

[Report 1906] / Medical Officer of Health, Leek U.D.C.

Contributors

Leek (England). Urban District Council.

Publication/Creation

1906

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Leek
District



Urban
Council.

with F. Green's Compliments

JOINT REPORT

OF THE

Medical Officer of Health

AND

Sanitary Inspector

ON THE

Sanitary Condition of Leek,

For the Year 1906.



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TO THE LEEK URBAN DISTRICT COUNCIL.

MR. CHAIRMAN AND GENTLEMEN,

In submitting my report for the year 1906, I must again point out that as these reports are framed according to the requirements of the Local Government Board and the Staffordshire County Council, there is necessarily a large amount of repetition of previous reports, as a statement of the local circumstances and a history of local sanitary questions, which may seem superfluous to you, may frequently be of the utmost importance to them.

GENERAL LOCAL FEATURES.

The Leek Urban Sanitary District covers an area of 1460 acres, and in the highest portion of what is a hilly district, attains an elevation of about 600 feet above sea level; the natural drainage is into the river Churnet.

A line drawn across the middle of the district, due north and south, marks fairly accurately its geological division; on the east of this line is a sub-soil of clay, on the west one consisting of red sandstone.

Investigations have been made with the view of ascertaining what influence this difference of sub-soil has

on the health of the inhabitants, both in respect to the general mortality, and more particularly as to its influence on the mortality from Phthisis, with the somewhat unexpected result that no appreciable difference could be demonstrated.

Further comparative investigations relating to other diseases would be interesting and instructive.

The population is mainly composed of artisans, the chief trade being silk manufacture and silk dyeing.

HOUSE ACCOMMODATION.

The house accommodation is fairly good, both as regards its adequacy, and fitness for habitation. One case of overcrowding has been investigated and reported on, and after notice had been served, the condition was brought within legal limits, prosecution being rendered unnecessary.

I fear there are many cases best described as borderland cases, which I should heartily rejoice to get rid of, but the dearth of houses having good sized rooms at a low rent makes it impossible, for wages are always comparatively low in many branches of silk manufacture, and especially low now that the trade is bad and many workers are making short time.

The injurious effects in these borderland cases would be largely counteracted if the people would learn to open the windows more freely and to unstop the chimneys which are stuffed with bags of shavings, etc., or blocked by boards which are frequently papered over to look clean and pretty. These conditions, which plainly mean want of fresh air and accumulation of bad air in the bedrooms, have an important bearing on our infant mortality, for

infants are most susceptible to the poisonous atmosphere, and either die in the early months, or surviving these grow up poor miserable undersized weaklings.

A sufficiency of open space about the houses is much more apparent in the more recently erected buildings, and their surroundings are clean. There are only fourteen back-to-back houses in the whole district, ten of these have two large bedrooms with good windows, and are provided with a separate water-closet each.

Supervision is constantly exercised over the erection of new houses.

SEWERAGE AND DRAINAGE.

Under this heading I am compelled to repeat from last year's report :—"It is again necessary to call your attention to some outlying portions of the district which require drainage improvement; the portions to which I refer are the west out-fall; also the district adjoining the Canal Wharf, which should be properly drained, and the sewage conveyed to the west side of the sewage farm."

SEWAGE DISPOSAL.

Since my last report the new scheme has been completed and has been working for three months. An epoch of such importance in the sanitary history of the town has been reached that I make no apology for adopting (with slight alterations) at considerable length the article by Mr. Beacham entitled "The Bacteriological Treatment of Sewage at Leek," in the "Surveyor and Municipal and County Engineer," September 14th, 1906. Although many of you have copies of this paper I think it worthy of preservation in our annual report :

“The town of Leek for purposes of sewage disposal is provided with three outfalls—viz., the south, west, and north, and up to the year 1892 the sewage disposal question was one which had not caused the Council any great amount of trouble, as plenty of land outside the town was obtainable, and the farmers were glad of the sewage for purposes of irrigation; but the time came (in 1892) when steps had to be taken to lay down proper disposal works, and the south district, to which about one-half of the town was drained, was the first to be dealt with.

The population of Leek at that time, according to the 1891 census, was estimated at 14,500, and of this number 7,000 were tributary to the south outfall. The sewage is not purely a domestic one, containing as it does, especially at certain times of the day, a considerable quantity of dye water which is turned out from the various mills, and dyeing factories connected with the silk industry. About one-third of the south district is provided with duplicate sewers, but the work of entirely separating the storm water from the sewage is not yet completed.

In the year 1892 a firm of consulting engineers were called in to advise the Council upon the best means of dealing with the question of the disposal of the sewage for the town of Leek, and their report was upon a general scheme, because it was thought advisable by some that it would be best to endeavour to combine the outfalls, if at all possible, and to put down one works to deal with the whole of the sewage in the town. Eventually, in the year 1896, the Council, after another report decided to deal with the question in the south district only, leaving the other outfalls to be dealt with

when the time came, and hoping that that day would be far distant in view of the fact that good use was made of the sewage for purposes of irrigation, that there was a demand for it, and that the distribution of it over the land could be dealt with without causing a nuisance or pollution of the river.

Twenty-six acres of land were acquired in the south district, and a scheme of sewage disposal, consisting of preliminary tank treatment, though on a very small scale, followed by intermittent downward filtration and broad irrigation, was adopted upon the advice of the consulting engineers. The soil of the land was found to be varied in its character, 6 acres with a free description of sub-soil containing such a proportion of gravel and sand as rendered it especially suitable for intermittent downward filtration, 16 acres of more of a clayey and peaty nature, which it was proposed should be laid out as broad irrigation, and the remaining 4 acres of gravel and sand, but above the level of the proposed tanks, of which part is taken up by roads, etc. It was proposed to cultivate that portion which was above the tanks, ploughing in the sludge which would accumulate from the periodical cleaning out of the screening tanks.

These tanks were two in number, each 30 ft. long by 8 ft. wide and about 5 ft. deep below inlet. The coarser particles in the sewage were arrested by screens at the entrance, the heavier matter fell to the bottom of two pits, constructed by means of cross walls in the tanks, while the passage of the more minute particles was prevented by a cage fixed on the cross wall and containing broken stone, through which the liquid was made to pass in its journey to the outlet. The sludge was removed by a hand pump on to a sludge bed, and afterwards

taken and used as previously described on land above tank level.

The 6 acres of intermittent land were laid out in plots of 1 acre each, with underdrains of 4-in. pipes laid in straight lines 5 ft. apart, all connected to a main channel running the whole length of the farm, dividing it into two, while the 16 acres of broad irrigation land were underdrained on similar lines.

The dry-weather flow, plus a certain proportion of storm water, was estimated at 200,000 gallons per day, and it was calculated that the farm would serve for many years, when possibly the increase of population would necessitate the purchase of additional land.

Several years of working experience proved in what respects the works answered the purpose for which they were designed, while they have also proved that it is only possible to produce a satisfactory effluent from raw sewage, or sewage which has only been roughly screened, when there is sufficient depth of porous soil as a filtering medium, and further an area large enough to allow of a change of top soil from time to time by ploughing or other means.

The 6 acres of intermittent filtration, after only passing the raw sewage through the small tanks provided and not allowing any time for settling, have always produced an effluent satisfactory in all respects, whereas the 16 acres of broad irrigation land have totally failed to deal with the sewage in a manner to render it fit to discharge into the river; in fact the effluent from the intermittent area has deteriorated to such an extent when mixed with that from the irrigation land (as it must do in passing through the same main channel to the outlet into the river)

that the Council have been compelled to go into the question of improving it, and though additional money has been spent in increasing the underdraining of the broad irrigation area no better result has been obtained. The sewage in summer time found its way direct into the drains through the cracks in the soil without any purification whatever, while in winter time the land became flooded, and so the sewage problem in the south district, after an expenditure of between £8,000 and £10,000, became one of anxiety to the Council.

Experiments in the direction of purification by means of charcoal were tried in the year 1902, but the works were handed over to Mr. Beacham in 1903, soon after taking up his duties as Surveyor to the Council, with instructions to consider the question of dealing with the sewage so as to remove the complaint of the County Council with regard to the quality of the effluent then being discharged into the river Churnet.

The question as it presented itself was one of difficulty. Here was a farm of 26 acres, 6 good, 16 bad, with but small tank capacity and a poor effluent after an expenditure of nearly £10,000. The scheme presented to the Committee was one in which the Surveyor proposed first to increase the tank capacity, second to retain in cultivation the intermittent downward filtration area of 6 acres for the treatment of sewage, and third to supplement the land so worked by means of artificial filters, and so abandon the 16 acres of broad irrigation land for the treatment of sewage proper.

The method proposed at this stage in the history of the sewage disposal question was not a new one, but Mr. Beacham suggested that before the Committee adopted

the scheme they should visit a few towns where works of a similar character to those proposed had been carried out, and accordingly those of York, Leeds, and Accrington were inspected, in addition to Rochdale, where Mr. Beacham had supervised a scheme of a like nature, and where experiments had been carried on for five or six years with good results. The information obtained from these towns, for which the Committee and Mr. Beacham desire to express their thanks to the various officials, was such as to satisfy them that the scheme proposed was one which would be likely to solve the difficulty they found themselves in, and it was upon their return adopted. The following is a description of the new works:—

The small tanks which previously acted as settling tanks have been altered and arranged to act as roughing tanks, receiving the sewage together with sand grit and road detritus. To hold back floating or solid articles, corks, etc., screens with $\frac{1}{4}$ in. to $\frac{3}{8}$ in. spaces between them are fixed at the inlet end. A middle wall running across the tanks and dividing them into two, acts as a catchpit, the heavier matter sinking to the bottom and the effluent passing under a scum board goes on to two new septic tanks, there to be subject to the action of the anaërobic bacteria. Before designing the new tanks it was thought advisable to take gaugings so that the dry-weather flow could be correctly ascertained, the previous gaugings being taken when the works were originally laid down. These were accordingly taken for a month without intermission, every hour, night and day, and it was found that the normal flow was 200,000 gallons, equal to a water supply of 25 gallons per head per day for a population of 8,000.

As is well known, the requirements of the Local

Government Board in relation to sewage disposal are that they consider that whatever system is adopted as a means of dealing with the sewage it is necessary that provision should be made (1) for treating fully as ordinary sewage a volume of mixed sewage and storm water equal to three times the dry-weather flow of sewage, and (2) for dealing with the excess of storm water up to six times the dry-weather flow by passing it through a special and separate storm-water filter of sufficient extent, or by dealing with it on a special and separate area of prepared land, other than that in use for the treatment of the effluent from the ordinary tanks or filters. Having thus ascertained the dry-weather flow it was easy to find out that the works, as they were, and as proposed, had to deal with 1,200,000 gallons per day, 600,000 gallons to be treated as sewage and 600,000 gallons as storm water.

It has been generally found in dealing with the effluent from septic tanks that a day's rest in the tanks is sufficient to liquefy the sewage and prepare it for the treatment on filters, although it has been found impossible to lay down hard-and-fast rules equally applicable to all cases; but having regard to the distance the sewage has to travel in the outfall sewers before it reaches the site of the disposal works, and the gradient at which the outfall sewer is laid, causing the sewage to reach the works in a comparatively fresh condition, the tanks were designed with these figures of dry-weather flow as a basis.

Tanks.—The tanks thus provided are two in number, running parallel to each other, and each 100 ft. long by 25 ft. wide, with an average depth of 6 ft. 6 in.—8 ft. 6 in. at the inlet ends and 5 ft. at the outlet sill level. They are built of Staffordshire blue bricks, coped

with York stone, with concrete floor and channel formed therein leading to sludge outlet at inlet end. The sewage after being screened in the roughing tanks is conducted along a race to the centre of the wall at the inlet end of tanks, and there, by means of penstocks, it can be diverted into either or both of the new tanks. The tanks are provided with scum boards, and all the necessary mechanism, floating arms, etc., to draw off the supernatant water and the sludge. The sludge well is at one corner of the tanks, built against the outside wall, into which the outlets from both tanks are laid, and over which, fixed on perforated cast-iron gratings, is a very strong chain pump. The supernatant water down to the level of the sludge is drawn off by means of a floating arm and conveyed to a chamber fixed at such a level as to command the intermittent filtration area.

Sludge Bed.—To receive the sludge a sludge bed is provided adjoining the tanks which can be reached from the sludge well near the new tanks, and also the well in connection with the roughing tanks. Its size is 100 ft. by 28 ft. (giving an area of 2,800 sq. ft.) by a depth of 2 ft. Along the floor is laid a 6-in. drain, with branches every 4 ft. apart of agricultural drain pipes, laid butt-jointed, and all converging to one outlet. Upon these pipes, as well as around them, is placed a layer of hand-packed clinker ashes of $1\frac{1}{2}$ -in. to 1-in. gauge and 6 in. deep. Upon these are placed another layer of 1-in. to $\frac{1}{2}$ -in. gauge, and a top finishing coat of $\frac{1}{2}$ in. to $\frac{1}{4}$ in. of ashes, all screened, giving a total depth of 2 ft. At the outlet end is placed a draw-off arrangement whereby the sludge effluent can be diverted to the inlet end of the roughing tanks, there to be again subjected to further treatment.

Filters.—The question of site for the filters occupied attention, as intervening between the septic tanks and the irrigation land are the 6 acres of intermittent filtration area, so that in order that this land which was producing a satisfactory effluent could be kept in use, and thus reduce the area of artificial filters required, it was decided to place them at the north-west corner of the irrigation land, and connect them with the tanks by means of a pipe carrier running parallel with the North Staffordshire Railway Company's canal. They were accordingly built on the irrigation land and the sides banked up with the excavation from the septic tanks. The number of filters provided is four, each of an area of 330 sq. yds., making a total surface area of 1,320 sq. yds. by a depth of 5 ft. Through these it is proposed to pass the effluent from the septic tanks, at the rate of 281 gallons per square yard per twenty-four hours, which is the quantity laid down by the requirements of the Local Government Board, so that in time of heaviest flow 371,000 gallons can be dealt with per day, the remainder up to 600,000 gallons, which is three times the dry-weather flow, being dealt upon the intermittent filtration area, and in times of dry weather or after slight rains the lesser quantity will be put upon both, thus affording every opportunity of aërating both land and filters. The area of the filters is such that if only the normal flow be dealt with they would pass the effluent through at the rate of 152 gallons per square yard per twenty-four hours.

The construction of the filters is as follows: The foundation floor is of cement concrete, 10 in. thick, rendered to a smooth surface. In shape they are octagonal and by the omission of the four internal walls form really

one large bed. Along the centre of the floor is a 9-in. by 6-in. channel for the purpose of taking away the purified effluent, and from this channel are small channels $1\frac{1}{2}$ in. by 1 in. running to the extreme ends of each bed, so that it is possible to take a sample of the purified effluent from each filter. At the corners of the beds air ducts are run up of 6-in earthenware pipes, carried to just above the surface of the filter, and provided with an open end covered with a perforated grid. They rest on a bend cemented to the floor of the filter, and the ends, which are left open, are protected by means of a perforated grid, so that the air may be drawn into the filter by the current set up by the purified effluent travelling along the channels to the outlets. The walls of the filters are built of Staffordshire blue brindled bricks, and are 14 in. thick for three-fourths of their height, diminishing to 9 in. thick at the top by means of $2\frac{1}{4}$ -in. set-offs. They are carried to a height of 5 ft. 3 in., and coped with a 9-in. by 6-in. Yorkshire coping.

The filtering medium is broken brick and sagger (a waste pottery product of varying guage). The main channels in the floor are covered with perforated tiles resting on ledges made to receive them, and on to which the smaller channels discharge. The bottom layer placed on the floor and over the tiles is of broken Staffordshire brindled bricks, cubical in shape, of 2-in. to $1\frac{1}{2}$ -in. guage, and laid 6 in. deep. The next 6 in. is of crushed sagger guaging 1 in. to $\frac{1}{2}$ in., then 3 ft. of $\frac{1}{2}$ -in. to $\frac{1}{4}$ -in. guage, and the top foot $\frac{1}{4}$ in. to $\frac{1}{8}$ in., making 5 ft. in all. The whole is washed, all dust being taken out, and carefully graded when put into place. In the centre of each bed is a circular chamber

4 ft. 6 in. in diameter, upon which is placed and fixed the distributor, and in the well formed by the four walls the valves are fixed controlling each sprinkler, these in turn being supplied by a main pipe connected up to a supply tank, which provides the necessary head for working the distributors.

Distributors.—The distributors used are those of the Patent Automatic Distributors Company's make, with mercurial seal, and are fixed upon steel girders built into the circular wells. The joint between the stationary supply pipe and the revolving sprinkler is made by a seal of mercury which gives a watertight and frictionless joint; the lower ball bearing is placed in the mercury seal, and thus is effectually preserved against rust, dust, grit, flies, etc. The top ball bearing runs in a lubrication bath which is also provided with the patent moisture-proof and dust-proof seal. Great importance is attached to this patent moisture-proof seal, and it is claimed that it is the only means by which the bearings of such an apparatus as a large distributor can be permanently maintained in an efficient condition. Owing to the bearings being rust-proof, hardened steel is used instead of soft metals, such as brass, bronze and similar alloys, which it is said have not proved hard enough for large sprinklers. The mercury seal further enables the whole of the fall to be utilized, the pressure being preserved by preventing the sewage from overflowing. The sprinklers are provided with patent compensating arms, which without any working parts enable the sprinkler to rotate with a smaller flow and yet be capable of passing a much larger volume than would otherwise be possible, thus avoiding the necessity of attention.

The necessary head for working the distributors is

supplied from a tank built adjoining the filters, 12 ft. square and 2 ft. 6 in. deep, the water level corresponding to that in the basin of the sprinkler. At this level in the tank is fixed an overflow weir which prevents any overflowing on to the beds. In the supply tank is fixed an automatic valve which discharges at intervals, and the sewage is conveyed from the bottom of the tank to the central chamber and thence to the distributors. The supply tank is built upon brick piers, with an armoured concrete bottom, and blue brick sides with a cement rendering $\frac{3}{4}$ in. thick to water level, and coped with Yorkshire stone in keeping with the walls of the filters. The supply tank is connected to the septic tanks by means of an earthenware pipe carrier 15 in. diameter taken from a distributing chamber, into which the partly purified sewage flows from the septic tanks, where it may be either all taken to the filters or partly diverted to the intermittent downward filtration area, and part sent on to the filters. The filtrate from the four filters after passing through is conveyed to one outlet, and then passing down over a flight of glazed brick steps arrives at a chamber whence it can be sent on to the broad irrigation land and then to the river.

Storm-Water Area.—Having made provisions for dealing with three times the dry-weather flow by treating the same in tanks and on filters it is proposed to deal with the balance up to six times as storm water; and on the main outfall sewer, before it reaches the farm, is placed an overflow weir so adjusted that any quantity of sewage above the six times dry-weather flow is diverted to the storm-water carrier discharging into the river. On the farm just before the sewer is connected with the tanks is a chamber in which a penstock is fixed at three

times the dry-weather flow, so that when the normal flow is increased to three times the remainder up to six times is kept out of the tanks, and requires to be dealt with as storm water.

The proposals of the Local Government Board in the matter of dealing with the storm water gives an authority a choice either to deal with it upon separate storm-water filter or a separate area of prepared land, and it is proposed in connection with this scheme to accept the latter proposal and deal with it on the land which has been used for broad irrigation and abandoned for the treatment of sewage. It is anticipated that with ample tank accommodation and subsequent treatment on the filters the final effluent will be of such a standard of purity as to satisfy the requirement of the Rivers Pollution Prevention Acts and that further land treatment will be unnecessary: and it is contemplated that when the works are in full working order the land referred to will be allowed sufficient time to rest to recover from the excessive amount of sewage which has been put upon it during the time the present extensions and alterations to the old works have been carried out, and that with ploughing in to a good depth cinders screened from the town's refuse the soil will be considerably lightened, and that being kept for storm-water purposes only it will be of much greater service for that particular purpose to the town than it has been for purely sewage purification.

The land was originally underdrained, and subsequently the drains then put in were supplemented at considerable cost, so that in course of time the Council hope to have sufficient prepared land to deal with their storm water. Should it, however, not come up to expectations they will consider the question either of

putting down a special storm-water filter, or lay out additional land they have for the purpose. The work of further separating the storm water from the sewage is receiving the consideration of the Council, and it is hoped that with more complete separation the increase of population will not necessitate the extension of their disposal works in the south district for many years to come.

The contractors for the present extensions were Messrs. Barker Brothers, of Dudley Hill, Bradford. The clerk of works was Mr. C. C. Brown, from the engineer's office. The amount borrowed for the works was £5,200, and the whole has been carried out to the satisfaction of the engineer, below the estimates.

Your committee has recently appointed a filter man to exercise constant supervision over the bacterial scheme, watching the working of the filters, regulating the flow, and by analysing the effluent to see that no portion of the plant is getting unduly worked or put out of gear. In addition to this they have very rightly engaged Mr. Carter Bell to make analyses of the Crude Sewage, Septic Tank Effluent, and Filter Effluent every month. I give below his reports for October 26th and November 27th, 1906. The former showing a considerable purification on the filters, but practically none in the septic tank; the November report shows that when a month longer had been given for the tank bacteria to do their work efficiently, the effluent was a good one.

The scheme has not been long enough in operation to justify any definite opinion, but the general outlook is most hopeful, and with the aid of an intelligent manager there should be no reason to doubt that we shall be able to produce a good effluent fairly consist-

ently: I say fairly because there are times of storm when the inflow to the tanks is so great as to disturb and wash out the sediment, thus not allowing time for septic action but hurrying on to the filters a heavier sample of sewage than they have a right to deal with.

ANALYST'S REPORTS.

ANALYSES OF THE THREE SAMPLES OF SEWAGE AND EFFLUENT SENT ON THE 22ND OCTOBER.

	Crude Sewage.	Septic Tank Effluent.	Bacterial Filter Effluent.
Appearance	Turbid	Turbid	Fairly clear
Odour	Sewage	Sewage	Earthy
Total Solids at 212° F.	104·3	47·0	40·6
Ditto at 360°	99·0	46·0	38·6
Loss	5·3	1·0	2·0
Chlorine	8·5	7·5	5·5
Nitrogen as Nitrates ...	nil.	nil	1·55
Free Ammonia	8·0	5·0	2·0
Albumenoid ditto	·80	·80	·60
Oxygen for 3 minutes	2·3	2·1	·96
Ditto for 4 hours	5·1	4·9	1·8
Alkalinity	nil	nil	nil
Deposit	Organic	Organic	Organic
Suspended Matter	33·7	14·8	6·8

The per centage of purification between the Sewage and the Septic Tank Effluent is very small, being only 4. Practically speaking, there is no difference between the two. In considering the Bacterial Filter Effluent, there is only a purification of 64 per cent. It is not by any means, a good effluent, and it is one which I could not pass as fit to enter clear fishing streams.

October 26th, 1906.

J. CARTER BELL, *County Analyst.*

ANALYSES OF THE THREE SAMPLES OF SEWAGE AND EFFLUENT
SENT ON THE 24TH NOVEMBER, 1906.

	* Crude Sewage.	† Septic Tank Effluent.	‡ Bacterial Filter Effluent.
Appearance	Turbid	Turbid	Turbid
Odour	Sewage	Sewage	Earthy
Total Solids at 212° F.	143·7	48·0	35·0
Ditto at 356°	131·4	45·6	32·0
Loss	2·3	2·4	3·0
Chlorine	13·0	6·0	5·0
Nitrogen as Nitrates...	nil	nil	1·23
Free Ammonia	7·0	3·0	·5
Albumenoid Ditto ...	2·4	·4	·22
Oxygen for 3 minutes	1·7	·7	·18
Ditto for 4 hours ...	6·8	2·6	·54
Alkalinity	nil	nil	nil
Deposit	Organic	Organic	Organic
Suspended Matter ...	30·7	4·3	Traces

* This is rather a strong sewage.

† This shows a Purification of 38 per cent. upon the Sewage.

‡ This shows a Purification of 79 per cent. upon the Sewage, and I consider this to be a very good effluent.

November 27th, 1906.

J. CARTER BELL, *County Analyst.*

EXCREMENT DISPOSAL.

The system in vogue for the disposal of excrement is mainly the water-carriage system, the remaining privies being gradually replaced by wash-down closets, either hand-flushed or furnished with flushing apparatus. During the year 33 privies have been demolished or converted into water-closets.

REMOVAL AND DISPOSAL OF HOUSE AND TRADE REFUSE.

The removal of house refuse is accomplished by the public scavengers employed by the Council, who make weekly rounds to collect the contents of about 2,000 movable receptacles; otherwise where ashpits exist these are emptied on notice being sent to the Authority. During the year 36 offensive uncovered ashpits have been abolished. I am glad to see suitable covers of tarpaulin have been provided to some of the ashes carts, but I notice with regret these are by no means in constant use.

The disposal of refuse consists in its being emptied on the "tip." I have long advocated a Destructor as the most sanitary method of refuse disposal, but I am bound to admit that the "tipping" as at present carried out at the sewage farm is robbed of many of its objectionable features, inasmuch as the refuse is levelled and covered over with a good layer of earth, thus obviating the nuisance associated with the ordinary tip.

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

WATER SUPPLY.

The water supply is one of which we are justly proud: taking its origin in a series of deep springs in the millstone grit of the Roches which are all carefully covered in, the water is carried directly, practically without storage to the town. The only approach to storage consists in the use of a reservoir situated on the outskirts of the town, which receives the surplus water during

the night, this is reduced by the increased demand during the day, diminishing the pressure in the mains, and allowing a flow from the reservoir through an automatic valve. The supply is sufficient, wholesome, and free from risk of serious pollution.

There is no necessity for storage in cisterns on the premises as the supply is on the "constant" system.

Lodging-houses, slaughter-houses, bake-houses, dairies, cowsheds, etc., are dealt with in detail in the Inspector's report.

INFECTIOUS DISEASES AND ISOLATION HOSPITAL.

Infectious diseases are as far as possible dealt with at the Isolation Hospital; true isolation in the homes being well nigh an impossibility. In this connection I heartily endorse the remarks of the Inspector.

In April, Dr. Fletcher, Local Government Board Inspector, held an inquiry re the borrowing of money for hospital extension. He approved of our proposals and plans and in addition required more bedroom accommodation for the nurses to be built outside the wards. Plans and specifications are now ready and the building will be commenced as soon as the weather permits. When completed we shall have full accommodation for 18 cases, distributed in two wards of 6 beds each, one ward of 3 beds, and 3 small observation wards of one bed each. We shall also have a well-equipped discharging block and a separate building providing bedrooms for nurses.

DISINFECTION.

Disinfection is effected by means of the dense fumes of vaporised carbolic acid, produced by a portable apparatus designed by Mr. Farrow, more than twenty years ago, and now made by Messrs Calvert, of Manchester. This

method has been constantly used in this district since that time ; it is rapid, clean, efficient, is not injurious to furniture or metal work, and in no way affects the colours of pictures, wallpapers, or delicate fabrics ; all great advantages over the sulphur method.

Half-a-pound of phenol can be converted into vapour in three minutes, and is sufficient for the disinfection of a room of the capacity of 1,000 cubic feet.

I have personally proved the efficacy of this vapour by extended bacteriological experiments, and beg to call the attention of the various Authorities of the County to this simple means of disinfection ; the results obtained with mattresses, bedding, etc., were not, however, satisfactory ; for these articles current steam should be used.

We have a "Thresh's Emergency Disinfector," which is kept at the Isolation Hospital ; it is portable, and is available for use in the proximity of any house where required. We have also a properly constructed hand-cart for the conveyance of infected bedding, etc., either to the "Disinfector" or to destruction by fire, unhappily, I cannot use the word "Destructor" in its technical sense, but hope that in the near future this will be possible.

VITAL STATISTICS.

Births.

The number of Births registered during the year was 376, which is 42 below the average for the preceding ten years, yielding a rate of 23·0 per 1,000. This is 4 lower than the birth rate for the preceding ten years.

Deaths.

The total number of Deaths registered was 263, which is 20 less than the ten years' average, and yields an uncorrected death rate of 16·1 per 1,000, as against

18·3 the average of ten preceding years ; this mortality rate becomes lower still when the necessary corrections have been made, coming out at 15·3 per 1,000 of the population.

Infant Mortality.

Turning to the Infant Mortality which is generally the black spot in our Vital Statistics, I am pleased to be able to report a maintained improvement, only 49 deaths having occurred in infants under the age of one year, or nearly 12 below the preceding 10 years' average (60·9), the rate per 1,000 births working out at 130·3 as compared with 145·6 for the previous decade.

The comparison with last year's figures is not so favourable, for during 1905 there were 51 deaths, with a rate of 120·0 per 1,000 births ; so that with a total number of deaths actually 2 less than last year, the rate per 1,000 is increased by 10, because the total number of births is less by 49 than in 1905.

It is worthy of note that out of the 49 deaths under one year, 36 were insured in one society in the town.

Mean Age at Death.

The mean age at death of each deceased individual shows a continued improvement, attaining the level of 41·5 years, as compared with 24·8 years for the decade 1851-60 ; 32 years, 1861-70 ; 37·2 years, 1891-1900 ; and 38·3 years for the 5 years, 1901-1905.

AGES AT DEATH.

Under 1 year	...	...	...	49
Between 1 and 5 years...	...	...	...	27
" 5 " 15 " ...	...	...	...	2
" 15 " 25 " ...	...	...	...	8
" 25 " 65 " ...	...	...	...	90
Over 65 years	...	...	...	75

There was no uncertified death in the district during the year.

THE 3 TO 5 AGE PERIOD.

It is, in my opinion, a mistake to send children under 5 years of age to school. From 3 to 5 years is not only the period of greatest frequency of measles and whooping cough, but is also the most fatal period. At this age therefore children should not congregate at school; the law does not compel attendance, but grant is paid on the attendance, which naturally the school authorities do their best to keep up; mothers also make it convenient to get rid of the children for part of the day. Briefly, the result is an increase of "preventable" deaths; a lowered physical and mental condition of the children, and an expenditure of about a million of money a year (on this age period) out of the pockets of the taxpayers.

I strongly urge the Education Committee to exercise to the full whatever power they possess, on the side of the children.

CAUSES OF DEATH.

Zymotic Class.

The Zymotic class of diseases is responsible for 17 deaths, the average for the previous ten years being 27·4; of these 3 were attributed to diarrhœa, 1 each to epidemic influenza, chicken pox, diphtheria, and rheumatism, and 9 to whooping cough.

In all cases of infectious disease the premises have been promptly inspected, and most careful investigation made to discover the source of infection, sanitary defects discovered being remedied forthwith.

The milk supply was free from suspicion in every instance.

Forty-one cases of scarlet fever, 29 cases of diphtheria, 12 cases of erysipelas, and 1 case of enteric fever were notified during the year, of which 36 scarlet fever, 25 diphtheria, and 1 enteric fever, were removed to the Isolation Hospital, giving a total of 62 removals to hospital out of 83 cases notified, or 74·7 per cent., or more fairly, calculating the per centage on diphtheria, scarlet and enteric fever cases, the removals amount to 87·3 per cent. of notifications. This would have been larger still had we been able to accommodate all cases desiring admission.

Phthisis.

Phthisis, I regret to report, has been responsible for 32 deaths, the average for the preceding ten years being 25·2.

Phthisis is now generally considered to be a dirt or filth disease, and I feel sure that if habits of cleanliness were more frequently practised, together with the admission of plenty of fresh air, especially through the open bedroom windows during hours of sleep, the number of cases of this terrible disease would rapidly diminish.

The "open air" treatment is simply "ventilation" treatment, and it is far easier to prevent than to cure, therefore I urge free ventilation of all rooms, and especially of bedrooms in which such a large proportion of our time is spent.

I am pleased to report that since the commencement of the house to house inspection by the inspector no less than 232 bedrooms have been properly ventilated,

provided always that people will recognise the fact that a window is made to open. There is much to be said in favour of the adoption of windows which cannot be completely closed. If free ventilation and cleanliness were more generally practised, we should have fewer and fewer cases of phthisis, and less money would be required from the rates to build and keep up Sanatoria for the treatment of consumptives. If preventive measures are ignored, Sanatoria are bound to be required, and it seems to me such a foolish policy and waste of money to begin at the wrong end of the business.

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.

Diphtheria.

Diphtheria has been responsible for 1 death out of a total of 29 cases notified. This tends to indicate the generally mild character of the cases, in fact our estimate of diphtheria needs considerably modifying, for since the adoption of the bacteriological diagnosis much of our previous clinical experience has needed revision. All this means the notification of many mild cases which previously escaped recognition; undoubtedly these very mild cases are of the utmost importance, constituting as they do a great danger to the community, for a child may contract severe diphtheria from a very mild case. Hitherto a certain amount of laxity has prevailed concerning these mild cases, the sore throat has soon been well and apparently clean, and unfortunately patients have been allowed to mix with other children; in this

way I feel convinced we may account for many cases, personal contact in school or at play being a far more important factor in spreading the disease than are so called sanitary defects in the houses.

To diminish the risk of infection in schools I would like to see every school provided with a sterilizer in which all articles such as books, pencils, slates, etc., used by the children would receive their daily purging from infectious impurities. This may sound somewhat extreme, but if infection is to be fairly tackled in its happiest hunting ground, *i.e.* the school, why hesitate to make it compulsory to erect a disinfecter or sterilizer in every school premises? The lives saved would be many, and the time saved owing to infectious disease absence would be incalculable.

The sterilization of the barber's implements is increasing rapidly, should not the case of the children demand similar attention?

Local Diseases.

In the class of local diseases the mortality from diseases of the brain and nervous system was 32, the average for 10 years being 35·2; that from heart affections 42, the 10 years' average being 32·8; that from diseases of the digestive organs 24, the average for 10 years being 24·5; that from diseases of the respiratory organs 38, the 10 years' average being 44·9, and that from malignant disease 16, the 10 years' average being 10·8.

As these diseases are chiefly the result of mistaken and injurious habits of life, influenced very considerably by economic conditions, we do not find that improved

sanitation has much influence over them, although in other classes this agency has been most effectual, as demonstrated by the fact that within the last 46 years the rate of mortality has been reduced 30 per cent., and the duration of life increased 30 per cent., as compared with the 10 years ending 1860.

There is nothing more in this year's mortality returns requiring special comment, and I append table giving principal causes of death in 1906:—

	Number of Deaths.	Average of preceding 10 years.	Mortality per 1,000 of population.
Chicken Pox	1	0·0	0·06
Influenza	1	2·1	0·06
Measles	0	8·2	0·00
Diarrhœa	3	1·0	0·18
Diphtheria and Membranous Croup	1	1·4	0·06
Erysipelas	1	0·2	0·06
Whooping Cough	9	3·8	0·55
Rheumatism	1	1·9	0·06
Total Zymotic Diseases ...	17	27·4	1·04
Phthisis	32	25·2	1·96
Bronchitis, Pleurisy, and Pneumonia	29	43·8	1·77
Heart Disease	42	32·8	2·57
Cancer..	16	11·1	0·98

VACCINATION.

Through the courtesy of the Vaccination Officer, I am able to give figures relating to the last 10 year's experience in this District.

	Births.	Vaccinated.	Exemptions.	Insusceptible.	Removed.	Dead.	Postponed.
1897	434	266	98	1	17	52	0
1898	433	243	139	0	9	43	0
1899	377	262	49	0	10	50	6
1900	414	218	41	1	6	39	10
1901	406	216	51	0	2	41	18
1902	426	236	27	0	9	42	25
1903	420	213	46	1	8	30	19
1904	423	211	49	1	10	43	18
1905	425	213	69	0	9	40	22
1906	379	200	54	0	10	30	20

The figures in these columns apply only to those children registered during the year, a proportion of which still remain under the vaccination age.

We cannot ignore the fact that there is a considerable opposition to vaccination, in spite of improved methods, vaccination performed at the home, and the use of glycerinated lymph.

The number of exemptions is 13 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 following tables are compiled in the form required by the Local Government Board and the Staffordshire County Council.

During the year the usual inspections of the district have been made and monthly reports have been submitted to the Sanitary Committee, in which any question specially affecting the health of the town has been referred to, and when necessary, suggestions submitted indicating the steps required to achieve a better condition of affairs.

J. MOUNTFORT JOHNSON, M.D.,
Medical Officer of Health.

"TABLE I."—VITAL STATISTICS OF WHOLE DISTRICT DURING 1906 AND PREVIOUS YEARS.

Year.	Births.			Total Deaths Registered in the District.				Total Deaths in Public Institutions in the District.	Deaths of Non-Residents registered in Public Institutions in the District.	Deaths of Residents registered in Public Institutions beyond the District.	Nett Deaths at all ages belonging to the District.	
	Population estimated to middle of each Year.	Rate. *		Under 1 Year of Age.		At all Ages.					Num-ber.	Rate. *
		Number.	Rate. *	Rate per 1,000 Births registered.	Num-ber.	Rate. *						
							Number.						Rate. *
I	2	3	4	5	6	7	8	9	10	11	12	13
1896	14920	408	27.3	47	115.1	257	17.2	24	9	...	248	16.8
1897	15037	418	27.7	54	129.1	289	19.2	36	16	...	273	18.1
1898	15174	437	28.7	59	135.0	267	17.5	32	9	...	258	17.0
1899	15242	376	24.6	74	196.8	323	21.1	40	16	...	307	20.1
1900	15386	414	26.9	59	142.5	280	18.2	40	20	...	260	16.9
1901	15509	406	26.1	68	167.4	294	18.9	38	18	1	277	17.8
1902	15562	422	26.9	70	165.8	298	19.0	36	14	2	286	18.2
1903	15726	420	26.6	56	133.3	277	17.6	37	15	2	264	16.7
1904	15921	422	26.5	71	168.2	302	18.9	38	19	6	289	18.1
1905	16150	425	26.3	51	120.0	248	15.3	37	16	1	233	14.4
Averages for years 1896-1905	15462	418	27.0	60.9	145.6	283	18.3	35.8	15.2	1.2	269.5	17.4
1906	16314	376	23.0	49	130.3	263	16.1	34	14	2	251	15.3

* Rates in Columns 4, 8, and 13, calculated per 1,000 of estimated population.

NOTE.—The deaths to be included in Column 7 of this table are the whole of those registered during the year as having actually occurred within the District or Division. The deaths to be included in Column 12 are the number in Column 7, corrected by the subtraction of the number in Column 10 and the addition of the number in Column 11.

By the term "Non-residents" is meant persons brought into the district on account of sickness or infirmity, and dying in public institutions there; and by the term "Residents" is meant persons who have been taken out of the district on account of sickness or infirmity, and have died in public institutions elsewhere.

"The Public Institutions" to be taken into account for the purposes of these Tables are those into which persons are habitually received on account of sickness or infirmity, such as hospitals, workhouses, and lunatic asylums.

Area of District in acres (exclusive of area covered by water) 1460; total population at all ages, 15,484; number of inhabited houses, 3,380; average number of persons per house, 4.58, at census 1901.

"The Public Institutions" in respect of the deaths, in which corrections have been made, are Leek Union Workhouse, Leek Cottage Hospital, and North Stafford Infirmary, Stoke.

"TABLE III."

CASES OF INFECTIOUS DISEASE NOTIFIED DURING
THE YEAR 1906.

NOTIFIABLE DISEASE.	CASES NOTIFIED IN WHOLE DISTRICT.						
	At All Ages.	Under 1.	1 to 5	5 to 15.	15 to 25.	25 to 65.	65 and upwards.
Small.pox ... ..	...	...	...	...	...	...	...
Cholera ... ..	...	...	...	...	...	...	...
Diphtheria	29	...	4	13	7	5	...
Membranous Croup ...	...	...	...	...	...	...	...
Erysipelas	12	...	...	1	2	7	2
Scarlet Fever	41	...	16	24	1	...	...
Typhus Fever... ..	...	...	...	...	...	...	...
Enteric Fever... ..	1	...	...	...	...	1	...
Relapsing Fever ...	...	...	...	...	...	...	...
Continued Fever ...	...	...	...	...	...	...	...
Puerperal Fever ...	...	...	...	...	...	...	...
Chicken Pox ... ..	...	...	...	...	...	...	...
Totals	83	...	20	38	10	13	2

Number of cases removed to the Leek Isolation Hospital :—
Diphtheria, 25, Scarlet Fever, 36, Enteric Fever, 1. Total 62.

"TABLE IV."

CAUSES OF, AND AGES AT, DEATH DURING YEAR 1906,
IN THE LEEK URBAN DISTRICT.

CAUSES OF DEATH.	DEATHS IN OR BELONGING TO WHOLE DISTRICT AT SUBJOINED AGES.							Total Deaths in Public Institu- tions in the District.
	All Ages.	Under 1 Year.	1 and under 5.	5 and under 15.	15 and under 25.	25 and under 65.	65 and up- wards.	
Small-pox ... ..	...	...	...	...	...	...	...	...
Measles ... ..	...	...	...	...	...	...	...	...
Scarlet Fever ... ..	...	...	...	...	...	...	...	...
Whooping-cough	9	4	5	...	...	...	...	...
Diphtheria and Mem- branous Croup	1	...	...	1	...	...	...	1
Croup ... ..	...	...	...	...	...	...	...	...
Fever { Typhus ... ..	...	...	...	...	...	...	...	...
Enteric ... ..	...	...	...	...	...	...	...	...
Other continued ... ..	...	...	...	...	...	...	...	...
Epidemic Influenza	1	...	...	...	...	...	1	...
Cholera ... ..	...	...	...	...	...	...	...	...
Plague... ..	...	...	...	...	...	...	...	...
Diarrhoea	3	3	...	...	...	...	...	1
Enteritis	8	7	...	...	...	...	1	...
Puerperal Fever ... ..	...	...	...	...	...	...	...	...
Erysipelas	1	...	...	...	1	...	...	...
Other Septic Diseases ... ..	...	...	...	...	...	...	...	...
Phthisis	32	1	3	...	3	23	2	4
Other Tubercular Diseases	2	...	...	...	...	2	...	1
Cancer, Malignant Disease	16	...	...	...	...	9	7	1
Bronchitis	29	7	5	...	1	5	11	2
Pneumonia	4	...	...	...	...	1	3	...
Pleurisy	3	...	...	...	...	3	...	...
Other Diseases of Respiratory Organs	2	...	2	...	...	...	...	...
Alcoholism ... ..	...	...	...	...	...	...	...	...
Cirrhosis of Liver }	3	...	...	...	...	3	...	...
Venereal Diseases	2	1	...	...	1	...	...	...
Premature Birth	10	10	...	...	...	...	...	...
Diseases and Accidents of Parturition	1	...	...	...	1	...	...	...
Heart Diseases	42	2	...	1	...	23	16	4
Accidents	4	...	1	...	...	3	...	3
Suicides	4	...	...	...	...	4	...	...
All other causes	74	14	11	...	1	14	34	17
All causes... ..	251	49	27	2	8	90	75	34

INFANTILE MORTALITY DURING THE YEAR 1906.

CAUSE OF DEATH.	Under 1 Week.	1-2 Weeks.	2-3 Weeks.	3-4 Weeks.	Total under 1 month.	1-2 Months.	2-3 Months.	3-4 Months.	4-5 Months.	5-6 Months.	6-7 Months.	7-8 Months.	8-9 Months.	9-10 Months.	10-11 Months.	11-12 Months.	Total Deaths under 1 Year.
COMMON INFECTIOUS DISEASES :																	
Small-pox ...																	
Chicken-pox ...													1				1
Measles ...																	
Scarlet Fever ...																	
Diphtheria : Croup																	
Whooping Cough				1	1							1			1	1	4
DIARRHOEAL DISEASES :																	
Diarrhoea, all forms						2	1										3
Enteritis (<i>not Tuberculous</i>)						1				2						2	5
Gastritis, Gastro-intestinal Catarrh										1	1						2
WASTING DISEASES :																	
Premature Birth ...	6	1	1		8	2											10
Congenital Defects	2				2	1											3
Injury at Birth ...																	
Want of Breast-milk																	
Atrophy, Debility, Marasmus	1				1	1				2							4
TUBERCULOUS DISEASES :																	
Tuberculous Meningitis																	
Tuberculous Peritonitis																	
Tabes Mesenterica																	
Other Tuberculous Diseases														1			1
Erysipelas ...																	
Syphilis ...						1											1
Rickets ...																	
Meningitis (<i>not Tuberculous</i>)										1							1
Convulsions ...				1	1	1	1		1								4
Bronchitis ...											1	3	1	2			7
Laryngitis ...																	
Pneumonia ...																	
Suffocation, overlaying																	
Other Causes		1			1		1			1							3
ALL CAUSES—Certified	9	2	1	2	14	4	6	2	1	2	7	4	2	3	1	3	49
Uncertified																	

Births in the year { Legitimate 358.
 Illegitimate 18.

Deaths from all Causes at all Ages 251.

POPULATION.

Estimated to middle of 1906.—16,314.

Births in the year { Legitimate 358.
 Illegitimate 18.
Deaths from all Causes at all Ages 251.

POPULATION.
Estimated to middle of
1906.—16,314.

ANNUAL REPORT
OF THE
Medical Officer of Health
FOR THE YEAR 1906,
FOR THE
URBAN DISTRICT OF LEEK,
ON THE
Administration of the Factory and
Workshop Act, 1901, in connection
with Factories, Workshops, Laund-
ries, Workplaces and Homework.

1.—INSPECTION.
INSPECTIONS MADE BY SANITARY INSPECTOR OR
INSPECTOR OF NUISANCE.

Premises. 1	Number of		
	Inspections. 2	Written Notices. 3	Prosecutions. 3
FACTORIES (Including Factory Laundries.)	15	7	...
WORKSHOPS (Including Workshop Laundries)	73	4	...
	88	11	...

2.—DEFECTS FOUND.

Particulars. 1	Number of Defects.			Number of Prosecu- tions. 5
	Found. 2	Remedied. 3	Referred to H.M. Inspector. 4	
<i>*Nuisances under the Public Health Acts :—</i>				
Want of cleanliness	2	2	...	...
Want of ventilation	2	2	...	...
Overcrowding .. ...	...	...	...	...
Want of drainage of floors... ..	...	...	...	...
Other nuisances ... ..	...	...	..	...
<i>†Sanitary Accommodation :—</i>				
Insufficient	2	2	...	...
Unsuitable or defective	3	3	...	...
Not separate for sexes	2	2	...	...
Total	11	11	...	...

* Section 22, Public Health Act Amendment Act 1890 in force here
† The Sanitary Accommodation Order of 4th February, 1903.

3.—HOME WORK.

OUTWORKERS' LISTS, SECTION 107.									
NATURE OF WORK.	Lists received from Employers.				Numbers of Addresses of Outworkers received from other Councils.	Numbers of Addresses of Outworkers forwarded to other Councils.	Prosecutions.		Number of Inspections of Outworkers' premises.
	Twice in the Year.		Once in the Year.				Failing to keep or permit inspection of lists.	Failing to send lists.	
	Lists.	Outworkers.	Lists.	Outworkers.					
	1	2	3	4	5	6	7	8		9	10
Wearing Apparel—									
(1) Making, &c....	4	28	1	4	...	24	...	...	8
(2) Cleaning and washing	...	...	...	...	...	...	...	...	...

Owing to the number of lists received being so small, the Council have caused a copy of the Home Work Order dated 15th August, 1905, to be forwarded to the occupiers of the various mills and workshops within the district.

4.—REGISTERED WORKSHOPS.

Workshops on the Register (s. 131) at the end of the year. I	Number. 2
Dressmakers, Tailors, Milliners, and Hoisery Establishments...	67
Bakehouses	20
Cabinet Makers, Joiners, Carriage Builders, Wheelwrights and Woodcarvers	24
Boot, Shoe, and Clog Repairers	16
Blacksmiths, Cycle Repairers, Tinsmiths, and Plumbers ...	20
Saddlers, Coopers, Painters, Sculptors, Timber Yards ...	7
Basket Makers, Rope Walks, Whip-lash Making	5
Cardboard Box Making, Silk Balling, Silk Warehouses ...	20
Hand Laundry, Trimming Warehouse	2
Total Number of Workshops in Leek ...	181

One Underground Bakehouse in use at end of year.

J. MOUNTFORT JOHNSON, M.D.,
MEDICAL OFFICER OF HEALTH.

SANITARY INSPECTOR'S REPORT.

ACTION TAKEN FOR THE ABATEMENT OF NUISANCES ETC.

During the year ending December, 1906, the following cases of Nuisance and other matters complained of were dealt with, comprising:—

	CASES
Defective or want of private drainage	76
Choked Sewers	7
Slop-stone drains admitting sewer gas into a house disconnected	13
Defective water closets	47
Offensive privies... ..	35
Offensive ashpits	41
Accumulation of offensive matter... ..	6
Offensive privy cesspools filled up	34
Want of drain ventilation	9
Dilapidated buildings... ..	0
Houses in a filthy condition	1
Nuisances arising from overcrowding	1
Defective water spouting... ..	5
Want of proper water supply	0
Swine kept within 60 feet of dwelling house	0
Want of proper bedroom ventilation	92
Slaughter-house nuisance... ..	1
Water course polluted by sewage	0
Workshop want lime washing	2
Offensive pig-sty	2
Want of proper waste-pipe to lavatory	3
Want of proper receptable for stable manure	2
Poultry kept in dwelling house contrary to Bye-Laws	2
Samples of petroleum taken and tested	4

	CASES
Escape of coal gas from gas mains	3
Want of w.c. accommodation in factories ...	7
Registered lodging house not kept clean	1
Want of proper urinal on licensed premises ..	3
Offensive swill tubs	4
Nuisance from fish frying	0
Nuisance from offal boiling	2
Want of proper paving in private yards attached to dwelling houses	8
Want of proper privy or water closet accommodation	112
Want of proper movable receptacles for ashes ...	85
Nuisance arising from dense black smoke	3
Number of houses disinfected	109
Number of schools disinfected	2
Number of infected articles, bedding, etc., disinfected	1872
Number of houses unfit for human habitation closed	6
Number of closed houses made fit for habitation...	0

A considerable number of nuisances were promptly abated on their being intimated to the persons responsible.

There are several unexpired notices of nuisances remaining on the books not yet complied with.

OFFENSIVE PRIVIES AND CESSPOOLS.

	CASES
Offensive privies demolished or converted into water closets	33
Offensive ashpits abolished, and portable receptables provided in lieu thereof	36

REMOVAL OF ASHES AND NIGHTSOIL.

The Scavenging Department removed 4877 loads of house ashes and garbage, compared with 5047 during the preceding year, and 200 loads of nightsoil, compared

with 291 the preceding year. The decrease in the number of loads of nightsoil removed is due to the conversion of privies into wash-down water closets. The abolition of offensive uncovered ash-pits, and the substitution of covered movable galvanised iron receptacles, the contents of which are emptied weekly, is having a marked effect in improving the condition of the back premises of the dwelling-houses.

COMMON LODGING-HOUSES.

There are 4 houses registered under the Common Lodging-houses Acts, for the reception of 111 casual lodgers. The regulations approved by the Local Government Board for their management are being satisfactorily observed. The Sanitary Committee have appointed the Superintendent of Police to act as Assistant Sanitary Inspector in respect of Common Lodging-houses at a salary of £10 per annum.

SLAUGHTER-HOUSES.

There are 6 premises situate at various points in the town licensed for occupation as Slaughter-houses. The number of English meat butchers in the town is 19. Three of these butchers have the entire use of 3 of the above-mentioned slaughter-houses (a separate one each), leaving for the use of the remaining 16 butchers only 3 slaughter-houses, the result being that overcrowding occurs owing to a number of butchers jointly using the slaughter-houses, or in other cases (where the butchers have no slaughter-house accommodation within the town) owing to them slaughtering in buildings situate in rural areas over which we have no control, rendering supervision of the meat supply extremely difficult.

In the Leek Improvement Act, 1855, power is given you to provide and maintain slaughter-houses, and the question now presents itself as to whether you will allow the objectionable system of the multiplication of private slaughter-houses together with their attendant drawbacks and shortcomings to continue, or whether you yourselves will provide the accommodation necessary.

The Council have already in their possession land bought for the purpose, abutting on the proposed new street running from Broad Street to Cruso Street, in every way suitable for this purpose, and I feel convinced that if a number of small tenement slaughter-houses were erected, of a plain serviceable nature, that the same would be a paying concern financially, irrespective of the increased supervision it would give over the town's meat supply.

WORKSHOPS.

There are 181 Workshops on the Register, all of which have been inspected from time to time as occasion required. On four occasions I have had to complain of contraventions of the provisions of the Act. The number of persons employed in December were as follows :—

Sex.	AGES.			Total.
	12 and under 14.	14 and under 18.	18 and upwards.	
Males	4	60	318	382
Females	7	65	191	263
Persons	11	125	509	645

BAKEHOUSES.

There are 20 Bakehouses within the district, all of which were inspected half-yearly, and at other times as occasion required. The number of persons employed

being 9 males between 14 and 16 years of age, 42 over 16 years of age, 2 females between 14 and 16 years of age, and 2 over 16 years.

PETROLEUM STORES.

There are 4 licenses in force for the keeping and sale of Petroleum that flash under 73 degrees Fahrenheit's thermometer (the maximum quantity stored never to exceed 60 gallons); 1 licence for the storage of 500 gallons of petroleum (wholesale only), and one for the keeping and sale of Calcium Carbide. There are also 2 private storehouses for the keeping of Petroleum under the Home Secretary's order.

GAS SUPPLY.

The purity of the Gas supplied to the town was tested from time to time in the manner required by the 34th and 35th Vic., chap. 41. No impurity arising from the presence of sulphuretted hydrogen (which is deemed a nuisance injurious to health) was shown by the tests made at the Town Hall during the year.

NOTIFICATION OF INFECTIOUS DISEASE.

During the year 83 cases of Infectious Diseases, consisting of 41 cases of scarlet fever, 29 of diphtheria, 1 of enteric fever, and 12 of erysipelas were notified, and the necessary steps taken to prevent the spread of the Disease. The public are appreciating the usefulness of our Isolation Hospital, and we experience no opposition to the removal of patients to the same. Had we had the necessary accommodation the whole of the cases notified would have been treated there, but we were only able to receive 62 cases. For this reason resort had to be made in the remaining cases to the so-called isolation at home, which to say the least is unsatisfactory. The source of milk supply is recorded

in every case of infectious disease notified, and we have no evidence of any mischief resulting from its distribution. All children of school age residing in the house are prevented attending school for a period, and the head-master promptly notified of the cause of their absence.

ISOLATION HOSPITAL.

Year ending December, 1906.

Number of patients in Hospital, Jan. 1st, 1906	...	15
Do. do. admitted during the year	...	62
Do. do. discharged do.	...	74
Do. do. died do.	...	1
Do. do. in Hospital, Dec. 31st, 1906	..	2

The average duration in Hospital of each patient discharged or died was 42·4 days.

INTERMENTS WITHIN THE TOWN.

During the year ending December, 1906, 3 interments took place in the Burial Ground attached to St. Edward's Church, and 3 in the ground attached to Mount Pleasant Wesleyan Chapel. The provisions of the Orders in Council relating thereto were duly observed.

TABLE I.—ABSTRACT OF THE CENSUS RETURNS OF 1851, 1861, 1871, 1881, 1891, AND 1901, WITHIN THE LIMITS OF THE LEEK IMPROVEMENT ACT.

Census Year.	Average Statute Acres.	HOUSES.			PERSON.			Average number of Persons per home.
		In-habited	Unin-habited	Build-ing.	Males	Fe-males	TOTAL	
1851	1460	1701	39	22	4315	4781	9066	5·06
1861	1460	2228	101	27	4686	5488	10174	4·56
1871	1460	2386	88	2	5087	6244	11331	4·74
1881	1460	2726	136	18	5874	6991	12865	4·71
1891	1460	3022	169	24	6420	7708	14128	4·67
1901	1460	3380	156	78	6917	8567	15484	4·58

TABLE 2.—SHOWING THE MEAN AGE AT DEATH OF MALES, FEMALES, AND PERSONS WITHIN THE LIMITS OF THE LEEK IMPROVEMENT ACT, DURING VARIOUS PERIODS OF THE 56 YEARS ENDING 1906.—(W.H.H.)

Periods.	Mean Age at Death.		
	Males	Females	Persons.
	<i>Years.</i>	<i>Years.</i>	<i>Years.</i>
10 years 1851-60	23·5	25·9	24·8
10 years 1861-70	29·1	34·7	32·0
10 years 1871-80	30·8	32·3	31·5
10 years 1881-90	32·7	35·9	34·3
10 years 1891-00	36·1	38·4	37·2
Year 1901	34·9	42·6	38·8
Year 1902	32·9	38·3	35·4
Year 1903	36·2	43·2	39·8
Year 1904	38·4	36·3	37·5
Year 1905	37·7	42·7	40·0
Year 1906	39·5	43·8	41·5

TABLE 3.—PERCENTAGE OF ILLEGITIMATE BIRTHS IN LEEK DURING EACH OF THE UNDER-MENTIONED PERIODS, OF THE 56 YEARS ENDING 1906.

Period of Years.	Percentage of Illegitimate Births.
10 years 1851-60	9·7
10 years 1861-70	8·8
10 years 1871-80	8·5
10 years 1881-90	6·8
10 years 1891-00	5·6
Year 1901	5·6
Year 1902	7·5
Year 1903	6·6
Year 1904	6·6
Year 1905	8·2
Year 1906	4·7

HOUSING OF THE WORKING CLASSES ACT.

During the year 1906 it has not been necessary to resort to the provisions of this Act for closing orders. Six houses unfit for habitation were closed.

CANAL BOATS ACTS, 1877 AND 1884.

During the year ended December, 1906, 6 Canal Boats were inspected within the Urban Sanitary District of Leek.

DAIRIES, COW-SHEDS, AND MILK-SHOPS ORDER, 1885.

There are 42 persons registered under the above order. 12 are Milk-shops, and the remainder Dairies and Cow-sheds. There are 171 milch cows kept. All the said premises were inspected twice during the year, in two instances new drainage systems have been installed.

During the year the systematic house to house inspection of property situate within the district has been continued, the total number of premises inspected up to December 31st being 2082.

The following table shows the number of Water-closets, outside and inside; the number of movable receptacles; the number of ashpits; the number of privies; and the number of houses with defective ventilation at the time of inspection and at the 31st December, 1906.

PERIOD.	Number of Houses Inspected.	Number of Houses with Defective Ventilation.	Waterclosets.			Movable Receptacles.		Ashpits.	Privies.
			Inside.	Outside.		Galvanised Iron.	Wood.		
				How Supplied with Water.					
				Cistern.	Bucket.				
At time of Inspection ..	2082	344	169	248	1276	54	1388	187	250
At December 31st, 1906 ...	...	112	196	376	1399	203	1533	40	107

From this you will see that no less than 147 offensive uncovered ashpits, and 143 offensive dilapidated privies have been abolished; and 232 houses provided with proper and sufficient through ventilation. The standard of ventilation being that each room should contain a good window capable of being opened at least one half its entire area, placed in such a position, as nearly opposite the door as possible, that it provides a good cross ventilation.

FRANK GREEN,

Sanitary Inspector.

