inspections & observations made	210				.	30	16	24	27	..	117	12	..	160			6	50	..	10	..	..	662											
	Formal notices by authority	70				..	..	2	1	1	..	50	4	..	40			1	22	..	1	..	..	192											
	Nuisances abated after notice	50				..	..	2	1	1	..	38	3	..	40			1	14	..	1	..	..	151	..	..	..	10	7	6	55	1				
Kidsgrove. 8,527.	Inspections & observations made	15	3	2	..	..	20	33	12	30	75	225	1	3	9	2	3	2	1	..	..	..	..	436											
	Formal notices by authority	15	3	2	..	..	2	1	..	..	7	33	1	3	9	2	3	2	1	..	..	..	..	84											
	Nuisances abated after notice	15	3	2	..	..	2	1	..	..	7	33	1	3	9	2	3	2	1	..	..	..	..	84	..	..	..	1	1	3	72					
Leek. 15,921.	Inspections & observations made	4	16	7	2	208	14	32	42	12	45	167	3	41	4	5	61	..	1	..	..	3	420	1087											
	Formal notices by authority	4	16	7	2	1	..	..	4	..	1	167	3	41	4	5	61	..	1	..	..	3	420	740											
	Nuisances abated after notice	4	16	7	2	1	..	..	3	..	1	102	3	41	4	5	61	..	1	..	..	3	420	674	..	..	..	..	..	1908	132	6	..	..	1	1

URBAN—continued.

District and Population.		Dwelling-houses and Schools.				Lodging-houses.	Dairies and Milkshops.	Cowsheds.	Bakehouses.	Slaughter-houses.	Canal Boats.	Ashpits and Privies.	Deposits of refuse & manure.	Water-closets.	House drainage.			Water supply.	Pigsties.	Animals improperly kept.	Offensive trades.	Smoke nuisances.	Other nuisances.	Totals.	Food supply & Water.					Precautions against infectious disease.						
		Foul conditions.	Structural defects.	Overcrowding.	Unfit for habitation.										Defective Traps.	No disconnection.	Other faults.								Seizures of unwholesome food.	Samples of food taken for analysis.	Samples of food found adulterated.	Samples of water taken for analysis.	Samples of water condemned as unfit for use.	Lots of infected bedding disinfected or destroyed.	Houses disinfected after infectious disease.	Schools disinfected after infectious disease.	Prosecutions for not notifying existence of infectious disease.	Convictions for not notifying existence of infectious disease.	Prosecutions for exposure of infected persons or things.	Convictions for exposure of infected persons or things.
Lichfield. 7,902.	Inspections & observations made	20	2	1	1	30	45		40	40	..	179	2	45	119	30	105	..	50	..	..	..	27	736											
	Formal notices by authority	20	2	1	1	1	4		2	1	..	179	2	45	119	30	105	..	20	..	..	..	27	559											
	Nuisances abated after notice	20	2	1	1	1	4		1	1	..	100	2	40	90	28	90	..	20	..	..	..	27	428	..	..	..	1	..	19	9					
Longton. 35,293.	Inspections & observations made	89	10	2	..	6	52	45	31	30	..	51	..	73	2	2	29	2	4	..	..	..	23	451											
	Formal notices by authority	77	10	2	..	2	..	..	16	2	..	11	..	60	2	2	29	2	..	..	..	..	23	238											
	Nuisances abated after notice	70	4	2	..	2	..	..	12	2	..	10	..	54	2	2	28	2	..	..	..	..	15	205	1	..	..	..	..	60	56					
Newcastle. 20,360.	Inspections & observations made	51	28	3	39	60	141	36	120	192	11	133	5	30	21	10	21	1	2	14	1	1	20	940											
	Formal notices by authority	51	28	3	39	..	..	3	9	..	1	133	5	30	21	10	20	1	2	12	1	1	20	390											
	Nuisances abated after notice	51	28	3	39	..	..	3	9	..	1	118	5	30	20	9	20	1	2	12	1	1	20	373	1	59	4	..	..	33	203	20				
Perry Barr. 2,390.	Inspections & observations made	..	1	39	..	..	10	8	..	..	..	225	..	..	..	..	12	293	..	..	..	..	..	588											
	Formal notices by authority	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	..	..	..	..	3											
	Nuisances abated after notice	..	1	..	..	..	3	3	..	..	..	8	..	..	..	..	6	7	..	..	..	..	..	28	..	..	..	..	..	20	26					
Quarry Bank 6,974.	Inspections & observations made	70	80	52	20	..	44	44	20	30	..	1600	70	50	60	70	40	29	49	..	..	..	66	2394											
	Formal notices by authority	40	37	3	3	..	44	44	...	3	..	..	12	5	20	29	50	3	13	..	..	..	45	351											
	Nuisances abated after notice	38	36	3	3	..	12	10	..	3	..	..	12	5	20	30	40	3	13	..	..	..	40	268	..	..	..	1	1	40	40	3	..	..	1	1

URBAN—continued.

District and Population.		Dwelling-houses and Schools.				Lodging-houses.	Dairies and Milkshops	Cowsheds.	Bakehouses.	Slaughter-houses.	Canal Boats.	Ashpits and Privies.	Deposits of refuse & manure.	Water-closets.	House drainage.			Water supply.	Pigsties.	Animals improperly kept.	Offensive trades.	Smoke nuisances.	Other nuisances.	Totals.	Food supply & water.					Precautions against infectious disease.						
		Foul conditions.	Structural defects.	Overcrowding.	Unfit for habitation.										Defective Traps.	No disconnection.	Other faults.								Seizures of unwholesome food.	Samples of food taken for analysis.	Samples of food found adulterated.	Samples of water taken for analysis.	Samples of water condemned as unfit for use.	Lots of infected bedding disinfected or destroyed.	Houses disinfected after infectious disease.	Schools disinfected after infectious disease.	Prosecutions for not notifying existence of infectious disease.	Convictions for not notifying existence of infectious disease.	Prosecutions for exposure of infected persons or things.	Convictions for exposure of infected persons or things.
Rowley Regis 36,400.	Inspections & observations made	212	..	19	14	..	86	86	166	93	135	1149	31	2971	161	..	331	2	284	26	..	..	..	15766											
	Formal notices by authority	159	..	19	14	..	..	..	..	..	14	..	31	77	18	..	113	2	14	26	..	..	..	487											
	Nuisances abated after notice	159	..	19	14	..	..	..	..	..	10	..	31	77	18	..	113	2	14	26	..	..	..	483											
Rugeley. 4,450.	Inspections & observations made	1	4	3	1	8	4	8	32	22	30	14	..	2	5	2	16	8	..	..	2	..	10	172	..	..	..	2	1	525	268	6				
	Formal notices by authority	1	4	3	1	1	..	..	..	..	2	14	..	2	5	2	16	8	..	..	2	..	10	71											
	Nuisances abated after notice	1	4	3	1	1	..	..	..	..	2	14	..	2	5	2	16	8	..	..	2	..	10	71	.	..	..	1	1	2	17	3				
Sedgley. 16,050.	Inspections & observations made	93	125	15	49	..	..	71	34	51	..	241	20	..	134			19	15	3	..	..	87	957											
	Formal notices by authority	10	20	7	8	..	..	8	2	3	..	29	2	..	16			..	2	1	..	..	6	114											
	Nuisances abated after notice	34	52	7	8	..	..	12	2	3	..	74	10	..	37			.	5	1	..	..	45	290											
Short Heath. 3,749.	Inspections & observations made	779				..	12	20	118*	12	..	842	..	..	..	..	81	13	81	..	..	..	98	2056											
	Formal notices by authority	..	22	4	..	..	..	..	1	..	..	2	..	..	..	..	17	8	3	..	..	..	2	59											
	Nuisances abated after notice	..	20	4	..	..	..	..	1	..	..	..	..	..	..	..	17	8	3	..	..	..	2	55	..	..	..	..	..	..	4					
Smallthorne 12,480.	Inspections & observations made	10	26	4	..	..	28	36	12	9	..	80	2	90	65	..	20	..	50	17	..	..	..	449											
	Formal notices by authority	..	11	..	..	..	..	..	..	..	..	30	..	..	30	..	10	..	..	13	..	..	..	94											
	Nuisances abated after notice	10	26	4	..	..	..	..	..	..	..	80	..	..	65	..	20	..	..	17	..	..	..	222	..	..	..	..	..	4	Yes					

* Including Workshops.

URBAN—continued.

District and Population.		Dwelling-houses and Schools.				Lodging-houses.	Dairies and Milkshops.	Cowsheds.	Bakehouses.	Slaughter-houses.	Canal Boats.	Ashpits and Privies.	Deposits of refuse & manure.	Water-closets.	House drainage.			Water supply.	Pigsties.	Animals improperly kept.	Offensive trades.	Smoke nuisances.	Other nuisances.	Totals.	Food supply & Water.					Precautions against infectious disease.						
		Foul conditions.	Structural defects.	Overcrowding.	Unfit for habitation.										Defective Traps.	No disconnection.	Other faults.								Seizures of unwholesome food.	Samples of food taken for analysis.	Samples of food found adulterated.	Samples of water taken for analysis.	Samples of water condemned as unfit for use.	Lots of infected bedding disinfected or destroyed.	Houses disinfected after infectious disease.	Schools disinfected after infectious disease.	Prosecutions for not notifying existence of infectious disease.	Convictions for not notifying existence of infectious disease.	Prosecutions for exposure of infected persons or things.	Convictions for exposure of infected persons or things.
Smethwick. 61,000.	Inspections & observations made	30	40	2	..	..	302*	30*	156*	48*	406	1690	8	39	32	3	159	3	8	3	..	..	36	2995											
	Formal notices by authority	9	12	..	..	..	..	..	..	..	30	270	4	13	16	1	50	..	..	..	..	..	18	423											
	Nuisances abated after notice	..	9	12	..	..	..	..	..	..	37	320	4	13	16	1	47	..	..	..	..	..	18	482	..	..	..	1	1	193	195					
Stafford.† 22,572.	Inspections & observations made	14	41	11	12	65	20	45	75	240	..	..	2	97	3	2	74	2	10	10	..	..	2812	3535											
	Formal notices by authority	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	448											
	Nuisances abated after notice	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	428	2	..	..	..	..	23	31	2				
Stoke-on-Trent. 32,898.	Inspections & observations made	25	24	2	2	146	126		76	97	317	88	2	18	11	2	51	..	2	4	1	14	2	1010											
	Formal notices by authority	25	24	2	2	2	..		1	..	41	80	2	18	10	2	33	..	2	4	1	2	2	273											
	Nuisances abated after notice	27	28	3	..	2	..		1	..	39	87	2	19	16	7	67	10	2	4	1	..	2	317	1	..	..	..	..	284	320	3				
Stone. 5,720.	Inspections & observations made	6	4	4	..	10	8		52	24	83	22	16	2	..	..	36	4	32	2	..	12	6	323						Several					
	Formal notices by authority	3	1	2	..	1	..		8	..	3	11	8	1	..	..	18	2	16	1	..	1	3	79											
	Nuisances abated after notice	3	1	2	..	1	..		8	..	..	11	8	1	..	..	18	..	16	1	..	1	3	74	..	..	..	1	1							
Tamworth.§ 7,631.	Inspections & observations made	16	60	7	10	49	5	8	11	24	..	240	12	..	96		106	3	44	39	5	8	31	780											
	Formal notices by authority	1	25	..	..	4	.	3	2	10	..	50	8	..	31	2	28	3	1	15	1	1	9	194											
	Nuisances abated after notice	9	16	..	..	10	..	3	3	10	..	42	8	..	31	4	34	2	19	12	1	1	16	221	21	..	..	3	3	..	50	3				

§ July to December. * Verbal notice given on each inspection where necessary. † Including Public Institutions.

URBAN—continued.

District and Population.		Dwelling-houses and Schools.				Lodging-houses.	Dairies and Milkshops.	Cowsheds.	Bakehouses.	Slaughter-houses.	Canal Boats.	Ashpits and Privies.	Deposits of refuse & manure.	Water-closets.	House drainage.			Water supply.	Pigsties.	Animals improperly kept.	Offensive trades.	Smoke nuisances.	Other nuisances.	Totals.	Food supply & water.					Precautions against infectious disease.						
		Foul conditions.	Structural defects.	Overcrowding.	Unfit for habitation.										Defective Traps.	No disconnection.	Other faults.								Seizures of unwholesome food.	Samples of food taken for analysis.	Samples of food found adulterated.	Samples of water taken for analysis.	Samples of water condemned as unfit for use.	Lots of infected bedding disinfected or destroyed.	Houses disinfected after infectious disease.	Schools disinfected after infectious disease.	Prosecutions for not notifying existence of infectious disease.	Convictions for not notifying existence of infectious disease.	Prosecutions for exposure of infected persons or things.	Convictions for exposure of infected persons or things.
Tettenhall. 5,395.	Inspections & observations made	62	98	..	1	..	26	46	15	16	..	198	30	18	50	..	94	..	16	8	..	.	170	848											
	Formal notices by authority	31	49	..	1	..	13	23	7	8	..	97	15	9	23	..	48	..	8	4	..	..	85	421											
	Nuisances abated after notice	31	33	..	1	..	13	23	7	8	..	89	15	7	18	..	48	..	8	4	..	..	85	390	..	..	..	..	..	..	41					
Tipton. 31,250.	Inspections & observations made	141	100	34	..	..	90	100	100	80	148	360	20	12	6	6	30	4	8	4	1	..	8	1252											
	Formal notices by authority	100	100	34	..	..	..	..	3	..	..	300	20	10	6	6	30	4	8	4	1	..	8	634											
	Nuisances abated after notice	80	60	34	.	..	..	..	3	..	..	260	20	12	6	6	20	4	8	4	1	..	8	526	..	..	..	4	4	46	46					
Tunstall. 26,420.	Inspections & observations made	478	427	3	..	*	60	94	42	180	91	194	7	272	17	25	81	..	9	..	12	3	..	1995											
	Formal notices by authority	216	197	..	..	..	23	12	3	2	5	79	7	191	16	..	54	..	9	..	..	2	..	816											
	Nuisances abated after notice	418	393	3	..	..	23	12	3	2	5	173	7	249	13	25	76	..	9	..	..	2	..	1413	..	..	..	..	..	..	47	2				
Uttoxeter. 5,300.	Inspections & observations made	52	45	25	4	** 209	12	40	35	53	..	160	10	109	12	4	120	9	13	..	10	..	43	965											
	Formal notices by authority	3	4	1	2	2	..	3	4	..	..	10	1	2	1	2	13	..	..	..	1	..	3	52											
	Nuisances abated after notice	4	7	..	4	5	..	4	4	3	..	39	4	14	4	4	31	..	..	..	2	..	8	137	..	..	..	9	..	27	27	2				
Wednesbury 26,700.	Inspections & observations made	360	5	14	1	210	..	..	90	140	..	5320	7	67	93	..	52	4	10	20	..	..	51	6444											
	Formal notices by authority	31	5	14	1	4	..	..	7	19	..	154	7	13	79	..	32	4	10	16	..	..	45	441											
	Nuisances abated after notice	31	5	14	1	4	..	..	7	19	..	119	7	13	76	..	32	4	10	16	..	..	45	403	..	..	..	..	..	30	363	‡				

* Inspected by Police. ** 191 Inspections made by Police. ‡ Disinfected by Caretaker under supervision of Sanitary Inspector.

URBAN—continued.

District and Population.		Dwelling-houses and Schools.				Lodging-houses.	Dairies and Milkshops.	Cowsheds.	Bakehouses.	Slaughter-houses.	Canal Boats.	Ashpits and Privies.	Deposits of refuse & manure.	Water-closets.	House drainage.			Water supply.	Pigsties.	Animals improperly kept.	Offensive trades.	Smoke nuisances.	Other nuisances.	Totals.	Food supply & Water.					Precautions against infectious disease.						
		Foul conditions.	Structural defects.	Overcrowding.	Unfit for habitation.										Defective Traps.	No disconnection.	Other faults.								Seizures of unwholesome food.	Samples of food taken for analysis.	Samples of food found adulterated.	Samples of water taken for analysis.	Samples of water condemned as unfit for use.	Lots of infected bedding disinfected or destroyed.	Houses disinfected after infectious disease.	Schools disinfected after infectious disease.	Prosecutions for not notifying existence of infectious disease.	Convictions for not notifying existence of infectious disease.	Prosecutions for exposure of infected persons or things.	Convictions for exposure of infected persons or things.
Wednesfield. 5,470.	Inspections & observations made	..	4	4	2	..	..	6	..	12	..	185	..	88	..	..	170	123	18	..	1	..	8	621											
	Formal notices by authority	..	4	4	2	..	..	..	..	..	..	3	..	..	..	..	54	123	3	..	1	..	8	202											
	Nuisances abated after notice	..	4	4	2	..	..	..	..	..	..	3	..	..	..	..	53	115	3	..	1	..	7	192	..	..	..	28	28	..	7					
Willenhall. 19,001.	Inspections & observations made	1100				..	57		73‡	48	..	1400	16	292	4	..	400	14	34	6	..	..	42	3653											
	Formal notices by authority	..	8	2	1	..	1		1	1	..	44	..	5	..	..	50	4	..	..	..	..	9	137											
	Nuisances abated after notice	..	3	2	..	..	1		1	1	..	11	..	4	..	..	17	4	..	..	..	..	4	53	3	..	..	1	1	287	64	1				
Wolstanton. 24,975.	Inspections & observations made	13	11	4	1	..	60	72	..	110	..	106	2	5	5	38	44	..	76	..	..	..	*95	†642											
	Formal notices by authority	13	11	4	1	..	..	5	..	3	..	106	2	5	5	38	44	..	4	..	..	..	2	243											
	Nuisances abated after notice	1	11	4	1	..	..	5	..	3	..	106	2	5	5	38	44	..	4	..	..	..	2	231	..	..	..	..	..	..	118	2				

* Factories and Workshops. † House-to-house visits, 11,470. ‡ 167 other workshops.

RURAL.

District and Population.		Dwelling-houses and Schools.				Lodging-houses.	Dairies and Milkshops	Cowsheds.	Bakehouses.	Slaughter-houses.	Canal Boats.	Ashpits and Privies.	Deposits of refuse & manure.	Water-closets.	House drainage.			Water supply.	Pigsties.		Offensive trades.	Smoke nuisances.	Other nuisances.	Totals.	Food supply & water.					Precautions against infectious disease.					
		Foul conditions.	Structural defects.	Overcrowding.	Unfit for habitation.										Defective Traps.	No disconnection.	Other faults.			Animals improperly kept.					Seizures of unwholesome food.	Samples of food taken for analysis.	Samples of food found adulterated.	Samples of water taken for analysis.	Samples of water condemned as unfit for use.	Lots of infected bedding disinfected or destroyed.	Houses disinfected after infectious disease.	Schools disinfected after infectious disease.	Prosecutions for not notifying existence of infectious disease.	Convictions for not notifying existence of infectious disease.	Prosecutions for exposure of infected persons or things.	Convictions for exposure of infected persons or things.
Blore Heath. 2,117.	Inspections & observations made	43	12	..	..	..	..	..	..	..	..	3	..	..	..	..	..	..	..	..	..	..	8	66										
	Formal notices by authority	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..										
	Nuisances abated after notice	40	12	..	..	..	..	..	..	..	..	3	..	..	..	..	..	..	..	..	..	..	8	63	..	..	..	20	3	..	23	6†			
Cannock. 18,950.	Inspections & observations made	12	14	11	..	..	176		18	79	50	150	24	1	47	54	..	26	16		..	2	98	778										
	Formal notices by authority	12	14	11	..	..	36		1	..	12	12	24	1	47	54	..	20	16		..	1	50	311										
	Nuisances abated after notice	12	17	11	..	..	36		1	..	25	25	16	1	56	..	43	26	16		..	..	17	312	1	..	..	11	8	30	24	1			
Cheadle. 24,657.	Inspections & observations made	3	2	4	6	15	6	127	36	22	46	7052	1	18	152	19	117	36	2	2	..	..	23	7689										
	Formal notices by authority	3	2	4	6	..	..	..	..	2	9	56	1	..	156			..	1	1	..	..	..	241										
	Nuisances abated after notice	2	2	4	5	..	..	..	..	2	7	56	1	..	..				1	1	..	..	..	81	1	..	..	8	4	5	68	3	..	..	1	
Eccleshall. 5,611.	Inspections & observations made	2	2	1	3	2	52		9	7	..	16	56	..	22			2	5	5	..	..	..	184										
	Formal notices by authority	2	2	1	2	..	1		1	..	..	11	41	..	14			2	5	5	..	..	..	87										
	Nuisances abated after notice	1	1	1	1	..	1		1	..	..	9	40	..	10			2	5	5	..	..	..	77	1	..	..	..	..	..	5	1			
Gnosall. 4,700.	Inspections & observations made	2	..	1	..	..	..	..	..	1	24	..	..	..	..	..	9	9	..	..	..	..	..	46										
	Formal notices by authority	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	6	..	..	..	..	..	..	7										
	Nuisances abated after notice	2	..	1	..	..	..	..	..	1	..	..	..	..	..	..	6	9	..	..	..	..	..	19	..	..	..	4	..	..	18	2			

† Inspected.

District and Population.		Dwelling-houses and Schools.				Lodging-houses.	Dairies and Milkshops.	Cowsheds.	Bakehouses.	Slaughter-houses.	Canal Boats.	Ashpits and Privies.	Deposits of refuse & manure.	Water-closets.	House drainage.			Water supply.	Pigsties.	Animals improperly kept.	Offensive trades.	Smoke nuisances.	Other nuisances.	Totals.	Food supply & Water.					Precautions against infectious disease.					
		Foul conditions.	Structural defects.	Overcrowding.	Unfit for habitation.										Defective Traps.	No disconnection.	Other faults.								Seizures of unwholesome food.	Samples of food taken for analysis.	Samples of food found adulterated.	Samples of water taken for analysis.	Samples of water condemned as unfit for use.	Lots of infected bedding disinfected or destroyed.	Houses disinfected after infectious disease.	Schools disinfected after infectious disease.	Prosecutions for not notifying existence of infectious disease.	Convictions for not notifying existence of infectious disease.	Prosecutions for exposure of infected persons or things.	Convictions for exposure of infected persons or things.
Kingswinford. 19,990.	Inspections & observations made	194	71	10	7	..	18	36	15	43	42	100	47	3	13	28	25	40	..	18	..	..	30	740											
	Formal notices by authority	10	45	3	..	..	4	10	9	3	10	52	..	2	9	14	..	..	..	..	..	..	..	171											
	Nuisances abated after notice	120	68	10	7	..	18	36	15	43	42	100	47	3	13	28	25	40	..	18	..	..	30	663	..	..	..	25	22	..	17	1				
Leek. 13,868.	Inspections & observations made	14	9	4	6	14	82		20	20	108	96	30	19	33	25	38	13	17	12	..	3	9	572											
	Formal notices by authority	7	6	4	4	2	12		..	4	9	40	8	12	26	22	30	7	14	6	..	2	3	218											
	Nuisances abated after notice	6	5	4	4	2	12		..	4	7	38	8	12	33	16	28	6	14	6	..	2	3	200	..	..	..	19	12	150	24	6				
Lichfield. 25,985.	Inspections & observations made	8	17	11	8	..	128		3	31	132	424	37	8	43	30	126	13	33	7	..	..	32	1091											
	Formal notices by authority	..	1	..	..	..	..		3	..	..	..	..	..	1	..	2	..	..	..	..	..	..	7											
	Nuisances abated after notice	8	12	11	8	..	40		3	31	21	414	37	8	40	27	118	13	30	7	..	..	26	854	..	..	..	..	..	183						
Mayfield. 4,150.	Inspections & observations made	16	4	..	..	12	6	80	4	2	..	15	6	5	6	6	..	4	5	5	..	..	2	178											
	Formal notices by authority	14	..	..	..	..	..	2	..	..	..	10	..	..	4	3	..	..	1	..	..	..	..	34											
	Nuisances abated after notice	16	4	..	..	..	6	20	..	..	..	15	..	5	6	6	..	4	5	5	..	..	2	94	..	..	..	..	..	39	42	1				
Newcastle. 6,721.	Inspections & observations made	256				..	20	50	14	8	..	212	8	..	298			12	26	..	6	4	..	914											
	Formal notices by authority	19	23	3	1	..	1	10	2	..	..	41	2	..	204			3	8	..	..	..	..	317											
	Nuisances abated after notice	19	21	3	1	..	1	10	2	..	..	41	2	..	200			1	8	..	..	..	..	309	..	..	..	2	1	..	8					

RURAL—continued.

District and Population.		Dwelling-houses and Schools.				Lodging-houses.	Dairies and Milkshops.	Cowsheds.	Bakehouses.	Slaughter-houses.	Canal Boats.	Ashpits and Privies.	Deposits of refuse & manure.	Water-closets.	House drainage.			Water supply.	Pigsties.	Animals improperly kept.	Offensive trades.	Smoke nuisances.	Other nuisances.	Totals.	Food supply & water.					Precautions against infectious disease.						
		Foul conditions.	Structural defects.	Overcrowding.	Unfit for habitation.										Defective Traps.	No disconnection.	Other faults.								Seizures of unwholesome food.	Samples of food taken for analysis.	Samples of food found adulterated.	Samples of water taken for analysis.	Samples of water condemned as unfit for use.	Lots of infected bedding disinfected or destroyed.	Houses disinfected after infectious disease.	Schools disinfected after infectious disease.	Prosecutions for not notifying existence of infectious disease.	Convictions for not notifying existence of infectious disease.	Prosecutions for exposure of infected persons or things.	Convictions for exposure of infected persons or things.
Seisdon. 13,341.	Inspections & observations made	76	39	7	1	..	4	50	11	8	83	316	60	1	59	57	57	69	49	..	..	.	..	947	..	..	..	24	16	..	76	8				
	Formal notices by authority	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	193												
	Nuisances abated after notice	76	39	7	1	..	..	11	..	..	..	316	60	1	59	57	57	69	49	..	..	..	..	802												
Stafford. 10,700.	Inspections & observations made	..	..	1	..	..	129		..	..	68	101		..	30			49	..	..	..	1	..	379	..	..	..	16	1	3	18					
	Formal notices by authority	..	..	1	..	..	..		..	..	..	8		..	3			1	..	..	..	..	..	13												
	Nuisances abated after notice	..	..	1	.	..	..		..	..	..	8		..	3			1	..	..	..	..	..	13												
Stoke-on-Trent. 5,013.	Inspections & observations made	54	92	10	..	..	240		8	36	..	34	2	..	16	..	..	4	..	..	..	..	..	496	..	..	..	..	..	60	36	4				
	Formal notices by authority	27	..	5	..	..	..		..	..	..	17	1	..	..	..	..	2	..	..	..	..	..	52												
	Nuisances abated after notice	27	46	5	..	..	..		..	..	..	17	1	..	..	..	..	2	..	..	..	..	..	98												
Stone. 8,600.	Inspections & observations made	2	.	4	..	..	121		7	6	99	25	50	..	17			7	1	4		..	..	343	..	..	..	..	..	..	11					
	Formal notices by authority	2	..	4	..	..	3		..	..	8	15	45	..	11			7	1	4	..	..	..	100												
	Nuisances abated after notice	2	..	4	..	..	3		..	..	5	12	43	.	8			5	1	4	..	..	..	87												
Tamworth.* 4,813.	Inspections & observations made	66	18	8	2	..	188		18	16	18	18	31	6	65			..	..	..	..	..	28	482	..	..	..	6	6	28	53	5				
	Formal notices by authority	23	5	2	1	..	2		4	2	3	3	4	2	22			3	2	2	..	..	5	85												
	Nuisances abated after notice	21	4	2	1	..	2		4	1	3	3	3	2	22			3	2	2	..	..	5	80												

* Staffordshire portion.

RURAL—continued.

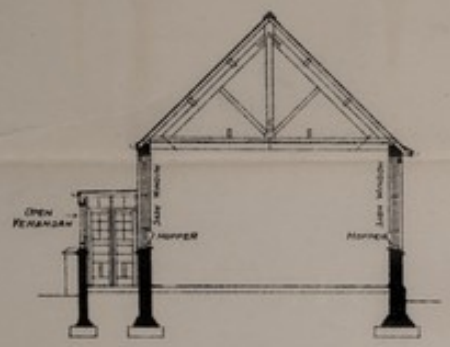
District and Population.		Dwelling-houses and Schools.				Lodging-houses.	Dairies and Milkshops.	Cowsheds.	Bakehouses.	Slaughter-houses.	Canal Boats.	Ashpits and Privies.	Deposits of refuse & manure.	Water-closets.	House drainage.			Water supply.	Pigsties.	Animals improperly kept.	Offensive trades.	Smoke nuisances.	Other nuisances.	Totals.	Food supply & Water.					Precautions against infectious disease.						
		Foul conditions.	Structural defects.	Overcrowding.	Unfit for habitation.										Defective Traps.	No disconnection.	Other faults.								Seizures of unwholesome food.	Samples of food taken for analysis.	Samples of food found adulterated.	Samples of water taken for analysis.	Samples of water condemned as unfit for use.	Lots of infected bedding disinfected or destroyed.	Houses disinfected after infectious disease.	Schools disinfected after infectious disease.	Prosecutions for not notifying existence of infectious disease.	Convictions for not notifying existence of infectious disease.	Prosecutions for exposure of infected persons or things.	Convictions for exposure of infected persons or things.
Tutbury. 9,145.	Inspections & observations made	3	4	4	..	..	70		8	6	..	76	112	12	100			24	40	2	1	..	24	386											
	Formal notices by authority	..	.	1	..	..	..		..	..	..	2	..	..	2			2	1	1	..	..	..	9											
	Nuisances abated after notice	3	4	4	..	..	..		..	3	..	38	12	9	30			6	12	2	..	..	24	147	..	..	..	3	2	..	14					
Uttoxeter. 8,280.	Inspections & observations made	12	4	2	1	..	281		11	12	..	92	9	27	13	7	..	47	16	..	..	3	..	537											
	Formal notices by authority	10	3	2	..	..	12		..	..	..	7	9	11	13	7	..	..	16	..	..	..	..	90											
	Nuisances abated after notice	10	3	2	1	..	12		..	..	..	7	9	11	13	7	..	15	16	..	..	1	..	107	..	..	..	..	..	..	23					
Walsall. 10,893.	Inspections & observations made	44	38	12	2	..	39	67	13	34	35	519	18	33	27	5	37	1	15	1	..	..	17	957											
	Formal notices by authority	17	14	12	1	..	..	4	2	1	..	64	9	11	13	3	15	..	5	1	..	..	11	183											
	Nuisances abated after notice	36	29	12	2	..	..	4	2	1	..	75	9	11	23	5	37	..	10	1	..	..	14	271	..	..	..	1	..	..	29					

THE STAFFORDSHIRE TYPE OF ELEMENTARY SCHOOL.

NOTES:–

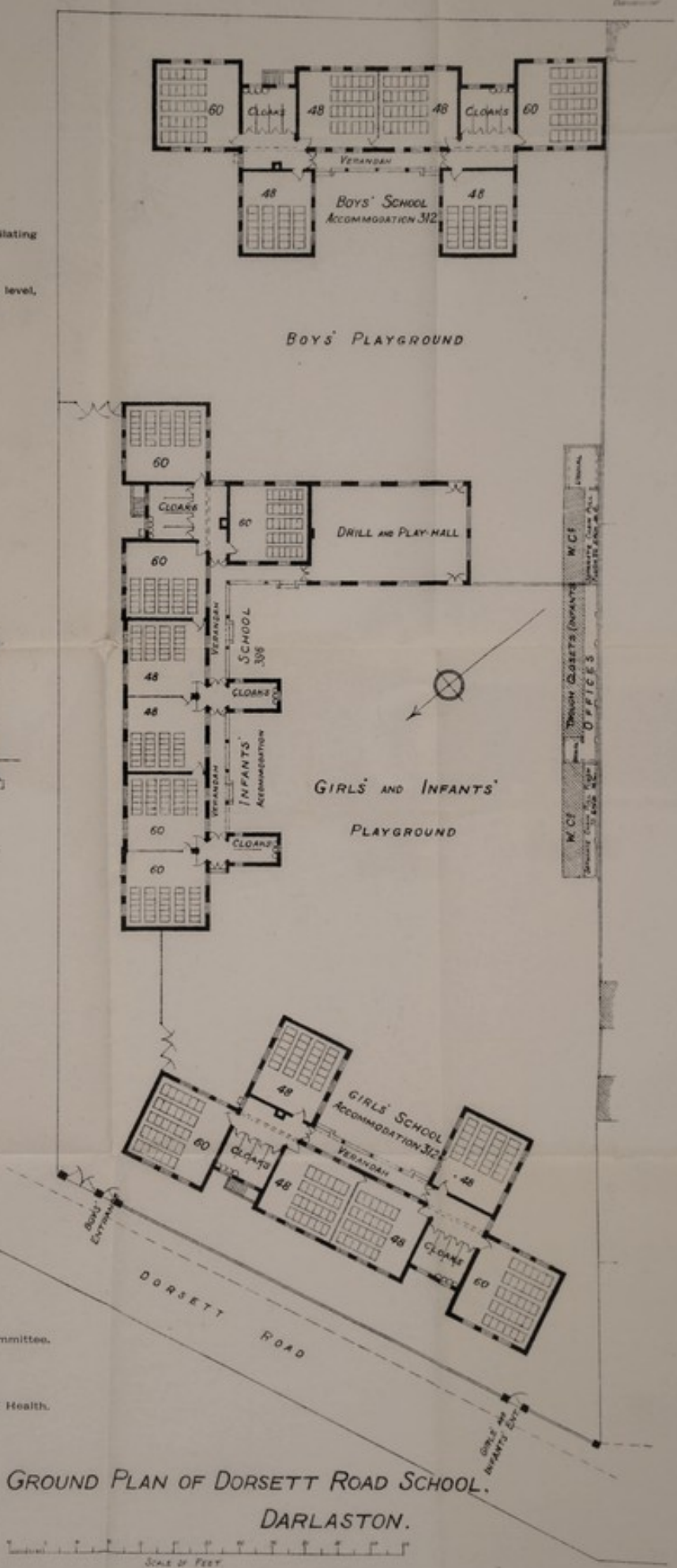
Warming by low-pressure water circuit and ventilating radiators.

Hopper openings in windows, 5 feet from floor level, and sash openings above.



SECTION.

SCALE OF FEET



J. HUTCHINGS, A.R.I.B.A.,
Architect and Surveyor of County Education Committee.

GEO. REID, M.D., D.P.H.,
County Medical Officer of Health.

GROUND PLAN OF DORSETT ROAD SCHOOL. DARLASTON.

SCALE OF FEET

FOLDOUT FOLDOUT FOLDOUT

NOTES:—

Warming by low-pressure water circuit and ventilating radiators.

Hopper openings in windows, 5 feet from floor level, and sash openings above.

WFLet

Staffordshire

ROYAL COMMISSION ON SEWAGE DISPOSAL.

SPECIAL & GENERAL EVIDENCE

BY

GEO. REID, M.D., D.P.H.,

Medical Officer of Health, Staffordshire County Council,

GIVEN ON

December 9th, 1904, and May 17th, 1905.

PRESENTED TO THE COUNTY COUNCIL AUGUST 1, 1905.

ROYAL COMMISSION ON SEWAGE DISPOSAL.

SPECIAL AND GENERAL

EVIDENCE BY GEO. REID, M.D., D.P.H.,

Medical Officer of Health, Staffordshire County Council.

SPECIAL EVIDENCE GIVEN ON DECEMBER 9th, 1904.

(*a*) Laboratory Test for Sewage Effluents;

(*b*) Standard of Purity of Sewage Effluents;

(*c*) Admission of Storm Sewage into Streams.

In submitting the following points relating to the above questions for the consideration of the Royal Commission on Sewage Disposal, in compliance with the request of the Commission, conveyed in a letter from their Secretary, dated November 28th, 1904, I am anxious it shall be understood that I have no desire to dogmatize on such difficult and important questions, but merely to submit certain opinions and impressions I have formed as the outcome of practical experience as Administrative Officer of a County Authority having control, under the Rivers Pollution Prevention Acts, of streams which drain an area embracing a population of nearly 2,000,000. I would also point out that any opinion I may express regarding the chemical aspect of the question is based upon the practical information afforded by the particular analytical methods I have adopted throughout, and that I offer no positive opinion as to whether these are or are not the best methods to adopt.

In the greater part, the population of the area under my charge is congregated together in two thickly-populated areas, formed by abutting urban districts in the north and south of the county, the intervening area being largely rural in character. It is important also to note that the Trent, which drains practically the whole area, arises within the county by small tributaries in the north and south (where the populous

towns are situated), which converge in a south-easterly and north-easterly direction to form the main important stream, which, having traversed the central rural area, enters Derbyshire at Burton-on-Trent.

It will be seen, therefore, that where the small tributary streams arise (at the extreme north and south of the county) the large urban districts are situated, and at the points where the two main tributaries leave these populous areas it may be said that sewage or sewage effluents have contributed no less than about one-half towards the total flow in each case, but more especially in the case of the southern stream.

Laboratory Test for Sewage Effluents.

The method of analysis I have been in the habit of employing is the one which, in whole or in part, is most generally in use throughout the country as follows, the figures being stated in parts per 100,000 :—

Solids in solution and suspension ; chlorine ; free and organic ammonias (Wanklyn method) ; oxygen absorbed in four hours at 80° F. ; and nitric nitrogen (Sprengel's method). I also apply a test of opacity, the standard being the depth of fluid necessary to obscure certain test lines. The last-mentioned test, which I introduced some ten or twelve years ago, I find very useful, and I believe it has since been adopted in one or two other counties.

From a practical experience of these analytical methods, extending over a period of upwards of twelve years, during which time I have analysed from 300 to 400 samples of sewages, effluents, and river waters annually, I am of opinion that they afford very valuable information, which, on the whole, enables one to form a correct estimate of the quality of the work done by sewage disposal plants.

I am not prepared to deny that there are other analytical methods which may be said to be more exact, but, before discarding those now generally in use, it should, in my opinion, be very clearly established that from a practical point of view the change would be advantageous. It is important not to lose sight of simplicity of application, for upon that depends the

number of systematic analyses conducted, and, consequently, the efficiency of supervision by the central authority. It is also of importance that the chain of records should not be broken by a change of methods by which the analytical data of the past would be rendered more or less useless for comparative purposes.

Standard of Purity of Sewage Effluents.

It would undoubtedly be convenient if a standard of purity could be established, but I doubt very much whether it would be possible to arrive at such a standard, and, if possible, whether it would be expedient to apply it generally for the following reasons :—

(1.) In judging of the quality of an effluent, various analytical figures have to be taken into account, and, as the significance of each is governed by the others, it would not be feasible to fix a definite individual minimum. Moreover, it would be misleading and erroneous to base a standard upon one figure because the limit within which that figure might vary in a good effluent is considerable, taking other figures into account.

(2.) If a general standard could be established on some basis, it would probably be the outcome of a compromise between conflicting opinions as to the degree of purification which should be required, and, as in practice this is governed to a considerable extent by local circumstances, it follows that authorities in certain districts might be called upon to do more than is really needful, while others would be justified in discharging an effluent of a quality which, in view of local conditions, would render the task of the central authorities in bringing about a purification of the streams a difficult, if not an impossible one.

In this connection, the volume of the stream compared with the volume of the sewage, is not the only consideration, even if one were justified in establishing a standard on a sliding scale upon such a basis. Among other local considerations which should be taken into account are the character of the town or district from the point of view of cleanly streets, or

otherwise ; contour as affecting the delivery of storm sewage at the outfall ; and the condition of the sewers as regards self-cleansing gradients, &c.

(3.) If a standard should be decided upon, I am certainly of opinion that it should not be a general one, but that provision should be made for varying its terms in accordance with local circumstances.

(4.) I understand that the question of the feasibility of establishing a biological standard of purity has engaged the attention of the Commission, and with regard to that I have the following comments to make :—

(*a*) Sterilization of sewage as the sole means of treatment could not be entertained because, from a nuisance point of view, trouble would subsequently arise when, by dilution in streams, the antiseptic state was no longer maintained. It follows, therefore, that if sterilization is to be adopted, it must be as an adjunct to sewage treatment as now practised, involving a great increase in capital outlay and annual maintenance charges.

(*b*) Even if it were found to be practicable to sterilize the volume of sewage now usually treated, it is not conceivable that all the storm sewage could similarly be dealt with, and, that being the case, the intended benefit would only be intermittently operative, while, at the same time, the knowledge that measures were being used to render the sewage harmless in a biological sense, would cause the public to have a false feeling of security—a dangerous situation, which is created by most partial remedies.

(*c*) I take it that the only argument of any weight which can be advanced in support of the imposition of a biological standard of purity is that an authority lower down stream may derive their water-supply from such stream. My answer to that is that no matter how stringent the conditions imposed on the sewage disposal authority, such would in no sense relieve the water authority from adopting every possible means of purifying the river water before distribution. This being the case, the work would be done twice over, a relatively enormous volume being treated by the sewage disposal

authority—a much smaller volume (amounting only to the actual water consumed) by the water authority.

Admission of Storm Sewage into Streams.

The question as to the degree of dilution which should take place before storm overflows shall come into operation is one which should be subject to regulation.

The present practice of the Local Government Board in this respect, so far as new schemes are concerned, appears to reasonably meet the case, but, unless authorities of districts not recently sewered are by some process brought into line, the money spent on works for disposing of the dry-weather flow, will, so far as the purification of streams is concerned, be largely thrown away.

Information bearing upon this point is afforded by the attached table (Table I.) showing the effect of rainfall in the case of certain streams in Staffordshire, which I am prepared to comment upon.

The table, which has been prepared on short notice, deals only with a fractional part of the data in my possession, and which is at the disposal of the Commission, should they care to make use of it. Besides similar records of samples from other streams in the county, some thousands of analyses of effluents collected under varying conditions of rainfall are also available, and I think would repay the trouble of collating.

I may mention that in preparing the attached table, I was compelled, owing to the short time at my disposal, to take one record of analysis only, namely, organic ammonia, in classifying the returns and working out the means, although in all cases complete analyses were made and recorded.

There is another important consideration bearing upon this aspect of the question, namely, the existence of weirs on streams with flat gradients. I am strongly of opinion that central authorities, say county councils, should be empowered to abolish such weirs by purchase, charging the cost over the area affected. It is also desirable that such authorities should have power to cleanse the beds of streams and adopt such other means as would contribute to their free flow.

GENERAL EVIDENCE GIVEN ON MAY 17th, 1905.

Many of the questions submitted to me by the Commission have reference to specific sewage disposal works, and, as my experience is derived from various sources, I propose to confine my answers to such questions as have a general application, referring to my knowledge of particular works only in so far as may be necessary in support of my opinions and conclusions.

Sewage.

Question 19. *Do you find that the trade effluents interfere with the process of purification by reason of their quality, variations in composition, fluctuations of volume or otherwise? If so, would you kindly tell us what your difficulties are?*

As regards trade effluents, those of which I have had most experience are the following :—

(A) Acid waste from galvanizing works.

(B) Brewery waste.

(C) Chemical waste from works for the recovery of ammonia from gas liquor.

(*a*) As regards acid waste from galvanizing works, two liquors have to be considered, namely :—(1) spent acid, and (2) wash water.

In certain cases, such as Birmingham, where the volume of acid waste is trifling compared with the volume of sewage, it is found to be practicable to deal with the sewage containing both spent acid and wash water by ordinary methods, but in several cases in Staffordshire—Wolverhampton for example —where the proportion of such waste to sewage is very much greater, special methods of treatment, and certain restrictions as to discharging into the sewers are found to be necessary.

In such cases, as regards *spent acid*, the manufacturer should, in my opinion, be called upon to treat it before discharging it into the sewers, but in the case of *wash water*, no special treatment need be enforced, provided the manufacturer gives an undertaking not to discharge such liquor in bulk at considerable intervals, but more or less uniformly throughout the day, and also consents to the works being inspected by responsible officers of the Authority from time to time at reasonable hours.

Even under such conditions, however, the sewage in certain cases will not be amenable to treatment entirely on biological lines, but must be neutralized by the addition of lime, followed by treatment in precipitation tanks, as a preliminary to further disposal by land or artificial filters.

This, of course, involves dealing with a large amount of sludge, as in the case of ordinary sewage when chemically treated.

It is not desirable that even treated waste pickle or wash water should be discharged into a stream direct, facilities, therefore, should in all cases be afforded for discharging such waste into sewers after treatment to the required extent and under the conditions suggested.

According to Mr Jones, the County Analyst of Staffordshire, the proportion of free acid in wash water compared with waste pickle is, roughly speaking, about one-tenth, but in volume the former is probably four or five times greater than the latter.

When the acid used is hydrochloric acid the pickle contains from 1,000 to 2,000 grains per gallon of free acid, and from 5,000 to 7,000 grains of iron. In the case of sulphuric acid waste pickle the amounts are from 1,200 to 2,000 grains free acid and from 7,000 to 9,000 grains iron.

Wash water, on the other hand, contains from 150 to 200 grains per gallon free acid and from 50 to 150 grains iron.

(*b*) As regards brewery waste, when present in considerable quantity in sewage, while such sewage is amenable

to bacterial treatment throughout, probably a high-class effluent can only be obtained by means of a deeper filter than is usually found necessary, or, better still, perhaps, by double filtration through shallower filters. The nuisance resulting, however, from septic tank effluvia, or from sludge disposal if chemical precipitation is the method of preliminary treatment adopted, is so great that in the case of sewage disposal works situated in close proximity to dwellings, special precautions must be adopted to counteract it.

As an example of this nuisance difficulty, I may mention the sewage disposal works of Stone, an urban district in Staffordshire, with a population of about 6,000, where brewery waste constitutes nearly two-thirds of the sewage flow. In this case the existing works (chemical precipitation and polarite filtration) are inadequate in themselves, but, apart from that, the nuisance experienced, especially in the summer months, by residents within 250 yards of the works is considerable.

By means of an experimental plant, I was able to show that, so far as actual disposal of this sewage was concerned, septic tank treatment, followed by double filtration through filters each 3ft. 9in. deep, would give satisfactory results, but, having regard to the situation of the works, I advised the Authority that the adoption of special precautions would be necessary in order to prevent nuisance from smell. The remedy I suggested was the covering of the septic tanks and the cremation of the gases evolved, the effluent being conveyed to the filters in closed pipes and applied by movable distributors, rather than by sprays or troughs, to insure that the smallest possible area of tank effluent should be exposed to the air.

(*c*) As regards ammoniacal liquor waste, if present in considerable quantity, it is impracticable to deal with the sewage by any known process, owing chiefly to the high oxygen-absorbant property of such sewage. Also, the effluent, in itself, is poisonous to fish life. This I found to be the case at Oldbury, where the ammoniacal waste equals about one-tenth the dry-weather sewage flow, and the

Staffordshire County Council obtained an Order in Court against the District Council in consequence. In this case, had it been necessary, the County Council were prepared to show that the waste in question could be dealt with at a reasonable cost, if not at a profit, before being discharged into the sewers.

Question 24. *Does its* (sewage) *strength vary very much from hour to hour or on different days of the week, and if so, do these variations affect the quality of your final effluent to a marked degree?*

So far as the varying strength of sewage from hour to hour and on different days of the week is concerned, I have no data to enable me to answer this question, but, while I have no doubt the strength does vary considerably, in the absence of trade waste in considerable quantity in the sewage, I do not find from my numerous records of analyses that the quality of the effluents varies materially if the works are efficient in every respect.

Question 25. *How do you think "strength" of sewage as affecting purification is best expressed or measured?*

I think the best indices of the "strength" of sewage from a disposal point of view are the albuminoid ammonia and oxygen absorbed figures, but I have already given evidence on this point.

Storm Water Sewage.

I have already dealt with most of the points under this heading in my previous evidence, but as the questions now put are more detailed and specific, I desire to supplement certain answers I then gave.

Question 29. *Do you find that the amounts of suspended solids are increased or diminished in times of storm; and can you give the Commission the figures at the end of each hour during a storm of some hours duration?*

I have not got sufficient data to enable me to express a very definite opinion as to the effect of rainfall upon the amount of suspended solids from hour to hour.

My practice in recording systematic analyses of sewage, sewage effluents, and river waters, is to note the rainfall in the particular locality the day before, the week before, and the

month before the date of collection of the samples; also, in the case of streams, I record the approximate flow at the time of collection.

On looking through my records, which are very numerous, extending over a period of fifteen years, the impression I have formed is that in populous towns, rainfall, especially following a dry period, has the effect of greatly increasing the suspended solids, while in the case of less populous places, where the street traffic is not so great, this is not the case.

As bearing upon this question, I have prepared a table shewing the suspended solids, albuminoid ammonia, and chlorine figures under different conditions of rainfall in the case of three Staffordshire streams, indicating also the volume of flow in each case. (See Table II.)

In selecting from my records the three streams in question for this purpose, I had regard to the population draining into each, and the relationships between sewage flows and the normal flows of the streams. I have also indicated the approximate flow of the streams at the time of collecting the samples in the last line of the table.

This table may be looked upon as supplemental to the table I prepared for the purpose of giving evidence on a former occasion.

Question 31. *What is the character of the liquid part of the sewage in storm times? Perhaps you could illustrate this answer by analyses of the liquid portion of the sewage in dry weather and in storm times? Please state whether in making the analysis the solids were removed by settling or by filtering through filter paper.*

Bearing upon this question, the figures set forth in Table III. may prove of interest, as shewing the degree to which the suspended solids in sewage add to the impurity of the liquid. It is true that the samples in question were taken from streams, but they were highly-polluted streams, in fact it may be said that the volume of sewage compared with stream water amounted to from one-fourth to one-half, so that from this point of view, the samples may be looked upon as sewage diluted to the extent indicated.

Question 41. *Do you consider that in certain circumstances this liquid (road drainage) should be purified?*

The road drainage in the case of populous towns, where the natural outlet is into small streams, is certainly highly polluting, and I think it would not be unreasonable to require in such cases that the liquid should be subjected to at least partial subsidence before being discharged into a stream.

Settlement by Sedimentation alone.

I have had but little experience in the preliminary treatment of sewage by sedimentation alone, the method in the case of nearly all the works of which I have knowledge being chemical precipitation, septic tank treatment, primary filtration, and contact.

Chemical Precipitation.

Question 53. *Have you had any experience as to the chemical precipitation of sewage?*

I have had considerable experience as to the chemical precipitation of sewage.

Question 54 *Have you any reason to think that sewage from which the solids have been removed by the aid of chemicals is less easily purified by subsequent filtration than sewage from which the solids have been removed by settlement or by passage through septic tanks?*

I am satisfied that sewage from which the solids have been removed by the aid of chemicals, is, if anything, more readily purified by subsequent filtration, than sewage from which the solids have been removed by settlement or passage through septic tanks.

In certain cases, as I have already indicated, for example, when the sewage contains galvanisers' waste, chemical precipitation is essential.

In Table V. the results of filtration after chemical precipitation will be seen in the case of Lichfield and Wolverhampton, and on an experimental scale in the case of Tipton.

Question 55. *Have you tried various chemicals? Can you give any comparative data on the practical value and cost of*

different precipitants for the preliminary treatment of sewage, stating whether you are referring to the precipitation of strong or of weak sewage?

My experience has been mostly confined to "alumino-ferric" and lime as precipitants, but of course in the case of sewages containing galvanisers' waste, lime only is necessary.

I cannot give any comparative data with regard to the cost of different chemicals. "Alumino-ferric," being a proprietary article, is costly, and I do not think that the results obtained are better than those from sulphate of iron (with lime), which is much cheaper.

"Alumino-ferric" in cakes is convenient in the case of small works, where, if it be placed in cages in the sewage channel, little attention is necessary.

Question 56. *What is the most effective way of adding chemicals?*

The most effective way of adding chemicals is in soluble form.

Question 57. *What is the average analysis of the liquor from your precipitation tanks (include "suspended solid" figures)? What length of time does the sewage remain in the tanks?*

In Table IV. I have given the mean figures of my analyses of typical chemical precipitation tank effluents in this county, the capacities of the tanks, population, and dry-weather flow of sewage, &c., being given in each case.

Question 58. *What is the character of the suspended matter in such liquor?*

I have not made any special analyses to show the character of the suspended matter in chemically precipitated effluents.

Question 59. *Do you find it necessary to add further chemicals to the sludge before it can be dealt with? If so, for what reasons, and what chemicals do you use and how are they added?*

It is the usual practice to add lime to the sludge in cases where it is treated in filter presses, owing to the mechanical difficulty arising from clogging of the cloths if lime is not added.

The addition of lime not only facilitates the process but enables a drier and firmer cake to be formed.

In the case of Wolverhampton, the lime, slacked and screened, is introduced slowly into the sludge ram while it is filling, and washed down by liquor from the filter presses, the quantity added being from 0·4 to 0·5 cwt. per ton of pressed cake.

Question 60. *What is the manurial value of the sludge obtained by the chemical precipitation of sewage at your works, and will farmers take it?*

I believe the manurial value of sludge obtained by the chemical precipitation of sewage is very small. Farmers, as a rule, will undertake to remove the sludge, but they generally refuse to pay anything for it, although in some cases 1s. a load is paid.

Question 62. *Do you find any nuisance from the treatment of sewage in chemical precipitation tanks? Have any complaints been made?*

So far as treatment of the sewage in the tanks is concerned, little or no nuisance need be experienced, provided the sludge is removed at short intervals; the disposal of the sludge, however, is frequently attended with nuisance to persons living in the locality, but this is a question which will be dealt with later on.

Septic Tanks.

Question 63. *How should septic tanks be shaped?*

Septic tanks should, I think, be longitudinal in shape.

Question 64. *Should they be divided into sections?*

There is no need, in my opinion, to divide septic tanks into sections, unless in cases where separate detritus tanks are not provided, in which event, a section of the septic tank should be utilised for such a purpose.

Question 65. *Should they be used in series or in parallel?*

I think septic tanks should be used in parallel.

Question 66. *Is a scum necessary or desirable?*

In my opinion, the formation of a scum is not necessary, and it appears to be immaterial whether such is formed or not.

Question 67. *Should the septic tank be closed in, and if so, what advantages does a closed tank possess over an open one?*

I do not think there is anything to be gained by closing in a septic tank, except in cases where, from its situation, it may give rise to nuisance, calling for special precautions as regards ventilation and, possibly, the cremation of the offensive gases.

Question 68. *What do you consider the best arrangement for the "feed" and "draw-off"?*

Both the "feed" and "draw-off" should, I think, be by means of a submerged inlet and outlet extending along the whole width of the tank.

Question 70. *What is the most advantageous rate of flow through septic tanks, and what is the rate of flow at which quicker passage through the tanks becomes, in your opinion, distinctly disadvantageous? Why do you consider one rate more advantageous than another? Do you think that the rate of flow should depend on the strength or character of the particular sewage which is being dealt with?*

The question of the rate of flow through septic tanks is one concerning which further information, the outcome of practical experience, is desirable. Personally, I think that in the case of ordinary domestic sewage, the usual tank capacity of 24 hours dry weather flow may be considerably reduced, say to from 14 to 16 hours.

Question 71. *Is it possible to "over-septicise" a sewage, and if so, for what reasons and how is the "over-septicising" brought about?*

While I have had no experience of the treatment of over-septicised effluents, I can quite understand that the nitrification of such might present difficulties. Certainly, from the point of view of possible nuisance, it is desirable that the septic process should be cut short as soon as may be found to be practicable.

Question 73. *Do you think a certain amount of sludge should be removed periodically from septic tanks, or do you prefer to work them for a considerable period without cleaning and then remove all the sludge?*

I think that septic tanks should be worked for as long a period as possible without removing the sludge, that is, if adequate accommodation has been provided for the deposition of the detritus.

Question 74. *In the latter case how often would you clean out the septic tank?*

I think a septic tank should be worked without cleansing until such time as its available capacity is materially diminished by the collection of sludge.

Probably this period will be governed by the quality of the sewage, but, as a case in point, I may mention that I have known a tank to be in continuous use for three years without shewing any need for emptying, and on being emptied at the end of that period, merely to ascertain the actual amount of sludge then in the tank, it was found that the deposit was really immaterial.

Question 75. *How do you think the sludge should be taken out of the tank, and how should it be disposed of? Does any nuisance attend the operation?*

As septic tanks need only be emptied at long intervals, a portable pump would answer the purpose, the fluid part being pumped back into other tanks in use, and the sludge pumped on to land.

The character of the settlement from the septic tank is such that no nuisance arises from its disposal.

Question 78. *Should any portion or the whole of the sewage which arrives at the outfall works in storm times be passed through the septic tanks?*

I am not prepared to answer this question; it can only be answered by careful observations being made on works which have various sized tanks relative to the dry weather flow.

Question 82. *Do you find that septic tank liquor is more easily treated on filters than settled sewage or than precipitated sewage, assuming that in each case you have the same amount of suspended solids in your tank liquor? Kindly state what observations you have made on this point along with what you*

consider the reasons for advantage or disadvantage of the one or other process.

Relatively speaking, chemically precipitated sewage is in my experience so free from suspended matter that I have no data enabling me to say whether it would be more or less amenable to treatment than septic tank liquor or settled sewage supposing it contained an equal amount of suspended solids. I am satisfied, however, that in practice chemically precipitated sewage is more readily dealt with by subsequent filtration than either of the others, because of the comparative freedom from suspended solids, while, at the same time, sufficient septic action has taken place during the process of precipitation.

Question 83. *Are the impurities in solution in sewage materially different from the impurities in solution in septic tank liquor?*

I think that a material reduction in oxidizable organic matter in solution takes place by septic tank treatment.

Some idea of this may be gathered from the figures of analyses of the sewage and septic tank effluents of Hanley and Pelsall, set forth in Table V. In the case of Tividale, on the other hand, it would not be wise to draw any conclusions, as the figures relate to only one sample of sewage, which could not be taken as the standard of comparison with the mean of the five samples of septic tank effluent. In considering this matter in the light of the figures I have referred to, it is true that the analyses in all cases were made after shaking the samples, still the reduction in the organic impurity in the tank effluents is far greater than could be accounted for by the removal of suspended solids effected by the tank.

Question 84. *Have you any data on the relative value of (a) plain septic tanks; and (b) septic tanks filled with rough stones or flints?*

I have not got sufficient data to enable me to express a very positive opinion regarding the value of plain septic tanks as compared with such tanks filled with rough stones or flints, but from the experience I have had I am strongly inclined to

the opinion that the latter tanks have no advantage over the former.

Question 85. *Do you find any nuisance from the treatment of sewage in septic tanks? Have any complaints been made?*

If the septic action is continued longer than is necessary, any nuisance which may exist is intensified, and, in any case, the distribution of septic sewage on filters if the works are situated near dwelling houses, is likely to cause nuisance, although the risk is greatly lessened by adopting a distributor which exposes as small an area of tank effluent to the atmosphere as possible.

Tanks in General.

Question 86. *Do you think it desirable that the suspended solids in sewage should be removed as far as practicable before sewage is filtered? If so, what do you consider a practicable limit to get down to? Kindly give the figures in parts per* 100,000.

I certainly think that the suspended solids in sewage should be removed as far as practicable before filtration. A practicable limit in the case of a septic tank effluent should, in my opinion, be from five to eight parts per 100,000, and in the case of a chemically precipitated effluent, from two to three parts.

It will be seen from the records of suspended solids in the case of the examples given in Table No. V. that all came within these limits.

Question 87. *Assuming that it is desirable to remove the suspended solids as far as practicable, how do you consider that this can best be done?*

Undoubtedly the best way of removing suspended solids is by chemical precipitation, but, of course, by such a method, the question of sludge disposal becomes more difficult, and, together with the provision of chemicals, adds considerably to the cost. For this reason, and in view of the fact that the suspended solids in septic tank and primary filter effluents do not render the sewage incapable of final purification, there is no need to use chemicals under ordinary circumstances. (See also answer to Question 123).

Question 88. *Have you any experience of any mechanical device or any special tanks for freeing tank liquor of suspended matter before delivering it to filters?*

I have had no personal experience of any mechanical device for freeing tank liquor of suspended matter, but in Derbyshire, straining by means of upward-flow filters has been adopted, I believe, with advantage, and at the Birmingham Tame and Rea District Sewage Disposal Works, tanks on the Dortmund principle have lately been under trial with this object.

Question 89. *What other (if any) method of dealing with tank liquor before delivering it to filters do you regard as necessary or advisable?*

Personally, I am of opinion that chemically precipitated sewage can with impunity be dealt with in fine-grain filters, and in the case of septic tank effluents, provided the suspended solids do not exceed the limit I have suggested, no difficulty need be experienced from treatment on similar filters.

In the practical working of such filters, it would seem that the suspended solids are held back by the top layer of the filter, where they are digested, and all that is necessary to prevent clogging, so long as the filter is not overtaxed, is that the surface shall be periodically forked and raked.

Question 90. *May I ask you to put before the Commission a full statement of your views as to the comparative cost and relative advantages of the various methods of settlement. I am not sure whether it would be possible for you to make this comparison on the assumption that in each case you reduce the same sewage down to the same figure for suspended solids, but if this could be done it would be useful to include a comparison on this basis. Kindly include the following methods so far as you have experience of them :—*

Quiescent settlement without chemicals.
Quiescent settlement with chemicals.
Continuous flow settlement without chemicals.
Continuous flow settlement with chemicals.
Septic tank treatment.

In framing your answer, please take into account the question of nuisance, the subsequent dealing with the sludge, the subsequent purification of the tank liquors, and the annual cost as well as the initial expenditure. It may be that with some kinds of sewage you would prefer one method and with other kinds another. If so, perhaps you would kindly indicate what rules you think should determine the choice.

The only methods of sludge removal concerning which experience enables me to form an opinion are continuous flow settlement with chemicals, primary ærobic filtration, and septic tank treatment. As regards the first mentioned, apart from the cost of the chemicals and the difficulties incidental to sludge disposal, I certainly think it has advantages over the other two methods.

With reference to primary ærobic filtration, the advantage of such treatment is the freedom from nuisance attending the further disposal of the effluent, but as it is frequently impossible to provide the necessary increased fall, to avoid pumping the sewage the adoption of septic tank treatment is usually indicated.

Contact Beds.

My experience of the working of contact beds led me, eight years ago, to discard that method of treatment as being far inferior to treatment by continuous percolating filters constructed of fine particles. In my opinion, to obtain anything approaching the standard of effluent by contact as can be obtained by filtration, double contact, after septic tank treatment, is essential, and to arrive at a corresponding result, something approaching twice the total cubic capacity of the beds is necessary in the former case as compared with the latter. Moreover, the tendency to clogging in the case of contact beds is greater than in the case of filters. The former, therefore, have to be rested more frequently and for longer periods, and periodically it becomes necessary to empty the beds for cleansing purposes—a necessity which, with legitimate working, has never arisen in my experience in the case of filters in which the filtering medium is satisfactory and of fine grade. Apart also from the chemical quality of the effluents, I invariably find that a contact effluent is dirtier in appearance than one from a fine-grain filter.

Some engineers recommend single contact after septic tank treatment, in cases where suitable land is available —a plan which, I think, has nothing to recommend it. In fact, if land filtration is to be the method of effecting the final changes, and the land is suitable, there is no need for further preliminary treatment beyond that of chemical precipitation, or septic tank treatment, and the introduction of single contact as an intermediary process is a waste of money. On the other hand, if suitable land of sufficient area is not obtainable, full bacterial treatment should be provided, although there may be cases in which land, while not sufficient for dealing with the entire sewage flow, may prove useful if held in reserve for storm sewage or made use of for treating a portion of the dry weather flow.

Continuous or Percolating Filters.

Question 121. *What do you find are the best filtering materials, and what size should the material be?*

In my opinion any hard non-friable material of irregular shape and not too smooth a surface, and one which is not liable to disintegrate is satisfactory as a filtering medium. Among such may be mentioned gravel, shingle, granite, blue bricks, saggers (a hard-baked clay, the discarded broken utensils in which potters' ware is packed for firing), clinker, coke, coal, &c. Ashes, on the other hand, are not satisfactory, owing to their friable nature. In Staffordshire a trial is now being made of selected furnace slag, such pieces as are porous or honeycombed being rejected. I am not yet in a position to say whether this material will prove permanently satisfactory and at present I should hesitate to advocate its use in view of possible chemical disintegration, especially if small-sized particles are used.

As regards the size of the filter particles, I am most decidedly of opinion that the smaller the grade compatible with aeration of the filter the better. In my experience the most effective size is $\frac{1}{8}$in. to $\frac{1}{4}$in., but, on the ground of economy, I advocate sizes of from $\frac{1}{4}$in. to $\frac{1}{2}$in. for the body of the filter, the top layer to a depth of from 9in. to 12in. being formed of the smaller grade particles. In the case of filters constructed

of such sized particles, washed free from dust, and given a moderately clarified tank effluent, properly distributed, I have never found any clogging to take place which could not be remedied by surface forking and a few days' rest, and I have instances of such filters having been worked continuously for seven years and are still working with excellent results without having been disturbed. (See Table V.) On the other hand, I know of large-particle filters, worked on identical lines, which have become clogged in a few months.

Question 122. *What depth should a percolating bed be to obtain a good effluent? If this varies with the quality of the liquid going on, or with the size of the filtering material, please state how it varies, what depths you require for different liquids, and how you would distinguish one liquid from another, i.e., what analytical figures you would rely on, for this purpose.*

The efficient depth for a filter of such sized particles as I have approved is, in my opinion, 5ft. Such a filter, under ordinary circumstances, will produce an excellent effluent from sewage which has first undergone preliminary treatment, either in a primary filter of larger sized particles (½in. to 1in.), or by means of septic tank treatment or chemical precipitation. In the case of brewery sewage, however, or a sewage containing a large amount of tannery waste, I am not so confident that a filter of that depth would suffice, unless the rate of flow, and, consequently, the rate of travel through the filter, is considerably reduced, or, as an alternative, double filtration is resorted to through, say 4ft. filters.

Question 123. *Do you think it generally desirable that sewage should be subjected to some form of tank treatment before it is put on percolating filters?*

Sewage need not necessarily be subjected to tank treatment, beyond that requisite for the separation of the detritus, before it is put on percolating filters. As a substitute for such tank treatment, the sewage, after treatment in detritus tanks, may be prepared for final filtration by being passed through a roughing or primary filter.

About five years ago I completed certain experiments on these lines at Burslem, in Staffordshire, where the sewage,

after screening and subsidence of the detritus, is pumped to land. For the purpose of the experiment the rising main was tapped in order that the sewage might be delivered to the experimental plant, consisting of two percolating filters, each having an area of 67 square feet, and a depth of 4ft. 6in., and so placed as to allow of the effluent from the one filter being passed through the other, the method of distribution being by notched fixed troughs, 9in. wide, fixed 9in. apart.

The filters were worked for 12 hours and rested for 12 hours, and the volume of sewage treated per superficial yard of filter daily was 190 gallons. The figures of analyses of the sewage and effluents after nine months' continuous working of the plant are set forth in Table V.

I have no doubt that even a better result would have been obtained had the means of distribution of the sewage on the filters been more satisfactory.

I may mention that these filters were continued in operation for some two or three years longer with equally good results, and without any appearance of clogging, in fact, the particles in the interior of the filters, especially the second one, retained their clear light-coloured appearance throughout, notwithstanding the immense amount of suspended solids in the sewage as delivered to the filters. I estimate that in 12 months the first filter must have liquefied about three times its available capacity of liquid sludge.

Question 124. *Is the material better disposed in the form of two beds, to be fed in succession with the same liquid, or in one deep bed?*

In my opinion, if, owing to the special character of the sewage, it is found that a filter of much greater depth than 5ft. is required, it is better to provide two beds. This, of course, from the point of view of distribution especially, will be more costly than one filter equalling the two in depth, but the advantage, from an aeration point of view, would be considerable. At the same time, it is only in the case of exceptional sewages that double filtration after tank treatment may be required, under ordinary circumstances a fine-particle filter, five feet deep, gives excellent results with efficient distribution.

Question 125. *How should percolating filters be fed?*

The great object to be obtained is uniformity of distribution, the sewage being applied in as finely a divided state as is practicable.

Question 126. *Should the feed be intermittent or continuous?*

I think the feed should be continuous, that is without any rest periods, except periodically and at more or less long intervals, for the purpose of resting the filters, either when they may require such rest or when, owing to small volume of flow, the full plant is not required.

Question 127. *What is the best form of distribution? What, in your opinion, are the conditions which have to be fulfilled by a perfect distributor, having regard not merely to the distribution of the liquid itself, but also to the purification of the liquid and the life of the bed?*

Undoubtedly the best form of distribution is by power-driven appliances, such as the Commission have seen at work at Hanley. By means of these all the important factors are under control, and the wind has no effect upon the rate of travel of the apparatus. Revolving distributors worked by a head of sewage are a great advance upon previous methods, such as troughs and intermittent automatic flushing on to the surface the sewage being held back by a top layer of fine material. On the other hand, spraying the sewage by means of pipes and jets answers very well, as at Lichfield, where the outfall is in the open country, but if the works are in the neighbourhood of houses, even as far distant as a quarter to half-a-mile, nuisance is sometimes experienced from this method, especially in the summer, owing to the large area of sewage in fine division which is thus exposed to the air. Chesterfield sewage works is a case in point, where, on my suggestion, revolving distributors were substituted for sprays on this account. In my opinion the best of the non-power-driven distributors is Fiddian's, which the Commission saw at work at Walsall, but which has recently been improved by the addition of vanes to counteract the effect of wind pressure. I recently conducted a series of tests with this form of distri-

butor in another district in Staffordshire, and found that the mean fluctuation over or under the mean delivery per yard of filter only amounted to 10%.

In my opinion the chief objection to most automatic distributors is the necessity for discharging the sewage in bulk at intervals, which results in charging the filter, for the moment, with an enormously increased flow per yard, causing the sewage to pass more rapidly through the filter; this objection does not apply to the Fiddian distributor.

The following, in my opinion, are the conditions to be fulfilled in a perfect distributor :—

(*a*) Uniform and fine distribution without exposing a large surface of sewage in fine division to the air.

(*b*) The discharge of the sewage on to the filter in such a manner that the slowest rate of travel through the filter is achieved without reducing the volume passed through per day.

(*c*) The avoidance of any arrangement which may give rise to trouble from freezing.

Question 128. *Do you think it best to put on the filter a fairly constant amount of liquid, or do you consider that the amount can be increased in times of storm without impairing the efficiency of the filter or the quality of the effluent?*

According to my experience, small-particle filters, with uniform distribution, may be worked at a certain rate for long periods without any clogging or deterioration in the results. In the case of 5ft. filters I have found that with ordinary sewage 200 gallons per square yard may be passed through continuously with excellent results, but if that rate is exceeded for any length of time the effluents deteriorate in quality until a point is reached when a few days' rest becomes essential. At the same time, periodically, and for a limited period, the rate of filtration may be considerably increased without much impairment in the results, the filters very soon recovering their former efficiency without being rested on resuming the regular rate of filtration. Notwithstanding this, however, in determining the area of filters to be provided, it is desirable to make a more liberal allowance than I have indicated, in order to permit of the occasional resting of the beds.

Question 129. *Is there any practical advantage in artificially heating the liquid which is being treated upon percolating filters?*

I have had no experience of the working of filters with artificially heated liquid, but judging from the published results in the case of artificially aerated filters with heated air, it does not appear that there is much to be gained by the adoption of such a plan.

Question 130. *Have you had any experience to show whether open sides are an advantage to a percolating filter?*

My experience does not show that there is any advantage in constructing filters with open sides.

Question 131. *Have you made any study of the conditions of aeration of percolating filters?*

I have not made any special study as to the conditions of aeration of percolating filters.

Question 132. *What do you consider is the most convenient superficial area for a percolating filter?*

The convenient area for a percolating filter is governed, to a large extent, by the size of the works and the method of distribution adopted.

In the case of small works, the necessity for dividing the filter area to allow of interchange and resting may dictate smaller filters than otherwise would be provided if economy alone were studied.

Again, in the case of automatic distributors, the workable area is limited by the mechanical difficulty of providing an apparatus which will work satisfactorily if the span exceeds a certain limit. Probably this limit is at present found to be from 130 to 150 feet, but at Chichester a revolving distributor (Mather & Platt's) serving a circular filter 200ft. in diameter, has been in operation for some 18 months, and, except during periods of high wind, when its automatic working fails and electrical power driving has temporarily to be employed, the distribution is good, the mean fluctuation over or under the mean delivery per yard being under 10%.

Question 133. *Do you think it desirable that the bottom of a percolating filter be raised from the ground?*

From practical experience, I have come to the conclusion that there is no advantage in having the bottom of the filter bed above ground; theoretically, possibly it might be expected to be otherwise.

Question 134. *Do percolating beds, in your experience, choke? If so, have you been able to measure the rate of choking, and how do you suggest that this choking can be removed, and at what cost?*

If percolating beds are constructed of fine-grain particles (not exceeding ¼in. to ½in.) and are not habitually and for long periods overtaxed, in my experience, choking does not occur, except to an extent which occasional short rest and surface forking will remedy.

Questions 135 to 138. 135. *Of what nature are the suspended solids in the filter effluent? How much is organic matter, and are they putrescible apart from the liquid portion of the effluent?*

136. *To what extent do you find that the organic matter of the suspended solids issuing in the effluent from a percolating filter is different from the organic matter of the suspended solids going to that filter?*

137. *Have you any experience of, or any suggestions to make on, the settlement or other separation of the suspended solids issuing from a percolating filter? and to what minimum figure do you think such settlement or other final treatment can be carried as a practical measure?*

138. *Do you find that the suspended solids in your filter effluent vary much in amount from time to time, and if so, can you explain the causes of such variation?*

In the case of modern works the filter effluents I have had to deal with have been free, or practically free, from suspended solids. In my experience it is only in the case of contact beds and filters formed of large particles that suspended solids are present in the effluents. (See Table V.)

Question 139. *What was the cost of your percolating bed installation per acre, and how much liquid do you treat per acre per 24 hours, at ordinary times and in storm times? Please give the depth of the filter and an average analysis of the liquid which you put on and an average analysis of the effluent when working at the ordinary rate and when working at a greater rate in storm times. In each case I should like you to give the figures for suspended solids, if you have them.*

The cost of percolating filters varies very much in accordance with circumstances; for example, the local facilities for obtaining suitable filtering material, whether the filter is entirely or partially above or below the surface, whether retaining walls or concrete lining are provided, or whether the filtering material is simply placed in an excavation in the ground with banked-up sides.

The following are the particulars as to the construction and cost per acre in the case of three types of percolating filters, all of which, to my knowledge, have given and are giving excellent results :—

Construction.		Distribution.	Preliminary Treatment.	Inclusive Cost per Acre.
Walls.	Filter Medium.			
1.—Earthen embankments, lined with cement concrete, 5ft. 3in. deep.	Broken shingle. Body ¼in. particles. Top layer ⅛in particles.	Mather & Platt's Revolving Distributor. Automatic except during heavy winds when electric power is used.	Chemical Precipitation.	£4,285.
2.—Close brickwork above ground. Longitudinal, 4ft. 9in. deep.	Broken 'saggers.' ¼in. to ½in. particles.	Power driven by electric motor.	Septic Tank.	£5,500.
3.—Entirely under ground, without any lining on sides or bottom. Longitudinal, 5ft. deep.	Coal. ¼in. to ½in. particles.	Spray distribution by pipes on surface of filter.	Chemical Precipitation.	£4,508.

As regards No. 3, owing to the absence of any brickwork or concrete, the cost, without loss of efficiency, would have been considerably less had a less costly medium than coal been used.

As the question is applicable to a specific filter, and my information relates to several, I can hardly answer the latter part, which has reference to average analysis under different conditions, analytical figures, however, showing the working of various plants, are set forth in Table V.

Question 140. *Have you made any experiments which throw light on the action of percolating filters, with regard to the oxidation of—*

(A) *the ammoniacal and organic matter in solution.*
(B) *the organic matter in suspension?*

I have not made any experiments bearing directly upon this question, but the following are what may be called the impressions I have formed from observing the practical working of filters and from the numerous analyses I have made of sewages and tank and filter effluents :—

(*a*) As regards the ammoniacal and organic matter in solution, if the filter is in a healthy active state and the sewage is of normal character, it would appear that a high standard of oxidation is effected in about seven minutes, the time which the liquid takes to pass through a fine-grain 5ft. filter, if the delivery is at the rate of 200 gallons per 24 hours and the distribution is uniform over the whole area of the filter.

(*b*) As regards the organic matter in suspension, it appears in the case of such a filter to be entangled in the upper layers of the filtering material, where it is gradually liquefied and, passing downward, becomes oxidised with the organic matter previously in solution. The process of liquefaction in this case is, I suggest, probably largely effected by aerobic liquefying organisms.

In the case of large-particle filters and contact beds, a considerable proportion of the organic suspended solids is washed through with the effluent. This constitutes one of the objections to such filters and beds, but, in my opinion, the most serious objections are—first, the comparatively

small area available for bacterial growth, and, secondly, the fact that organic solids are permitted to pass down into the deeper layers of the filter, where the purely oxidising process should, as far as possible, be exclusively in operation.

Question 141. *Have you evidence to show that ammonium salts and organic substances in solution, not of a colloidal nature, pass rapidly through a percolating filter, or that they are first absorbed by the filtering material or by growths on that material, so that their passage through the filter is a very gradual one?*

I have no evidence which enables me to offer any decided opinion on this point apart from what I have stated in reply to the previous question.

Question 142. *Have you observed the effects of changes of atmospheric temperature on the working of a percolating filter?*

When active nitrifying properties are once established in a percolating filter, I cannot say that I have observed any material change in the quality of the effluents in different seasons, I am satisfied, however, that a newly-constructed filter is longer in acquiring nitrifying properties in winter than in summer.

Question 143. *Have you found any trouble from vegetable growths in percolating filters? If so, have you been able to form any opinion as to the causes of these growths and as to the way in which the growths can be prevented?*

I have had no personal experience of the occurrence of vegetable growths in percolating filters.

Question 144. *Do you find any nuisance from the treatment of sewage on percolating filters? Have any complaints been made?*

Undoubtedly nuisance does arise sometimes from the treatment of sewage on percolating filters, and sewage containing brewery waste in considerable quantity is specially liable to cause such nuisance. I have found also that nuisance is likely to arise from unduly prolonging septic tank treatment.

As a rule the difficulty may be overcome by shortening the period of preliminary tank treatment as much as possible,

and adopting a method of distribution on the filters which exposes as small a surface of tank effluent to the air as possible.

In the case of strong brewery sewage it is possible that the addition of a cheap antiseptic to the tank effluent before distribution might remedy the nuisance, but the quantity used must, of course, be carefully regulated, so that when mixed with the sewage it is present in sufficient strength to act merely as a deodorizer, otherwise the vitality of the organisms in the filter might be impaired. I think it is likely that this expedient will be tried in a case in which I am at present interested, where brewery waste constitutes about two-thirds of the sewage flow, and the works are situated close to a residential locality. In this case the antiseptic to be tried will probably be "oxichloros," prepared on the spot from a solution of salt by electrolysis.

General Questions in regard to Filters (Including Contact Beds).

Question 145. *Would you kindly compare the cost (initial expenditure and annual cost of upkeep and working) and relative advantages of percolating filters and contact beds. Do you consider that one form is best for some kinds of sewage, and the other form for other kinds of sewage?*

As regards the comparative cost of percolating filters and contact beds, I should say that, both as regards initial expenditure and annual cost of upkeep and working, the latter are the more costly, for the following reasons :—

(1) To obtain anything approaching a corresponding result from contact beds as from small-particle filters, double contact, as compared with single filtration, is essential, and the total cubic contents of the contact beds should about equal twice that of the filters.

(2) The automatic gearing for filling and discharging contact beds, or, as an alternative, manual labour, probably equals the cost of distributors for filters.

(3) As in the case of percolating filters the sewage is not held up, the provision of walls or concrete linings is not essential if the beds can be constructed below ground level ; on the other hand, in the case of contact beds, the sewage being held up,

walls or linings, together with concrete bottoms are essential in most cases and desirable in all. This, of course, from a structural point of view, adds greatly to the cost of contact beds compared with filters.

(4) As contact beds are far more liable to clog than small-particle filters, the upkeep cost in that respect in the case of the former is greater than in the care of the latter.

I consider that small-particle filters are greatly superior to contact beds, no matter what kind of sewage has to be dealt with. I formed this opinion some eight or nine years ago, and subsequent experience has never caused me to modify it, in fact, I think the introduction of the contact method was an unfortunate step, because its apparent simplicity led to its very general adoption, and thus tended to delay progress in overcoming the initial difficulty associated with filtration, namely, providing for the uniform and fine distribution of the sewage on the filters.

In comparing contact beds with filtration, I wish it to be understood that the filters I have in my mind are those formed of small not large particles.

Question 146. *Do you find that the chance of nuisance is any greater with one form of filter than with another? Does the risk of nuisance depend on the kind of sewage which is being treated or on the nature of the preliminary treatment to which the sewage has been subjected? The question of nuisance is important, and I should be glad if you would state your views fully on these points.*

As regards nuisance, I do not think that with proper management the risk is greater with one method than with the other. When once the sewage penetrates the filter or contact bed the risk of nuisance, so far as that portion of the liquor is concerned, is at an end, supposing the beds are in a healthy state. The real trouble is associated with the delivery to the beds, and I do not think that any larger surface of sewage need be exposed to the air during that process in the one case than in the other.

The risk of nuisance is undoubtedly greater in the case of certain sewages than others. As regards ordinary domestic

sewage, there need be no appreciable nuisance, even near to the works, but the case is very different with sewages containing a large amount of brewery and, possibly, tannery waste, as I have already indicated in my answer to Question 144, in which I also suggest possible remedies. The question of nuisance arising from the disposal of screenings, sludge, &c., is dealt with later.

Question 147. *Have you made any comparative observations which show how many gallons per cubic yard per 24 hours of your tank liquor or tank liquors, could be satisfactorily purified on a percolating filter, and how many gallons per cubic yard on contact beds? If so, would you kindly state the results, at the same time telling us in precise terms what was the composition of your tank liquor or tank liquors, and what you are considering to be a satisfactory effluent.*

According to my experience, a fine-particle percolating filter, five feet deep, is capable of producing, practically for an indefinite period, an effluent of great purity, at a rate of delivery of 200 gallons per superficial yard per 24 hours (120 gallons per cubic yard). As I have previously stated, to obtain the same result from contact beds double contact (after septic tank treatment) is essential, each bed having, approximately, the same cubic capacity as the filter. In other words, to obtain the same result by contact beds as by percolating filters, the cubic capacity of the former must be about twice that of the latter.

Question 148. *Could you express an opinion as to how the number of gallons would vary with variations in the strength of your tank liquor, and on what figure or figures you would rely for defining the "strength" of your tank liquor?*

So far as ordinary domestic sewage is concerned, I believe the strength of the tank liquor, as measured by the amount of unoxidized matter it contains, affects the question of the volume per yard a fine-grain filter is capable of purifying much less than is generally supposed, but I am not so confident that the same may be said regarding contact beds or large-particle filters. In my opinion, the working capacity per superficial yard of a fine grain filter depends upon

the volume rather than the strength of the sewage, that being the factor which determines the degree of aeration of the filter.

Question 149. *Have you had any experience of storm water filters? If so, would you kindly give us the results of it.*

So far, I have had no experience of the working of storm water filters, although at the present time several large works are in the course of construction in Staffordshire in which such filters are being provided. I cannot say that I am very confident as to their success, but as the capacities of the works in other respects are very liberal (being on the present Local Government Board basis) the probability is that we shall not be dependent upon the storm filters to any great extent. Theoretically, I think all we can expect storm filters to effect is an advancement of the stage of purification to an extent which will facilitate the further purification in the stream through mixing with the nitrified effluent from the filters proper.

Question 150. *Do you consider storm water filters lose any of their efficiency by being used intermittently at long intervals?*

In my experience, dry weather flow filters which have had a long rest, say two or three weeks, on being again brought into use yield effluents of a high degree of purity, the nitric nitrogen in the effluent being greatly increased, and in all probability the first effluents from a storm sewage filter after a period of rest would be of good quality in that respect, although, at the rate of delivery at present allowed in the case of such filters (500 gallons per superficial yard), the quality would rapidly deteriorate.

Sludge.

Question 151. *Have you any practical suggestions to make for disposing of sludges, i.e. :—*

(*a*) *Sewage screenings.*

(*b*) *Material from detritus tanks.*

(*c*) *Sludge from precipitation tanks.*

(*d*) *Sludge from septic tanks.*

(*e*) *Sludge from settlement tanks.*

In the handling of sludge, nuisances no doubt are frequently experienced unless proper precautions are adopted, and the nuisance in certain cases is much greater than others, for example, in the case of brewery sewage.

(*a*) (*b*) As regards sewage screenings and material from detritus tanks, frequent removal and disposal on land is a satisfactory method even if the area of land available is very small. A shallow trench should be dug, into which the refuse should be placed, and immediately covered over with soil. The same land may be used over and over again if it be suitable, and it usually is found to be so, as a few inches of top soil is all that is necessary.

(*c*) The only practicable method of disposing of sludge from precipitation tanks, unless the works are in a locality far removed from houses, is by sludge pressing; the pressed sludge to be removed at short intervals.

If land is available, and the outfall works are not in the immediate neighbourhood of houses, the sludge may be disposed of in the same way as is suggested in the case of (*a*) and (*b*).

(*d*) It is remarkable how free from smell septic tank sludge is, so much so that no nuisance will be experienced from its being spread on land even in close proximity to dwellings.

(*e*) The sludge from settlement tanks should be dealt with in the same manner as suggested in the case of that from precipitation tanks.

Question 152. *Do you find that some methods of disposing of sludge are more likely to cause nuisance than others?*

If sludge is discharged into lagoons, where it is left to consolidate by evaporation and drainage, a practice which was frequently adopted before sludge pressing was introduced, the nuisance arising from the practice is considerable.

Questions in regard to Effluents.

With one exception, all the questions under this heading were answered by me when I previously gave special evidence

before the Commission. The following question, however, was not then dealt with specifically :—

Question 154. *Do you consider that the type of effluent from a contact bed is superior or inferior to the type of effluent from a percolating filter? Kindly give your reasons.*

I am most decidedly of opinion that a contact bed effluent is inferior to that from a percolating filter if the latter is formed of small particles. I am not so confident, however, that the difference is so pronounced if the comparison is made with an effluent from a filter formed of large sized particles.

Comparing the effluent from a contact bed with that from a small-particle percolating filter of the same area, the advantage, in my opinion, is immensely in favour of the filter, in fact, as I have already stated, to obtain anything like corresponding results from contact beds as from small-particle filters, the capacity of the former should about equal twice that of the latter.

By double contact after septic tank treatment, a non-petrescent effluent can undoubtedly be obtained, but its quality as judged by the reduction of the albuminoid ammonia and oxygen absorbed and the degree of nitrification, will not equal that from a similar tank effluent treated by single filtration through a fine-grain percolating bed, neither will it equal the latter in appearance, a contact effluent, in my experience, being invariably cloudy or foul looking, while a fine-grain filter effluent is clear, in fact, hardly distinguishable from drinking water.

In the case of a weak sewage, single contact after septic tank treatment may produce a non-petrescent effluent, as at Exeter, but this, in my experience, is exceptional.

Some years ago, in conjunction with four other experts, I had occasion to report upon the treatment of the sewage of two towns by septic tanks and single contact beds, and having made a series of analyses, we found that, while the results obtained in the one case were undoubtedly satisfactory, in the other case they were quite the contrary. In the former case, however, we found that the sewage was quite exceptional in character, for not only was it very weak, but it also con-

tained nitrates, in some samples as much as 2 pts. per 100,000; on the other hand, the sewage in the latter case was of quite a different character, and the treatment proved to be highly unsatisfactory.

Miscellaneous Questions.

Most of the questions under this heading were dealt with in my previous evidence before the Commission.

Question 159. *What is your experience of the effect of storm water upon filters of various sorts?*

If the volume of sewage delivered to filters is greatly increased during storm times, a rapid deterioration in the results obtained undoubtedly takes place, but by resting the filter the quality of the effluent rapidly improves, provided the suspended solids are held back from the interior of the bed by a fine top layer, say of $\frac{1}{8}$in. particles.

Such a filter may be overtaxed with impunity; on the other hand, if precautions are not taken to prevent the penetration of solids into the interior of the filter, great damage may result in the case of filters composed of large-size particles.

Question 160. *How far do you consider it advisable for a sewage installation to be worked automatically?*

In the case of small works, for economical reasons, automatic working, as far as practicable, is advantageous, but in the case of large works, where the men in charge must necessarily be always on the spot, it is not so essential.

In the case of filters, whether on a large or small scale, there is great need for an automatic distributor which will deliver the sewage uniformly, under all conditions of weather, without having to resort to mechanical power or the automatic discharge of the sewage in bulk at intervals.

Question 164. *If there are any further points on which you would wish to speak we should be glad to hear your views on them.*

I venture to make the following comments for the consideration of the Commission regarding the practice of the Local Government Board in sanctioning loans for sewage disposal works, with the view of indicating how urgently

some authoritative statement is needed regarding the question of the artificial disposal of sewage :—

(1) In view of the fact that the Local Government Board, notwithstanding the opinion already expressed by the Commission to the effect that land treatment is not essential, still hesitates to sanction disposal works without land, a definite and authoritative pronouncement on the subject by the Commission is urgently called for.

Lately, the Local Government Board, in cases where they have given way in the land requirement, have, by way of compensation, required the provision of twice the area of bacteria beds than would satisfy them if land was provided. This imposes a very costly, and, in my opinion, needless condition upon authorities.

(2) If the Commission should be of opinion that present experience of the working of artificial bacteria beds does not absolutely warrant the Local Government Board in relaxing their requirements, I would suggest that schemes might be sanctioned without land, and without any compensating increased area of beds, on authorities giving an undertaking to extend the works within a specified period if they should be found to be inadequate.

Possibly, in some cases, owing to the special quality of the sewage, such extension might be found to be necessary, but in the case of ordinary domestic sewage, I am satisfied that no extension would be called for.

If this plan was adopted by the Local Government Board, an independent expert, approved by the Board, might be appointed to periodically inspect the works and conduct the necessary analyses during the probation period, the cost involved to be deferred by the local authority interested. In the case of those administrative counties, however, where expert advisers have been appointed by County Councils, their services would, no doubt, be placed at the disposal of the constituent authorities for this purpose without charge, as the proposed sewage disposal works would, in any case, be subject to inspection by the Officers of such County Councils.

(3) In view of the present great diversity of practice regarding the construction of bacteria beds, it is very desirable that an authoritative pronouncement should be made as soon as possible regarding the type of plant which will give the best results under different conditions.

The present practice of the Local Government Board is to require the same cubic capacity of beds to be provided, no matter whether the method of disposal proposed is by contact beds or percolating filters.

This, on the face of it, seems to be an extraordinary practice, for, considering the radical differences in the two methods, it is hardly conceivable that the results obtained from the two classes of beds having similar capacities should be identical.

(4) As regards the construction of the beds, no matter what sized particles are used, the cubic capacity required by the Local Government Board is the same.

Considering the fact that the successful working of the beds depends upon the vitality of organisms, which require for their life processes certain important essentials, it is again hardly conceivable that the highest state of activity can be arrived at and maintained, no matter whether the organisms are housed in filters composed say of 3in. particles or $\frac{1}{8}$in. particles or any grade between these sizes.

GEO. REID.

TABLE I.

Rainfall as Affecting the Condition of certain Streams in Staffordshire.

	Fowlea Brook.			Lyme Brook at Hanford.			Trent at Hanford.			Tame at Tamworth.			Churnet at Rocester.		
	Rainfall day before.			Rainfall day before.			Rainfall day before.			Rainfall day before.			Rainfall day before.		
	Under $\frac{1}{10}$in.	$\frac{1}{10}$in. and under $\frac{1}{4}$in.	$\frac{1}{4}$in. and over.	Under $\frac{1}{10}$in.	$\frac{1}{10}$in. and under $\frac{1}{4}$in.	$\frac{1}{4}$in. and over.	Under $\frac{1}{10}$in.	$\frac{1}{10}$in. and under $\frac{1}{4}$in.	$\frac{1}{4}$in. and over.	Under $\frac{1}{10}$in.	$\frac{1}{10}$in. and under $\frac{1}{4}$in.	$\frac{1}{4}$in. and over.	Under $\frac{1}{10}$in.	$\frac{1}{10}$in. and under $\frac{1}{4}$in.	$\frac{1}{4}$in. and over.
No. of Records	39	10	9	41	7	10	39	11	8	38	7	7	36	10	6
Mean Rainfall. Day before	0·01in.	0·18in.	0·46in.	0·01in.	0·19in.	0·44in.	0·01in.	0·18in.	0·46in.	0·007in.	0·15in.	0·56in.	0·008in.	0·15in.	0·43in.
Mean Rainfall. Week before	0·43in.	0·73in.	1·10in.	0·49in.	0·69in.	1·03in.	0·43in.	0·86in.	1·15in.	0·38in.	0·69in.	1·13in.	0·45in.	0·83in.	1·04in.
Mean Rainfall. Month before	2·24in.	2·42in.	3·39in.	2·33in.	1·78in.	3·49in.	2·29in.	2·37in.	3·43in.	1·87in.	2·34in.	2·65in.	2·65in.	2·88in.	2·46in.
Organic Ammonia (parts per 100,000) ..	0·136	0·158	0·202	0·088	0·114	0·080	0·097	0·171	0·100	0·111	0·106	0·199	0·019	0·030	0·031
Flow in cubic feet per sec.	7·1	9·0	29·0	11·7	13·6	18·2	58	79	129	316	344	665	88	107	137

	Tame 20 miles higher up (below Birmingham). *	
	Total Rainfall 3 preceding days.	
	Under $\frac{1}{4}$in.	Over $\frac{1}{4}$in.
No. of Records	10	9
Mean Rainfall	0·06	0·49
Organic Ammonia (parts per 100,000)...	0·185	0·323

* These records are not comparative with those of the stream at Tamworth. The samples were specially collected throughout the period between February, 1896, and July, 1897.

TABLE II.

TABLE shewing the Suspended Solids, &c., in certain Streams in Staffordshire under different conditions of rainfall and flow.

	DOVE NEAR BURTON-ON-TRENT. (Pure stream draining large rural area and a few small towns).			TRENT AT HANFORD. (Foul stream draining comparatively small area partly rural but very largely urban).			TAME AT TAMWORTH. (Very foul stream draining small rural area and very large and populous urban areas).		
	Rainfall day before.			Rainfall day before.			Rainfall day before.		
	Under $\frac{1}{10}$in.	$\frac{1}{10}$in. and under $\frac{1}{4}$in.	$\frac{1}{4}$in. and over.	Under $\frac{1}{10}$in.	$\frac{1}{10}$in. and under $\frac{1}{4}$in.	$\frac{1}{4}$in. and over.	Under $\frac{1}{10}$in.	$\frac{1}{10}$in. and under $\frac{1}{4}$in.	$\frac{1}{4}$in. and over.
No. of Records	37	8	7	38	11	8	38	7	7
Mean Rainfall. Day before	0·01 in.	0·16 in.	0·39 in.	0·01	0·18	0·46	0·007	0·14	0·56
Mean Rainfall. Week before	0·63 in.	0·93 in.	0·88 in.	0·43	0·86	1·15	0·37	0·69	1·13
Mean Rainfall. Month before	2·90 in.	2·55 in.	2·58 in.	2·30	2·37	3·42	1·87	2·34	2·65
Parts per 100,000. Suspended Solids	0·9	4·1	2·2	4·9	18·3	16·2	3·9	6·9	8·1
Parts per 100,000. Chlorine	2·1	2·1	2·0	5·1	7·1	4·9	11·4	10·9	10·7
Parts per 100,000. Albuminoid Ammonia ...	0·019	0·030	0·027	0·095	0·171	0·100	0·111	0·106	0·199
Flow in cubic feet per second ...	321	419	293	59	79	129	316	344	665

TABLE III.

Table shewing Mean Figures of Analyses of Corresponding Samples before and after Subsidence.

		No. of Samples.	Mean flow in Cubic feet per Second, giving No. of Records in each case.	Parts per 100,000. Solids. In Solution	In Suspension	Total.	Free Ammonia.	Albuminoid Ammonia.	REMARKS.
Stream A	Before Subsidence	4	32 Cubic feet	103·0	5·5	108·5	0·354	0·068	Stream D before receiving B and C.
	After ,,	4	314 Records	101·5	2·7	104·2	0·407	0·062	
Stream B	Before ,,	6	2·5 Cubic feet	88·3	40·3	128·6	0·629	0·299	Tributary of Stream D.
	After ,,	6	312 Records	87·5	7·6	35·1	0·625	0·120	
Stream C	Before ,,	6	8·6 Cubic feet	44·2	5·8	50·0	0·160	0·113	Tributary of Stream D.
	After ,,	6	170 Records	42·2	0·6	42·8	0·125	0·063	
Stream D	Before ,,	5	43 Cubic feet	91·6	9·4	101·0	0·490	0·118	Formed by the Union of A, B, and C.
	After ,,	5	314 Records	90·3	1·4	92·2	0·448	0·090	
Stream E	Before ,,	5	84 Cubic feet	90·8	26·4	117·2	0·977	0·369	Stream D lower down; the increased flow being practically entirely from partially-treated and untreated sewage.
	After	5	314 Records	89·0	4·8	93·8	1·062	0·110	

NOTE.—The Gaugings of Flow covered a period of Eight Weeks.

TABLE IV.

The following are the mean figures of a number of analyses of typical chemical precipitation tank effluents in Staffordshire, the capacities of the tanks, population, and dry weather flow of sewage being given in each case:—

DISTRICT.	Population, Census 1901.	Dry weather flow per 24 hours in gallons.	Capacity of Tanks in gallons.	Period of Quiescence.	Precipitants used.	No. of Records.	Parts per 100,000. Solids. In Solution.	Solids. In Suspension.	Solids. Total.	Chlorine.	Free Ammonia.	Albuminoid Ammonia.	Oxygen absorbed in 4 hours at 80° F.
Hanley	61599	3,000,000	1,500,000	12 hours	Sulphate of Iron and Lime.	9	87·6	2·8	90·5	10·0	2·156	0·304	1·640
Lichfield	7902	350,000	340,000	23·3 ,,	Alumino-ferric and Lime.	10	62·5	3·6	66·1	7·6	2·036	0·348	1·559
Newcastle	19914	864,000	416,000	11·5 ,,	Chloride of Lime only.	4	86·7	6·0	92·6	12·5	1·978	0·591	3·071
Wednesbury ...	26554	600,000	366,000	14·6 ,,	Alumino-ferric and Lime.	4	75·5	2·0	77·7	11·9	2·271	0·253	1·077
Wolverhampton	94187	3,000,000	1,546,900	12·3 ,,	Lime only*	2	115·9	1·8	117·7	20·4	3·992	0·426	2·574

* The Wolverhampton sewage contains iron from Galvanizers' acid waste.

TABLE V.

PARTICULARS AS TO THE WORKING OF PERCOLATING FILTERS AND CONTACT BEDS IN STAFFORDSHIRE, WITH ANALYTICAL RESULTS.

DISTRICT.	Population, 1901 Census.	Nature of Sewage.	Nature of Works.	Particulars of Filters and Beds.					Time covered by Records.	Sample.	No. of Samples.	Parts per 100,000.							REMARKS.
				Material.	Depth.	Grade of Material forming Body.	Distribution.	Rate of Filtration and Rest Periods.				Solids. In Solution.	Solids. In Suspension.	Solids. Total.	Chlorine.	Free Ammonia.	Albuminoid Ammonia.	Oxygen absorbed in 4 hours@ 80° F.	Nitric Nitrogen.	
BROWNHILLS	15252	Domestic	Septic Tank and Percolating Filters (single filtration).	Furnace Slag	5ft. 3in.	Slag=3-16ths in. to 1-16ths in.	Spray Feed by Adjustable Perforated Iron Pipes.	175 gallons per square yard per 24 hours (100 gallons per cubic yard). Work 8 hours, rest 16 hours.	2 years	Septic Tank ...	1	68·8	8·0	76·8	11·0	2·040	0·230	2·200	Nil	The night flow of sewage is disposed of on land, also the storm sewage, i.e., any flow in excess of the dry weather flow.
										Slag Filter	3	92·7	0·8	93·5	6·3	0·224	0·185	0·961	1·97	
				Coal	5ft. 3in.	Coal=¼in.				Coal Filter	2	113·5	0·3	113·8	7·2	0·187	0·116	0·560	1·64	
BURSLEM	38766	Largely Brewery ...	Primary and Secondary Filtration after subsidence of Detritus.	Broken Saggers ...	4ft. 6in.	First Filter=¼in. ...	Troughs	190 gallons per square yard per 24 hours (126 gallons per cubic yard). Work 12 hours, rest 12 hours.	6 years	Sewage	9	99·0	32·0	131·0	11·0	2·935	1·132	4·288	Nil	These filters are experimental. The trough distributors work very imperfectly. Had the distribution been more uniform, the results no doubt would even have been better. The filters are still working regularly with good results, but the figures of analyses are for the earlier periods of the working.
										First Filter... ...	15	91·1	8·7	99·8	10·9	1·851	0·506	1·746	0·26	
				Broken Saggers ...	4ft. 6in.	Second ditto=3-16ths in.	Troughs			Second Filter ...	15	93·9	1·1	95·0	10·7	0·549	0·156	0·698	2·01	
HANLEY	61309	Domestic	Septic Tank and Percolating Filters (single filtration).	Broken Saggers ...	4ft. 6in.	¼in. to ½in.	Mechanical Power-driven Apparatus.	200 gallons per square yard per 24 hours (133 gallons per cubic yard). Continuous Feeding.	2 years	Sewage	8	125·4	62·9	188·3	8·9	2·109	0·765	3·854	0·03	These filters were experimental but of large area, and the distribution was very perfect.
										Septic Tank... ...	7	105·3	4·4	109·7	8·7	1·820	0·270	1·725	0·09	
										Filter	13	112·3	0·6	112·9	8·3	0·069	0·029	0·260	1·06	
LICHFIELD	7902	Very largely Brewery.	Chemical Precipitation and Percolating Filters (single filtration).	Coal	5ft. 0in.	¼in. to ½in.	Spray Feed by Adjustable Perforated Iron Pipes.	110 gallons per square yard per 24 hours (66 gallons per cubic yard). Work 8 hours, rest 16 hours.	6 years	Sewage	4	75·2	35·0	125·0	10·8	2·567	1·401	5·133	Nil	On the whole the distribution is moderately good. No trouble has been experienced from clogging until the past few months, when the filters were overworked. Two new filters on the same lines are now being constructed. The material in the body of the filters is still clean and sharp.
										Tank	10	62·5	3·6	66·1	6·6	2·036	0·312	1·659	0·01	
										Filter	24	79·2	1·1	80·3	8·4	0·408	0·054	0·242	1·42	
PELSALL	3626	Domestic	Septic Tank and Percolating Filters (single filtration).	Coal	4ft. 6in.	¼in. to ½in.	Spray Feed by Adjustable Perforated Iron Pipes	No regular volume of flow or period of working.	5 years	Sewage	4	81·2	44·4	125·6	8·1	1·900	1·213	4·629	Nil	These filters were not in constant use, the tank effluent being occasionally discharged on to land.
										Septic Tank ...	5	67·2	5·3	72·5	7·0	1·045	0·250	1·937	Nil	
										Filter	5	75·6	1·1	76·7	8·2	0·322	0·051	0·335	1·19	
SILVERDALE	7820	Domestic	Subsidence and Double Contact.	First Contact=Broken bricks.	3ft. 6in.	First Contact=2½in.	Hand fed	First Contact=112 gallons per cubic yard per 24 hours. Second Contact ditto ditto. Filled and discharged twice in 24 hours.	6 years	Subsidence Tank	8	83·6	16·5	100·1	7·3	2·892	0·496	2·355	0·19	These beds are experimental, and difficulty has been experienced from the clogging of the first contact bed.
										First Contact ...	12	81·2	5·9	87·2	7·2	1·903	0·286	1·288	0·05	
				Second Contact = Coke breeze.	3ft. 6in.	Second Contact=¼in. to ½in.	Hand fed			Second Contact...	18	80·3	2·0	82·3	7·1	0·761	0·104	0·403	1·02	
TIPTON	30543	Domestic	Chemical Precipitation and Percolating Filters (single filtration).	Lowcock Filter= Gravel and Sand.	3ft. 9in.	Lowcock=Pea Gravel	Troughs	Lowcock Filter=100 gallons per square yard per 24 hours (60 gallons per cubic yard). Work 12 hours, rest 12 hours.	2 years	Tank	13	82·7	1·6	84·3	10·2	1·250	0·230	0·770	Nil	These filters were experimental.
										Lowcock Filter ...	8	80·7	1·4	82·1	10·0	0·270	0·050	0·230	0·74	
				Garfield Filter= Coal.	3ft. 9in.	Garfield=¼in. to ½in.	Troughs	Garfield Filter=200 gallons per square yard per 24 hours (160 gallons per cubic yard). Work 12 hours, rest 12 hours.	1½ years	Garfield Filter ...	8	81·4	0·3	81·7	10·6	0·190	0·040	0·200	0·81	
TIVIDALE	2500	Domestic	Septic Tank and Double Contact.	Furnace Slag	3ft. 6in.	First Contact=2½in. to ½in. Second Contact=¼in. to ½in.	Contact Beds=hand fed on to Troughs.	First Contact=168 gallons per cubic yard per 24 hours. Second Contact ditto. Filled and Discharged 3 times in 24 hours.	Contact Beds=4 years.	Sewage	1	132·5	16·3	148·8	13·8	1·233	0·421	1·800	0·08	The filter, but not the contact beds, was experimental.
										Septic Tank... ...	5	113·7	7·9	121·6	13·6	3·272	0·436	2·204	Nil	
										Second Contact ...	11	115·1	3·0	118·2	11·9	0·654	0·100	0·561	0·35	
DITTO		Domestic	Septic Tank and Percolating Filters (single filtration).	Furnace Slag	6ft. 0in.	Filter=¼in. to ½in. ...	Filter=Fiddian's Automatic Distributor.	Filter=225 gallons per square yard per 24 hours (111 gallons per cubic yard). Work 14 hours, rest 10 hours.	Filter=2½years	Filter	5	130·4	0·8	134·2	19·2	0·106	0·055	0·368	2·28	
WOLVERHAMPTON ...	94187	Largely Galvanisers' Waste.	Chemical Precipitation and Percolating Filters (single filtration).	Coal	5ft. 0in.	¼in. to ½in.	Spray Feed by Adjustable Perforated Iron Pipes.	200 gallons per square yard per 24 hours (120 gallons per cubic yard).	3 years	Sewage	1	152·0	69·2	221·2	31·0	9·580	3·530	...	Nil	This filter was experimental.
										Tank	2	139·5	2·2	141·7	26·1	5·161	0·565	9·263	0·33	
										Filter	11	159·5	1·1	160·6	25·3	1·173	0·073	0·351	1·88	

Medical Officer's Report

OF THE

BIRTHS AND DEATHS

FOR THE

YEAR ENDED DEC. 31st, 1904,

IN THE

BOROUGH OF STALYBRIDGE.

MEDICAL OFFICER'S REPORT OF THE BIRTHS AND DEATHS,

For the Year ended December 31st, 1904.

To the Mayor, Aldermen and Councillors of the Borough of Stalybridge, being the Urban Sanitary Authority for the said Borough.

Gentlemen,

I beg to present my Thirty-first Annual Report, which I commence with the usual formal record of the Births and Deaths for the last twelve months.

During the year ended December 31st, 1904, the number of Births registered in the Borough was 675; of these 356 were males and 319 females. The Deaths registered during the same period numbered 529; of these 274 were males and 255 females.

The birth rate for the year was 23·7, and the death rate 18·6 per 1000 persons living.

One hundred and eleven deaths were recorded from the seven principal zymotic diseases, which gives a zymotic death rate of 3·9 per 1000 persons living for the past twelve months.

The death rate per 1000 persons living of the following diseases, viz. :—

Phthisis	1·1
Bronchitis, Pneumonia and Pleurisy	3·4
Infant Mortality.....	4·9

The Borough is divided into four wards, and the following is the death rate in each ward :—

Lancashire Ward.....	16·4
Stayley Ward	18·1
Dukinfield Ward	17·8
Millbrook Ward	11·4

Thirty-three deaths occurred in the Workhouse, Ashton-under-Lyne of persons removed there from the Borough, and ten deaths at the Infirmary, and four at Ashton-under-Lyne Borough Hospital, which I have included in my general death rate, and also apportioned them to the ward in which they lived before removal.

The deaths of children under one year of age to 1000 births registered for the past year are 210, and the average for the last 10 years—1895 to 1904 is 212.

The deaths of children under one year of age to 1000 births registered in the different wards for the year 1904 is as follows, viz. :—

Lancashire Ward	210
Stayley Ward	234
Dukinfield Ward	201
Millbrook Ward	100

No one can deplore more than I do "this awful slaughter of the Innocents," and the subject on many occasions during the past years has occupied the attention of the Sanitary Committee of the Borough over and over again, and I can only again call attention to the instructions to mothers on the subject of feeding their children, &c., issued by the Sanitary Committee, a copy of which is given by the Registrar of Births to each person registering a birth, and I hope that as mothers become more alive to the interests and welfare of their children, especially as to their feeding and clothing them, this great Infant Mortality will diminish.

BOROUGH OF STALYBRIDGE.

The Sanitary Committee of the Borough of Stalybridge, recognising how largely dependent upon improper feeding and unskilful management is the

in the Borough, make the following Recommendations, which they trust may be of service to all those who have the care and rearing of infants.

MANAGEMENT OF INFANTS.

1—Wash the child all over in warm water every day, and dry it thoroughly.

2—Let the clothing be warm and loose. Soft flannel should be worn next the skin.

3—Let the child have plenty of fresh air. Open the windows and air the rooms every day, and send or take the child out as often as you can (when the weather is fine), but in Winter—from November to April—only for a short time in the middle of the day.

4—The Committee especially wish to call attention to the great danger in taking young children to and fro in the early morning and the late evening to be nursed, and where this is unavoidable, see that the greatest care is taken against all exposure to cold.

FEEDING OF INFANTS.

5—Let all food be given at regular times and in regular quantities.

6—If possible, let the child have nothing but the breast until it is seven months old, and then begin to wean it, and wean it entirely before it is a year old.

7—If the child cannot be suckled, feed out of a bottle on warm milk and water slightly sweetened with lump sugar. Wash the bottle with hot water every time it has been used; brush the tube and teat twice a day, and keep all the parts in clean cold water. See that it draws easily. Be careful to see that the milk is not sour. At first give the child half milk and half water—half a breakfast cupful every two hours. When a month old give it two parts of milk to one of water—one cupful every three hours; and gradually lessen the quantity of water until the child is six months old, when it may take pure milk. If the milk does not agree, try boiling it, or add a spoonful of lime-water to it.

8—Give the child no other food until it is seven months old, when it may have, besides the milk, one or two meals a day of milk thickened with well boiled bread, oatmeal, or any of the recognised infants' foods. The food must be thin enough to pass through a fine strainer.

9—When good fresh milk cannot be obtained, condensed milk can be used instead, one teaspoonful to four teaspoonfuls of water will be sufficient for infants up to three months, when the quantity of condensed milk should be gradually increased up to two teaspoonfuls for children of six months and over.

10—Children should not be allowed to eat any solid food until they have cut their double teeth.

11—All food should be freshly prepared for every meal.

12—Never give any child Beer, Wine, Spirits, New Bread, or Unripe Fruit, and never give it such things as "Soothing Syrups."

SPECIAL ATTENTION

Is called to the fact that "Convulsions" and "Wasting" are the most common causes of death among infants, and are most often brought on by improper feeding, hence the necessity of suitable food.

By order of the Sanitary Committee,

JNO. MILLER, Town Clerk.

19th July, 1904.

The population of the Borough is based on the Census taken in April, 1901, with the increase of births over deaths added to it, and brought down to the end of the year. and the population is as follows, viz. :—

Lancashire Ward	6125
Stayley Ward.....	10990
Dukinfield Ward	8167
Millbrook Ward	3133
Total	28415

I now give a detailed account of the Sanitary Work of the Borough during the past year, viz. :—

Zymotic Diseases.

In July, 1891, the Council at their meeting adopted the Infectious Diseases (Notification) Act, 1889, and the Infectious Diseases (Prevention) Act 1900. The working of the Infectious Disease Compulsory Notification Act has given serviceable direction to much of the work of general inspection of the Borough. All premises specified in notifications of infectious diseases are at once visited by myself and the Inspector of Nuisances, and many minor sanitary defects are thus discovered and remedied.

A few facts relating to these diseases are now appended.

Small Pox.—I regret to have to report thirteen cases were notified.

All the cases were removed to our Small-pox Hospital, situated in the grounds of the Ashton-under-Lyne Borough Hospital. In all cases the patients were at once removed to the Hospital, the houses fumigated, &c., the bedding, &c., burned, and all the inmates of the houses were *Re-Vaccinated*, and the houses kept under my observation for a fortnight. No second case occurred in any of the houses, showing that there is only one way of stamping out Small-Pox, and that is by *Vaccination* and *Re-Vaccination*. The Sanitary Committee met and approved of all that had been done to prevent the spreading of the disease, and ordered the following handbill to be delivered at every house in the neighbourhood where the outbreak of Small-Pox occurred.

I publish this Handbill in the hope that other Towns, when Small-Pox occurs, may follow our example, and make for the time being, at any rate, all Medical Men Public Vaccinators ; for the Public, when Small-Pox occurs, will go to their own Medical Man to be *Re-Vaccinated*, but will not go to the Public Vaccinator appointed by the Guardians. Since the Sanitary Committee adopted this course, which they did many years ago, we have never failed to at once stamp out Small-Pox when it has been brought into our Borough :—

PUBLIC NOTICE.

SMALL-POX.

ANY PERSON WHO—

(1) While suffering from any dangerous infectious disorder wilfully exposes himself without proper precautions against spreading the said disorder in any street, public place, shop, inn or public conveyance, or enters any public conveyance, without previously notifying to the owner, conductor, or driver thereof that he is so suffering; or

(2) Being in charge of any person so suffering, so exposes such sufferer; or

(3) Gives, sells, lends, transmits, or exposes, without previous disinfection, any bedding, clothing, rags' or other things which have been exposed to infection from any such disorder, shall be liable to a penalty not exceeding

FIVE POUNDS,

And proceedings will be forthwith commenced against all persons offending in this respect, and the full penalty enforced as far as possible.

NOTE.—This disease is chiefly spread by

NEIGHBOURING,

AND ALL PERSONS ARE HEREBY

WARNED

AGAINST THIS PRACTICE.

The Sanitary Committee particularly request that all persons suffering from Small-Pox be kept indoors and warm, as cold is the chief cause of death from this disease. When Small-Pox exists in any house, children in such house are prohibited from attending school.

RE-VACCINATION.

Vaccination and Re-Vaccination are the only safe-guards against taking the disease.

The Statistics of the last Sheffield Epidemic of Small-Pox prove this fact beyond doubt.

Out of 20,000 persons who had been Re-Vaccinated, no deaths occurred.

Out of 15,000 persons who had not been Vaccinated, 97 deaths occurred, or 64 deaths per 10,000 inhabitants.

In other words, there were ten times as many deaths amongst those who had not been Vaccinated, as amongst the Vaccinated, whilst those who had been Re-Vaccinated were free from deaths.

Dr. R. THORNE THORNE, late Chief Medical Officer of the Local Goverment Board, Whitehall, London, says in his official circular, dated August 26th, 1892—"Where Small-Pox is the prevailing disease, it is essential that all un-vaccinated persons (unless they previously have had Small-Pox) should very promptly be Vaccinated; and that Re-Vaccination should be performed in cases properly requiring it."

The Sanitary Committee are anxious that all persons within the Borough should be Re-Vaccinated, according to the requirements of the Local Government Board, and to facilitate this course being taken, they have made arrangements whereby any person can be Re-Vaccinated from Calf Lymph, free of charge, on applying to any of the Medical Practitioners in Stalybridge.

By Order of the Sanitary Committee.

F. J. ROBERTS-DUDLEY,

Medical Officer of Health for the
Borough of Stalybridge.

Town Hall, Stalybridge.

We have now a Small-pox Hospital situated at Hartshead, managed by the Ashton-under-Lyne and District Joint Small-Pox Hospital Board, to which Stalybridge sends two members, the Chairman (Alderman Simpson) and the Vice-Chairman (Councillor Dr. Hancock, of the Sanitary Committee.

Measles.—Although this is not one of the Diseases specified in the above Act required to be notified, 48 deaths occurred. In August the Local Government Board requested me to make a Special Report about the Deaths from Measles, and the following is a copy of the Report forwarded to the Local Government Board, viz. :—

[COPY.]

Sanitary Department,
Stalybridge, 31st August, 1904.

To the Chairman and Members
of the Sanitary Committee.

Gentlemen,

Referring to the communication, dated the 16th of August inst., received from the Assistant Secretary of the Local Government Board, relative to the 40 deaths from Measles, which occurred within the Borough of Stalybridge during the quarter ended the 2nd July last, I have the honour to report as follows :—

That as previously reported by me, an epidemic of Measles arising from some unknown cause appears to have visited Stalybridge each alternate year during the last ten years, as will be seen from the following figures :—

Deaths :

1894,	1895,	1896,	1897,	1898,	1899,	1900,	1901,	1902,	1903,
3	49	5	43	19	32	14	0	32	1

I have already, under your instructions, asked for the assistance of the School Attendance Officers, and they have been requested to report to me any cases of Measles which may come to their knowledge, in order that I may at once inspect the premises in which the persons affected reside, and take such action as may be considered necessary with a view to prevent the spreading and recurrence of the disease.

Although 40 deaths have occurred from Measles during the quarter ended the 2nd of July last, there have only been eight deaths notified to me during the month of July last, and two deaths notified during the month of August instant.

I would further beg to refer the Committee to the fact that only one death from Measles occurred during the whole of last year.

Although the sanitary condition of the Borough has undoubtedly been lately improved generally, still it is not only very advisable but also really necessary that greater care should be exercised by the parents of children suffering from this disease, by carrying out more vigilantly than at present the requisite sanitary arrangements and cleanliness in some of the homes in which the children affected live, in order that the present large number of deaths may be materially reduced.

F. J. ROBERTS-DUDLEY,

Medical Officer of Health for the Borough of Stalybridge.

[COPY.]

106,550. M. 1904.

Local Government Board, Whitehall, S.W.,

9th September, 1904.

Sir,

I am directed by the Local Government Board to acknowledge the receipt of your letter of the 1st instant, enclosing copy of a report by the Medical Officer of Health for the Borough of Stalybridge, on the recent prevalence of Measles in the Borough.

The Board do not find in this report information as to the manner in which the disease spread and as to the measures adopted to prevent its spread; and I am to request that the Medical Officer of Health may be instructed to furnish the Board with this information.

I am, Sir, your obedient Servant,

NOEL T. KERSHAW,

Assistant Secretary.

The Town Clerk, Stalybridge.

[COPY.]

Enville House, Stalybridge,
10th September, 1904.

To the Chairman and Members
of the Sanitary Committee.

Gentlemen,

Referring to the communication, dated 9th September, 1904, received from the Assistant Secretary of the Local Government Board relative to the manner in which Measles is spread, and as to the measures adopted to prevent the spreading of the disease, I beg to say :—

1—Measles is an epidemic disease that appears in Stalybridge almost without exception every two years, and is spread chiefly by ærial infection and also by contagion from child to child.

2—The measures adopted to prevent the spreading of Measles were as follows :—I called at all the schools and advised the schoolmasters and schoolmistresses to pay particular attention to the children's health, and that if they saw any of the children appeared to be ill to send them home at once. I also asked the Education Committee to allow their Visiting Officers to notify all cases of Measles coming to their notice, so that I could visit the houses and examine as to their healthy condition or otherwise, and also to advise the mothers to pay particular attention to their children when they were suffering from the disease. I do not see that I could do more in the absence of an Infectious Hospital to remove the children suffering from Measles to, and I question very much whether this would have in any degree stayed the epidemic.

I have never, after 30 years experience as a Medical Officer of Health, thought it advisable to recommend to my Committee the closing of schools on account of Measles, for the children come in contact with one another just as much in their homes as they do at school.

The Visiting School Officers have not reported a case of Measles for the last two weeks, and we have had no death for the last four weeks.

However perfect our Sanitary arrangements might be, I believe Measles would come just the same, and the great number of deaths that always occur during an Epidemic of Measles arises from the ignorance of mothers in not looking after their children in the early stage of Measles.

F. J. ROBERTS-DUDLEY,
Medical Officer of Health for the Borough of Stalybridge.

Scarlet Fever.—Eighty were notified and three deaths occurred.

Diphtheria.—Nine cases were notified and four deaths occurred.

Membranous Croup.—Six cases were notified and four deaths occurred.

Whooping Cough.—Though not included in the above-named Act caused six deaths.

Tyhoid Fever.—During the year seventeen cases were notified, and six deaths occurred.

With regard to Typhoid Fever, which exists in our Borough in an intermittent form all the year round, I can only repeat what I have said in my last five reports, that I believe the cause to be the old fashioned privy and ashpit which exist so extensively in our Borough, and which arrangement is universally condemned by all Medical Officers of Health, and the Local Government Board, and the chief ground of condemnation is that the accumulation of filth close to the back doors of cottage houses must be and is detrimental to the health of the people.

With regard to the question of the old fashioned privies, many of these have been converted into the Water Carriage System, and many are in course of conversion, no less than 607 having been altered during the last seven years, of which 211 conversions were carried out during the year ending Dec., 1904.

Mr. Bradbury, the Inspector of Nuisances, sees that all ashpits, in connection with property where Typhoid Fever has been notified, are emptied at once, and the walls, and all surroundings washed with the following solution :—

R. Hyd. Bichlor .....one ounce.
Acid Hydrochloric .....one ounce.
Aniline Blue.....four grains.
Aquæ.....three gallons.

On receipt of a notification of Typhoid Fever, a pail, hermetically sealed, is supplied to each house to receive all discharges from the patient, and the following special instructions are left at each house, viz. :—

BOROUGH OF STALYBRIDGE.—HEALTH DEPARTMENT.

TYPHOID FEVER INSTRUCTIONS.

1. A person suffering from Typhoid Fever should, if possible, be placed in another room, and all unnecessary furniture and articles must be removed.

2. The room must be thoroughly ventilated and disinfectants freely used.

3. No person must enter the room except those attending upon the patient, and such persons must keep their hands thoroughly clean.

4. All discharges from the patient must be at once disinfected by Chloride of Lime being freely put into the utensil receiving the discharge, and the discharges whether arising from vomiting or otherwise, must be fully covered over with the Chloride of Lime.

5. All Bed-Clothes and Body Linen taken from the patient must, before removal from the room, be forthwith placed in a tub or vessel containing water mixed with some disinfectant.

6. Any food left by the patient must be burned at once.

7. Disinfectants and all necessary assistance to carry out these instructions will be given free of charge by the Corporation Officials.

8. All persons failing to carry out the above requirements are liable to heavy and serious penalties.

F. J. ROBERTS-DUDLEY,

Medical Officer of Health for the Borough of Stalybridge.

Infectious diseases included in the Infectious (Notification) Act, 1889, notified during the year, 1904, and the number of deaths from same, viz.:—

	Number of Cases.	Number of Deaths.
Small Pox	13	4
Scarlet Fever.....	80	3
Diphtheria	9	4
Membranous Croup	6	4
Typhoid Fever	17	6
Erysipelas	19	1
Puerperal Fever...	1	0
	145	22

Phthisis.— The Sanitary Committee issued in March last the following handbill, which was distributed at all Factories and Workshops with a request that it should be placed in a prominent place, so that the workpeople might see that Phthisis was a distinctly infectious disease:—

This Handbill should be nailed up for reference.

BOROUGH OF STALYBRIDGE.

INSTRUCTIONS FOR CONSUMPTIVE PATIENTS AND THOSE ATTENDANT UPON THEM.

Consumption is an Infectious Disease which is usually communicated from person to person by the Phlegm coughed up by the Consumptive.

The great danger lies in the drying up of this Phlegm and its being scattered about as dust.

The breath of the Consumptive is not directly infectious, but whatever is coughed up should be received into pieces of rag or paper which should be at once burned, or into a vessel containing water, which vessel should be cleansed at least twice a day by pouring in boiling water, emptying the contents down the drains, and again scalding out the vessel with boiling water.

The Phlegm should on no account be swallowed, for so the disease may pass to other organs of the body.

Consumptive persons should avoid kissing and should not suckle.

Anything which has been in the mouth of a Consumptive person should never be used by another person until it has been thoroughly washed with boiling water.

Cleanliness in person and abode, along with fresh air and sunshine, are the best means of preventing and of aiding the cure of Consumption. Consumptives should therefore spend as much time as possible out of doors.

By day the Consumptive should occupy as airy and as bright a room as possible, and by night should sleep alone with the Bedroom Window open, more or less, according to the season.

In Cleansing Rooms damp dusters should be used, and wet tea-leaves or sawdust should be put down before sweeping so that the dust will be removed without being spread through the air. The dusters should be boiled and the sawdust or tea-leaves burned.

Any Clothing or Bedding soiled with the Phlegm should, if possible, be washed with boiling water, or where this cannot be done should be thoroughly cleansed with a disinfectant.

Carpets and Floors accidentally soiled must have the Phlegm wiped up and burned, and then be cleansed with strong disinfectant.

Rooms which have been occupied by a Consumptive person should, before occupation by anyone else, be carefully disinfected, as after other infectious disease, and this will be done by the Sanitary Authority on notice being sent to the Sanitary Inspector.

Persons attending upon Consumptives should thoroughly wash their hands after waiting upon them.

By order of the Sanitary Committee,

F. J. ROBERTS-DUDLEY,

Medical Officer of Health.

Town Hall, March, 1904.

During the year I have visited my district with the Inspector of Nuisances, and on many occasions we have been accompanied by the chairman (Alderman Simpson), the Vice-Chairman (Dr. Hancock), and other members of the Sanitary Committee.

I attend all meetings of the Sanitary Committee, and advise them on all matters relating to the health of the Borough.

Lodging Houses.—I have many times during the year visited all the registered lodging-houses within the Borough, and in April and October have been accompanied by the Inspector of Police (Mr. Bamforth), and found them in a fairly sanitary condition.

I also beg to report that owing to the prevalence of Small Pox in the surrounding neighbourhood I have, during the last year, visited all registered lodging-houses weekly, and have required each lodging-house keeper to furnish me (Section 83, Public Health Act, 1875) with a list of every person who resorted to such house during Sunday night.

Water Supply.—The Water supply to the Borough is absolutely pure.

Sale of Food and Drugs Act, 1875.—The Chief Constable (Capt. Bates) forwarded to the Borough Analyst (Mr. J. Carter Bell) the following Articles to be analysed during the year, 1904, viz.:—

FOOD AND DRUGS ACT.

Forty Samples have been obtained and submitted to the Public Analyst, viz.:—

10	Milk	Pure.
9	Butter	,,
3	Tea	,,
2	Lard	,,
2	Coffee	,,
2	Pepper	,,
2	Cheese	,,
1	Mustard	,,
1	Barm	,,
1	Oatmeal	,,
1	Sago	,,
1	Castor Sugar	,,
1	Golden Syrup	,,
1	Ground Rice	,,
1	Cocoa	,,
1	Jam	,,
1	Brandy	,,

Proceedings were taken in three cases against one person for selling Margarine as Butter, and he was fined £20 and costs in each case; the same person was fined £20 and costs for exposing Margarine without being labelled as directed by law.

JAMES BAMFORTH,

Inspector under the Foods and Drugs Act.

SANITARY IMPROVEMENTS CARRIED OUT DURING 1904.

During the year Sanitary Improvements have been carried out at the following properties, under the supervision of the Borough Surveyor (Mr. White), and in some cases executed by the Corporation workmen.

SITUATION OF PROPERTY.	NAME OF OWNER.
Mount Street	James Wrigley.
Harrop Street	John Marsden.
Bath Terrace and Forrester Street	Mrs. Hassall.
Cocker Hill and Wakefield Road	Chas. Mellor.
Coopers Yard, Canal Street	Exors. D. Cooper, deceased
Gas Street	Hannah Bebbington.
Bridge and Port Streets	D. C. McCulloch.
Spring Bank Street	B. Wellock.
High Street	David Innes.
Castle Street	Richard Clarke and Co.
Hollingworth Place	Uriah Lees and others.
Newton Street	Exors. Ellen Hurst, deceased.
Grasscroft Street	Humane Sick and Burial Club, Bowling Green Hotel, Ashton-under-Lyne.
Kinder and Union Streets	Mrs. George Webb.
Warrington Street	James Shatwell.

SITUATION OF PROPERTY.	NAME OF OWNER.
Grasscroft Street	T. Mollett.
Victoria and West Streets	M. Hartley, E. Elliott, J. Hurst.
Stamford Street	Mrs. E. Hill.
Knowl Street	R. G. Ives.
Peel and Dale Streets	W. Storrs, Sons, & Co. Ltd
Buckley's Yard, Knowl Street	Exors. J. A. Newton, deceased.
Fitzroy Street, Millbrook	Openshaw Brewery Co. Ltd.
Glent Road	Exors. J. Hyde, deceased.
Market Street	Exors. T. Naylor, deceased G. H. Dean, J. E. Lees, Mrs. Cook, Fitton & Smith, W Thorneycroft, T. Ford J. Hardy, J. C. Keyes J. Heginbotham.
St. George's Street	G. Lawton.
Grosvenor & Kenworthy Streets	Gartsides Ltd. (Brookside Brewery).
Kenworthy and Cross Leech Streets	C. & O. McCallum.
Wakefield Road	Mrs. Oldfield & Miss Peac
Peel Street	Henry Shaw.
Caroline Street, Butterworth's Yard	S. Hall, agent.
Buckton Vale	Calico Printers' Association.
Star Inn, Stamford Street	Exors. T. Schofield, deceased.
Brown Cow, Gas Street	Fred. Robinson, Stockport.
John and Leech Streets	John Leech & Sons.
Castle Street	Richard Clarke.
Wakefield Road	Samuel Elliott.
Warrington Street	Wm. Ridyard.
Kinder Yard	Exors. T. Mollett.
Aqueduct Mills	Messrs. Wagstaffe.

With regard to the sanitary state of the Borough during the year, I beg to append to my report the following statement furnished by Mr. Bradbury, Sanitary Inspector, viz. :—

Summary of general nuisances which have received attention during the year 1904 :—

Insanitary Ashpits	125
Defective Ashpits	4
Full Ashpits	287
Insufficient Ashtubs	5
Defective House Drainage	58
Defective Water Closets	5
Defective Paving of Yards	2
Accumulation of Manure and other refuse	3
Keeping of Animals	3
Stagnant Water in Cellars	2
Insanitary Stable	1
Dirty Privies	29
Total	524
Number of smoke observations	70
Number of notices served	16
Number of canal boats inspected	17
Number of notices served	2
Number of houses fumigated	99
Number of infectious disease inquiries	94

I beg to give a return of the number of ashpits emptied and loads removed during 1904, viz. :—

1904.	ASHBINS.	ASHPITS.	LOADS.
January	2058	427	629
February	1801	411	604½
March	2478	508	767
April	2159	415	497
May	2305	585	723
June	1852	369	503
July	1330	397	427
August	2636	687	768
September	1998	421	457½
October	2368	398	466
November	2676	660	642
December	2225	511	629½
	25886	5789	7113½

SLAUGHTERHOUSES.

There are 15 slaughterhouses in use within the Borough, which have been visited at various times during the year.

Ten of these premises are not of an entirely satisfactory character, but taken as a whole they are, however, kept in as cleanly and sanitary state as circumstances permit.

FACTORY AND WORKSHOP ACT.

I beg to report that in my Annual Report, 1902, I gave a full account of my visit with the Sanitary Inspector, the late Mr. Oliver, to all the Workshops, Bakehouses, &c., and we now have a register of all the Factories and Workshops in the Borough. This year I have paid visits to most of the workshops in the Borough, and have found them fairly clean, especially some of them which had only been recently limewashed.

Air Space.—In Workshops and Workplaces notices must be exhibited in each room specifying maximum number of persons employed therein. Each person in a Factory or Workshop must be allowed 250 cubic feet of air space, or 400 during overtime. Last year very few of the occupiers of workrooms, &c., had complied with this requirement, but now most of them, I am glad to report, have done so.

Bakehouses.—I have twice visited with the Sanitary Inspector, Mr. Bradbury, all the Bakehouses in the Borough, and found them satisfactory.

Closet Accommodation.—The Factory and Workshop Act, 1901 (Section 9), requires every Factory and Workshop to have suitable sanitary conveniences, with separate provisions for each sex, where necessary. In some mills this regulation is very satisfactory and efficiently carried out. In others it is very unsatisfactory, and I have supplied the Borough Surveyor, Mr. White, with a list of those that require his attention, and which he will have to proceed with under Public Health Act, 1890 (Section 22).

Canal Boats.—I beg to give Mr. Bradbury's (Inspector of Canal Boats) Report :—

Sanitary Office, Town Hall,

Stalybridge,

December 30, 1904

To the Chairman and Members of the Sanitary Committee.

Gentlemen,

In presenting the Annual Report of Canal Boats for the past year, I beg to state that seventeen boats have been inspected which were registered for sleeping accommodation.

These boats were occupied by 33 males. No females or children were in residence on any of the boats. All the boatmen appeared to be in good health and free from infectious disease.

During the year two notices have been served for contraventions under the Acts and Regulations; one for absence of certificate; one for want of repairs.

I am,

Yours obediently,

W. J. BRADBURY,

Inspector under the Canal Boats Acts.

Before closing this report I beg to express my regret at the loss the Sanitary Committee have sustained in the death of Mr. Oliver, who had served them 27 years.

I beg to thank your Committee for the kindness and courtesy I have at all times received at your hands, and have the honour to remain,

Gentlemen,

Your obedient Servant,

F. J. ROBERTS-DUDLEY.

Medical Officer.

Enville House,
Stalybridge,
January, 1905.

NUMBER OF DEATHS,

For the Year Ending December 31st, 1904.

Causes of Death.

Small Pox	4
Measles	48
Scarlet Fever	3
Whooping Cough	6
Diphtheria and Membranous Croup	8
Enteric Fever	6
Epidemic Influenza	0
Cholera	0
Plague	0
Diarrhœa	15
Enteritis	21
Puerperal Fever	0
Erysipelas	1
Other Septic Diseases	0
Phthisis	32
Other Tubercular Diseases	3
Cancer, Malignant Disease	20
Bronchitis	58
Pneumonia	31
Pleurisy	1
Other Diseases of Respiratory Organs	7
Alcoholism, Cirrhosis of Liver	2
Premature Birth	8
Diseases and Accidents of Parturition	3
Heart Diseases	42
Accidents	7
Suicides	5
All other causes	198
	529

Ages at which Death occurred.

Under 1 year of age	142
Between 1 and 5 years of age	85
,, 5 and 15 ,,	16
,, 15 and 25 ,,	13
,, 25 and 65 ,,	165
65 and upwards	108
	529

Deaths.

Male	275
Female	254
	529

Births.

Male	356
Female	319
	675

Estimated Population, 28,415.

Annual Death Rate for every thousand persons living for the year ending December 31st, 1904	18·6
Corresponding time for 1903	17·8
,, ,, 1902	20·4
,, ,, 1901	21·3
,, ,, 1900	22·4
,, ,, 1899	22·3
,, ,, 1898	24·8

Deaths in Different Wards.

Lancashire Ward	102
Stayley Ward	199
Dukinfield Ward	146
Millbrook Ward	35
Public Institutions	47
Total	529

The following table will show the number of deaths in each year from the seven chief zymotic diseases, as well as the various Death-rates for the past ten years, and also the deaths of children under 1 year of age to 1000 births registered:—

	1895	1896	1897	1898	1899	1900	1901	1902	1903	1904
Smallpox	0	0	0	0	0	5	0	1	1	4
Measles	49	5	43	19	32	14	0	32	1	48
Scarlet fever	2	22	18	11	3	1	4	7	4	3
Diphtheria and Membranous Croup	5	5	3	1	5	0	1	18	7	6
Whooping Cough	13	23	12	17	1	41	1	3	19	8
Fevers of continued character — Typhus	0	0	0	0	0	0	0	0	0	0
Fevers of continued character — Enteric	10	3	3	20	12	14	12	7	4	6
Fevers of continued character — Doubtful	0	0	0	0	0	0	0	0	0	0
Diarrhœa and dysentery	33	8	22	27	23	23	36	6	14	36
Deaths from the 7 chief zymotic diseases	112	66	101	95	76	98	54	74	50	111
Deaths from other causes	553	506	505	612	562	547	539	496	454	418
Totals for each year due to the Borough	665	572	606	707	638	645	593	570	504	529
Death-rate from the 7 zymotic diseases per 1000	4·0	2·3	3·5	3·3	2·6	3·4	1·9	2·6	1·7	3·9
Death-rate from all other causes per 1000	19·9	18·0	17·9	21·5	19·7	19·0	19·4	17·8	16·1	14·7
General death-rate per 1000	23·9	20·3	21·4	24·8	22·3	22·4	21·3	20·4	17·8	18·6
Deaths of children under 1 year of age to 1000 births registered	244	168	184	239	240	253	221	176	190	210

Daily Meteorological Observations taken at 9 o'clock a.m. at Stamford Park by Samuel Turner, Park Superintendent.

Date.	Hygrometer.		Temperatures						Distance travelled by Wind in 24 hours	Rainfall 12 inches above ground
	Dry	Wet	Maximum in Shade	Minimum in Shade	Maximum in Sun. Bright Bulb.	Maximum in Sun. Black Bulb in vacuo.	Temp. 1 ft. deep	Temp. 4 ft. deep		
1904.										
January	39	38	43	34	31	50	36	41	..	2·77
February	36	35	45	33	30	54	37	40	..	3·67
March	39	37	53	34	30	73	37	41	..	1·17
April	47	46	53	40	37	83	43	42	..	2·22
May	52	51	50	44	40	91	49	47	..	1·96
June	57	56	63	47	43	91	55	52	..	1·35
July	62	60	71	54	50	97	61	57	..	1·31
August	60	59	64	50	46	90	57	57	..	3·71
September	56	55	61	50	43	85	55	55	..	1·03
October	50	49	56	44	38	70	50	53	..	1·81
November	41	40	46	35	31	51	42	47	..	2·86
December	38	37	42	32	28	45	37	42	..	2·88
										26·74

TABLE I.

NAME OF DISTRICT, STALYBRIDGE.

Year	Populati'n estimated to Middle of each Year	Births		Deaths under One Year of Age.		Deaths at all Ages. Total		Deaths in Public Institutions
		Number	Rate*	Number	Rate per 1000 Births registe'd	Number	Rate*	
1894	27583	811	29.4	122	150	509	18.4	56
1895	27722	761	27.4	188	244	665	23.9	43
1896	28044	837	29.8	141	168	572	20.3	57
1897	28295	812	28.6	150	184	606	21.4	45
1898	28429	771	27.1	185	239	707	24·8	70
1899	28575	743	26.0	179	240	638	22.3	41
1900	28680	694	24.1	176	253	645	22.4	66
1901	27754	678	24.4	150	221	593	21.3	66
1902	27938	696	24.9	123	176	570	20.4	58
1903	28222	730	25.8	139	190	504	17·8	58
Averag's for years 1894-1903	28124	753	26.7	155	206	600	21.8	56
1 94	28415	675	23.7	142	210	529	18.6	†47

*Rates calculated per 1,000 of estimated population.

	At Census of 1901.
Total population at all ages	27,674
Number of inhabited houses	6,288
Average number of persons per house	4.4
Area of District in acres (exclusive of area covered by water)	3,137

† Deaths in this column are all apportioned to the Districts in which they lived before removal.

TABLE II.

NAME OF DISTRICT, STALYBRIDGE.

Names of Localities	BOROUGH.				LANCASHIRE WARD				STAYLEY WARD.				DUKINFIELD WARD				MILLBROOK WARD			
Year	Population estimated to Middle of each Year.	Births Registered.	Deaths at all Ages.	Deaths under 1 year.	Population estimated to Middle of each Year.	Births Registered.	Deaths at all Ages	Deaths under 1 year	Population estimated to middle of each Year.	Births Registered	Deaths at all Ages	Deaths under 1 year	Population estimated to middle of each Year	Births Registered	Deaths at all Ages	Deaths under 1 year	Population estimated to middle of each Year	Births Registered	Deaths at all Ages	Deaths under 1 Year
1894....	27583	811	509	122	6028	182	92	21	10407	298	179	41	8071	259	147	49	3077	72	35	7
1895....	27722	761	665	188	6070	163	124	40	10435	269	241	65	8120	256	207	67	3097	70	50	14
1896....	28044	837	572	141	6143	180	107	24	10555	302	182	47	8213	278	185	57	3133	77	41	11
1897....	28295	812	666	159	6236	201	108	33	10611	290	234	64	8287	236	162	41	3161	85	57	11
1898....	28429	771	707	185	6286	179	147	37	10642	268	237	59	8338	257	206	78	3181	67	47	8
1899....	28575	743	638	179	6331	205	142	38	10690	271	223	67	8358	212	192	63	3196	55	40	10
1900....	28680	694	645	176	6345	146	132	40	10740	260	204	55	8390	232	200	67	3209	56	43	12
1901....	27754	678	593	150	5994	124	131	26	10805	236	225	50	7935	233	197	65	3020	85	40	8
1902....	27938	696	570	123	6016	139	117	23	10833	261	183	49	7984	222	173	44	3055	74	39	7
1903....	28222	730	504	139	6069	140	111	28	10954	262	207	53	8100	251	151	47	3099	77	35	9
Averag's of Years 1894 to 1903	28124	753	600	155	6151	166	121	31	10667	271	211	55	8179	243	176	57	3122	71	42	9
1904....	28415	675	529	142	6125	157	101	33	10990	235	199	55	8167	213	146	43	3133	70	36	7

TABLE III.

NAME OF DISTRICT, STALYBRIDGE.

CASES OF INFECTIOUS DISEASE NOTIFIED DURING THE YEAR 1904.

Notifiable Disease	Cases Notified in whole District.							Total Cases Notified in each Locality				No. of Cases Removed to Hospital from each Locality.			
	At all Ages.	Under 1.	1 to 5	5 to 15	15 to 25	25 to 65	65 and upwards	Lancashire Ward	Stayley Ward	Dukinfield Ward	Millbrook Ward	Lancashire Ward	Stayley Ward	Dukinfield Ward	Millbrook Ward.
Small-Pox	13	1	0	2	0	10	0	8	2	2	1	8	2	2	1
Diphtheria	9	0	5	2	1	1	0	0	4	4	1	0	0	0	0
Membranous Croup	6	1	5	0	0	0	0	0	2	3	1	0	0	0	0
Erysipelas	19	2	2	1	2	7	5	1	9	8	1	0	0	0	0
Scarlet Fever.....	80	1	20	47	5	7	0	10	17	21	32	0	0	0	0
Enteric Fever	17	0	3	3	2	9	0	3	2	10	2	0	0	0	0
Puerperal Fever ..	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0
Totals..	145	5	35	55	10	35	5	23	36	48	38	8	2	2	1

ISOLATION HOSPITAL—SMALL POX ONLY.

TABLE IV. NAME OF DISTRICT, STALYBRIDGE.

Causes of, and Ages at, Death during the Year 1904.

Cause of Death	Deaths in whole District at Subjoined Ages							Deaths in Localities (at all Ages)				Deaths in Public Institutions
	At all Ages	Under 1	1 and under 5	5 and under 15	15 and under 25	25 and under 65	65 and upwards	Lancashire Ward	Stayley Ward	Dukinfield Ward	Millbrook Ward	
Smallpox	4	1	0	1	0	2	0	2	1	1	0	0
Measles	48	17	30	1	0	0	0	7	16	21	4	0
Scarlet Fever	3	0	2	1	0	0	0	0	0	1	2	0
Whooping Cough	6	0	6	0	0	0	0	2	3	1	0	0
Diphtheria & Membranous Croup	8	2	6	0	0	0	0	1	4	3	0	0
Enteric Fever	6	0	0	0	0	6	0	2	0	4	0	0
Diarrhœa	15	12	2	0	0	0	1	2	8	4	1	0
Enteritis	21	16	4	0	0	1	0	5	7	9	0	0
Erysipelas	1	1	0	0	0	0	0	0	0	1	0	0
Other septic diseases	0	0	0	0	0	0	0	0	0	0	0	0
Phthisis	32	2	0	2	3	25	0	8	11	9	4	0
Other tubercular diseases	3	0	0	1	0	2	0	0	2	1	0	0
Cancer, malignant disease	20	0	0	0	0	19	1	7	8	4	1	0
Bronchitis	58	11	6	0	1	19	21	10	34	11	3	0
Pneumonia	31	10	11	0	0	8	2	8	12	10	1	0
Pleurisy	1	0	0	0	0	0	1	0	0	0	1	0
Other diseases--Respiratory organs	7	1	2	0	0	3	1	4	3	0	0	0
Alcoholism, Cirrhosis of Liver	2	0	0	0	0	2	0	1	0	0	1	0
Venereal Diseases	0	0	0	0	0	0	0	0	0	0	0	0
Premature Birth	8	8	0	0	0	0	0	2	1	5	0	0
Diseases & accidents of parturition	3	0	0	0	1	2	0	0	1	2	0	0
Heart Disease	42	0	0	4	5	22	11	9	20	9	4	0
Accidents	7	0	3	4	0	0	0	0	1	4	2	0
Suicides	5	0	0	0	0	4	1	0	2	2	1	0
All other causes	198	61	13	2	3	50	69	53	80	49	16	0
All causes	529	142	85	16	13	165	108	123	214	151	41	0