[Report 1908] / Medical Officer of Health, Luton County Borough.

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BOROUGH OF LUTON.

ANNUAL REPORT

OF THE

MEDICAL OFFICER OF HEALTH,

FOR THE YEAR 1908.

HERBERT STALKER, PRINTER, WELLINGTON STREET, LUTON

MEDICAL OFFICER OF HEALTH'S OFFICE,
GEORGE STREET.
12TH MARCH, 1909.

GENTLEMEN,

I have the honour to lay before you my thirtieth and final Annual Report for the year ended 31st December, 1908. My first report, in 1879, covered two and a half sheets of loosely printed matter, while that of last year covered no fewer than thirty-two pages, mostly closely printed matter, and commenting upon more than three times the number of headings in 1879. This final report will necessarily be not a short one. In it I shall endeavour, to the best of my ability, and with information gathered from the most up-to-date sources, to put you in the best position to appreciate the services which your new Medical Officer of Health, Dr. Wm. Archibald, is in a position to render you, and especially with regard to Infectious Diseases. You have it in your power, if you will give him a fairly free hand, to make Luton a beacon light to towns of even greater size and importance.

During the year, 1,292 Births and 559 Deaths have been registered, equal to annual rates of 32·3 and 13·9 respectively. The Births therefore exceeded the Deaths by 733, which is by far the biggest internal increase of population recorded in recent years. The Birth-rate for 1906 was 28·1; for last year, 27·6.

The population of the Borough has been estimated for the whole year at 40,000. Unfortunately, in the absence of another census this estimation is only guesswork. The Borough has increased rapidly from outside by new-comers, as well as inside by the increase of Births over Deaths, so that it might well total a population of 42,000. In that case, however, the Birth-rate would still be a fairly high one, viz., 30·7. We have at the last two censuses been quite wide of the mark, being considerably over-estimated. This was owing, as regards the 1891 census, to the figures elaborated by the late School Board, and, as regards the census of 1901, to the estimation by the Surveyor's Department. The census showed a very large number of empty houses, which, I believe, had not been sufficiently taken into account. The estimate for school purposes on both occasions considerably exceeded mine and influenced me considerably, and unfavourably, as it turned out. Now we are probably under-estimating the population, which makes us on the safe side as regards not under-estimating the Death-rate, but in that case is doing the opposite to the Birth-rate. If the population were 42,000 the Death-rate would be 13·3 instead of 13·9.

The declining Birth-rate.

The Birth-rate in England and Wales in 1907 was 26·3 per 1000, which was 0·8 per 1,000 below the rate in 1906, and lower than the rate in any other year on record. Compared with the average in the 10 years 1897-1906, the birth-rate in 1907 showed a decrease of 2·1 per 1000. In the 76 great towns the rate was 27, in the 142 smaller towns 25·7, and in England and Wales, less the 218 towns, 25·6.

On going deeply into the subject of the decreased birth-rate, we find that it does not depend upon economic causes, for the general condition of the people has vastly improved, and the standard of comfort risen, forcing us to admit that this declining birth-rate is in some way connected with this very improved state of things, for the birth-rate is very much lower in the well-to-do than in the poorest classes. It has been stated that if it were not for the hopelessly pauper class in France the population of that country would be on the decrease. Herbert Spencer's dictum was "that the rate of reproduction is inversely proportionate to the worth of the individual." The social customs of the day are said to tend to diminish the size of families, and thus cause a decline in the birth-rate. Just to mention one such custom. Young people now-a-days wish to begin where their parents leave off, and so they either do not marry at all, or, marrying early, often take means to keep down the size of the family, or marry late, and so

naturally diminish it. The day is not far distant when the amount of taxation will be somewhat proportioned to the size of a family, and bachelors will be taxed for the "privilege" of bachelorhood. If men and women could only be persuaded to go back to the simple life, and regard, as of old, happy married family life as the highest form of enjoyment, instead of rushing from one form of excitement to another, the condition of things we deplore would soon be altered. The darker side to the above consists in the fact that the fall of the birth-rate is due to the relative infertility of the most valuable stocks in the race, and Karl Pearson attributes to this fact the present dearth of ability, or, in other words, the survival of the less able. There is one grain of comfort in the fact that the number of illegitimate children born is decreasing; formerly it was as much as 55 per 1000 births; in 1905 it was 40·2 per 1000. The number of these births varies much in different parts of the country. The direct means whereby the declining birth-rate is brought about is generally known. Malthus was the progenitor of prevention on a large scale, but it was not until the end of last century that social reformers like Bradlaugh advocated preventive measures. Their reason for so doing was the reduction of poverty; they thought the limitation of large families would certainly bring it about. Unfortunately the literature circulated wholesale to this end has made matters worse, by reducing the breed which ought to have been encouraged, with little effect on that which they were so concerned about. Apart from the harm done to our nation by the decrease of population, each individual having some decided monetary value to the Empire at large, harm has unfortunately resulted to the women affected. A Royal Commission was appointed in New South Wales to investigate the subject, and the evidence of the gynecologists, obstetricians, &c., was absolutely conclusive that preventive measures were extremely common among all classes, and were becoming more so. Such evidence, which cannot be refuted, leads one to fear that civilized nations may later on be either doomed to extinction, or, perhaps worse, come under the domination of the more fertile and numerous races of the East.

The harm accruing to women of the community has shewn itself mostly in affections of the nervous system, neurasthenia, and such like, and many men well qualified to judge have even included insanity, declaring that it is undoubtedly one of the results of restriction. The increase in insanity dates since the decline of the birth-rate became marked, and not being accounted for by increased alcoholic or other causes, has been fairly concluded to be caused by restriction. Then, apart from the harm done to the nervous system, there is sufficient evidence to prove the great increase of diseases peculiar to women, and, as Professor Emmett states, "Can anyone accustomed to treating these particular diseases say in truth that the statement is exaggerated, that we can see on any one day more sorrow and misery resulting from the abuse of the married state than would be found in a month of uncomplicated child-bearing." These methods, it is said, commonly result in sterility, and it often happens that postponement of birth for a few years means loss of the reproductive capacity. The individual and racial deterioration ensuing from these practices threatens more than anything else to bring about the decay of modern civilization. Prudence E. Gaffkin, late Assistant Medical Officer of Warrington, writing on infant mortality, speaking of abortifacients, says it is an evil largely on the increase in our large manufacturing towns, and that during the previous six months the number of still and premature births in Warrington, due frequently to this cause, is heart-breaking. She recommends:—

(1) Prohibition of the sale of abortifacients and patent medicines containing dangerous drugs without a doctor's prescription.
(2) The teaching of hygiene to older girls (over 13), by extending the school age for girls, or compulsory continuation classes.
(3) Training of midwives more fully in the importance of proper feeding.
(4) Notification of Epidemic Diarrhœa.
(5) Inspection of *all* children put out to nurse.

I would add that married woman's labour, wherever possible, should be reduced. Mr. John Burns has described such labour as an individual mistake, a social tragedy, a communal blunder. In Blackburn a number of poor women who are within one month of their confinement are supplied daily with a suitable cooked dinner free of charge, from a restaurant. Two conditions are imposed on the mother, one that she shall feed her baby at the breast, and the other that she shall allow the baby to be weighed every week. Advice is also given. One meal a day is given for three months, and after this the number of meals is reduced. It was proposed to give small sums of money as prizes to mothers whose infants were in a satisfactory condition at the end of the first year of life. This scheme is carried out by ladies and gentlemen apart from measures taken by the Health Department. The advisability of feeding mothers after their confinement is that by this means they get into a better state of health, and there would then be less likelihood of premature births later on. Badly nourished and over-worked mothers are particularly prone to this happening.

Notter and Firth, under Vital Statistics and the Birth-rate, make the following remarks, the latter part of which is a bit comforting:—"A decreasing birth-rate is not peculiar to this country, that condition, in varying degree, being common to nearly all highly-civilized communities; it is none the less an economic factor which requires intelligent observation. In this country we have no need for any lessened expansion of the population, as a diminishing or even stationery one may be, and probably is, a grave national danger; but in our own case, so long as our birth-rate exceeds our death-rate in its present proportions (27 to 15·4) we have nothing to fear except lack of employment and want of support for our increasing population. *If the actual rate of increase in our population be suggestive of gloomy forebodings to the statistician, would it not be better to dwell less upon the falling birth-rate, but rather dwell more upon the need to check wasteful expenditure of life, and, by so adding to our national income in this respect, secure a more favourable balance? The destruction of infant life in this country is enormous, and there can be no doubt that, if we could reduce this loss, we might allow the birth-rate to fall still lower, and yet have nothing but gain in every direction.*"

It is with the above idea in view that I advocated a Health Visitor and School Nurse, and have drawn all the attention I could to our infant mortality—and the waste, the unnecessary waste, of valuable lives. You might ask why, as our own infant birth-rate rules so comparatively high this year, I take so much trouble in writing about the reduction of the birth-rate. It is partly because I have my doubts about its genuineness. As I have before stated, in all probability our population is under-estimated, and we must bear in mind the very great influx of outsiders to our Borough, not individuals *useless after 40*, but of married women of child-bearing age, many hailing from Scotland and the North of England, where the birth-rate still rules higher than down South.

Zymotic Diseases.

Thirty-two deaths were referred to the seven principal zymotic diseases, viz., 3 to Measles, 8 to Diphtheria and Membranous Croup, 5 to Whooping Cough, and 16 to Epidemic Diarrhœa. This is equal to a zymotic rate of 0·8 per 1000, against 1·3 in 1907, 3 per 1000 in 1906, and only 0·04 in 1905.

Whooping Cough.

Five deaths were referred to this disease, two under one year and three between one and five.

The M.O.H. of Woolwich says that the rapid decrease of Whooping Cough—for which there is no notification, no isolation, no anti-toxin—seems at first sight surprising. It has operated steadily since 1860, but much more in

the last twenty years. My own experience, he says, is that the great majority of children get the disease sooner or later, and presumably it is not the number of cases that have diminished, but the fatality. This diminished fatality—as with Phthisis—is probably due to increased resistance of the individual resulting from improved conditions of life, and to more hygienic treatment of the disease. But why, he asks, has not Measles shared to any *appreciable* extent in the improvement? The suggestion is thrown out that improved conditions of life may have been annulled by some other influence such as school attendance. There has been a shifting of Measles mortality on to the first two years of life from school aggregation, &c., (Sir Shirley Murphy, Annual Report, 1905). Whooping Cough, however, apparently has normally its chief mortality under one year of age (Supplement to 65th Annual Report, Registrar-General), and school aggregation could therefore have little effect of this kind.

Small Pox.

No case of Small Pox has been notified during the year, and the Country generally has been, I believe, from the Returns I have weekly received, practically free from outbreaks of Small Pox. This is not surprising, for there is said to be an irregular periodicity in the recurrent outbreaks of the disease: this has not only been shewn in recent years, but in periods before vaccination was thought of. This irregular periodicity has been well shewn in Epidemics, varying in extent in Boston, U.S.A. Starting in 1649 they occurred until 1792 at intervals of a few years.

I should now have left this subject had it not been the last chance I shall have of alluding to it.

I have never, out of deference to local feeling or that of my Committee, or even that of the Town Council, kept back my own strong views on the very great importance of vaccination. A few years ago the remarks on the subject in my Annual Report were considered so strong as to call for repression; the offending paragraphs were accordingly stuck over. Owing to the insistence of the County Council Clerk, who demanded other than an "emasculated" report, the Bedford County Council were made acquainted with my rather forcible opinions. I may have damped down in my expressions since that time but my views remain unmodified.

In 1796 Jenner introduced vaccination and, in his own words, "duly and effectually performed, it will protect the constitution from subsequent attacks of Small Pox as much as that disease itself will. *I never expected it would do more, and it will not, I believe, do less.*" Inoculation was at first practised, but during the earlier part of the 19th Century vaccination gradually superceded it. In more recent times human lymph has been very largely replaced by calf lymph. By means of calf lymph, and rigid care in protecting the vaccinated area, the operation has been rendered an almost perfectly safe one, for be it remembered that not even the most simple operation can be performed without an element of danger. Recently one has even read of tetanus being produced by the simple application to the skin of Fuller's Earth, and that is no operation at all.

There are two subjects I specially wish to dilate upon, one is the conveyance of infection by tramps, and the other the ærial connection of Small Pox and its possible relation to our Small Pox Hospital.

In recent years nearly every epidemic has been traced to the peregrination of tramps. Such an one occurred years ago at Ampthill when a tramp, complaining apparently only of backache, left our Casual Wards. He walked to Ampthill, craved water at some cottages, and caused an outbreak of about 70 cases. All communication with Luton was shut off. It was understood that this caused an immense loss to Ampthill, owing to the dislocation of trade, and that it was not recovered from for some considerable time.

I had hoped that the extremely lucid report of Dr. Armstrong, of Newcastle, of three years ago, drawing public attention to this constant and very expensive danger to the community, would have resulted in some legislative action. Such action, I had hoped, would result in making these gentry, who live parasitically on others, limit their movements to useful work in tramp colonies, and at the same time limit the perpetuation of a body of individuals which is a disgrace to any country, and especially to England. I for the last time repeat that, in my humble opinion, in this 20th Century tramps and flies have no *raison d'être*, the former of course only as such.

Tramps not only live the life of parasites, but worse, for their example is necessarily a bad one, and they frequently contaminate those with whom they come in contact. Last, not least, in the estimation of some, the tramp is an expensive luxury, for besides being kept at the public expense, the numerous epidemics of Small Pox, owing their origin to him, have in many localities demanded from the community what amounts to an extra and burdensome tramp tax.

The question of the ærial convection of Small Pox is apparently by no means settled: further illustrative cases have occurred, fixing more firmly that belief in the minds of its disciples. The alternative theory endeavours to account for the undoubted increase of Small Pox cases in the neighbourhood of Small Pox Hospitals by personal communication and traffic. I doubt whether any one unacquainted with hospital management has any idea how great is the communication, and how insidious it may be. The question is decidedly a vexed one. An up-to-date Authority states on this point: "Setting aside all bias we must agree as to the reality of ærial convection at short distances: for all infection, other than by inoculation or ingestion, is through the air. We must further recognise that every outbreak of infectious disease in crowded centres affords instances, not only of ærial convection, but of personal infection and spread of disease from virulent concealed cases. It is desirable to maintain each of these factors in proper perspective, and in all diseases to admit and provide for every form of transmission, of which ærial convection is but one, though perhaps playing a more important part in Small Pox than in others, and judging from the analogy of other particular matter, by no means confined to comparatively short distances. In any case, and whatever opinion may be held as to the merits or the demerits of the air-borne theory, the building of Small Pox Hospitals in popular districts is probably a thing of the past." The following are the instructions of the Local Government Board with regard to the erection of a Small Pox Hospital:—

(1) Not on any site where it would have within a quarter of a mile of it, as a centre, either a hospital, whether for infectious diseases or not, or a workhouse, &c., or a population of 150-200 persons.

(2) Not on any site where it would have within half a mile of it, as a centre, a population of 500-600 persons, whether in one or more institutions or in dwelling houses.

My reason for going into this matter is that your present Medical Officer of Health has found at Spittlesea, a Small Pox Hospital, situated not 100 yards from the main building. It is certainly on the highest part of the Sewage Farm, it is exposed to every wind that blows, and has, I believe, never accommodated more than two patients at one time. So far no trouble has occurred from ærial convection (or human intercourse). Supposing the hospital to be utilized to the full there would be only 8 or 10 patients. I have thought that a belt of rapidly growing trees might be planted between this hospital and Spittlesea proper. We had insuperable difficulty in getting any other site for the building, being threatened with injunctions on every side, therefore "Hobson's choice" was ours. The erection of a very small building further away, which might take the first case or the first suspect, would allow us to utilise the bigger building in cases of extremity which crop up from time to time, especially with Diphtheria, for which we make no provision. We have

three separate buildings for three infectious diseases, and it comes about that the best is hardly ever used, and the very worst is always in use.

While this report is in process of printing, an outbreak of Small Pox is reported from Bristol, where, since the middle of December, 21 cases and 4 deaths have occurred from this disease. The reason for mentioning this here is that Dr. Sweeting, of the Local Government Board, on holding an enquiry strongly urged vaccination, but the Board of Guardians refused to pass this resolution, and as matters stand at present the Local Government Board Inspector has threatened that if the statutory powers with regard to vaccination are not enforced, the Guardians might be superseded by the Town Council, who had set an example by the measures they had taken. The disease was probably introduced from the East of Europe, as the first patient had been employed in unloading a cargo of barley from that part.

Measles.

Only 3 deaths were registered, and all in the 4th quarter. There were 2 deaths between 1 and 5, and 1 between 5 and 15. Considering the number of cases, I believe the death rate to be a small one. This is doubtless attributable to the absence of any continued spell of cold weather: had such been experienced doubtless we should have had as large a proportion of deaths as occurred in 1906, when a cold spell set in with an immediate increase in the death rate. In November, Measles began to threaten; and on the 24th I visited the Infant Department, Old Bedford Road, hearing that there were a number of absentees. It appeared that there was only one child absent with undoubted Measles, and I could find no evidence that any premonitary symptons had been observed at school, otherwise I should have considered the advisability of closing the school in a few days time for five days. This course was suggested, as I reported to you last year, by Dr. McVail, and has been favourably considered by the Local Government Board, who in their latest "Memorandum on the circumstances under which the closing of Public Elementary Schools, or the exclusion therefrom of particular children, may be required in order to prevent the spread of disease," state—"In view of the failure of school closure, when deferred until a considerable number of children have been attacked, to prevent the spread of Measles, *a class closure of short duration after the occurence of a single case of Measles has been suggested.* If this be done the class should be closed on the 9th day after the sickening of the first child, for a period of 5 days only, after which time *only those who have sickened should be excluded* with those in the same household *who have not had Measles.* The infection of Measles is probably conveyed chiefly by the nasal mucus, but is less persistent than that of Small Pox, Scarlet Fever, and Diphtheria, and is not commonly conveyed by healthy persons: hence it is unnecessary to exclude from school, the children of infected households *if they themselves have had Measles.*" Two years ago, for carrying out this policy of allowing immune children to attend school, you condemned me, so that I reverted, and have done so ever since to the policy of excluding every child from an infected household whether it had had Measles previously or not, greatly to the detriment of school attendance. I do not remember, in the whole 30 years of my term of office, any other act of mine which caused me any particular discomfort, and in this case I blamed myself bitterly, not for what I had done, but for being too up-to-date. It is a great mistake, sometimes, to be too previous. I stated last year with regard to the above course of closing a class for the first case of Measles, "I am afraid our Local Education Authority, and possibly the Local Government Board, would have a good deal to say if I took upon myself to advise my Authority to close a class for one case." You have since informed me that you would not view such a course with favour, but the Local Government Board wrote me unofficially with regard to my statements, that they would not look upon such action with disfavour, and referred me to their Memorandum quoted above and

which did not come into my hands until after I had written my report. On November 24th I also visited Christ Church Infants, as it was reported that 40 of them were absent owing to Measles. I at once advised the closing of the department from November 24th to December 9th prox. To my surprise on December 8th I was informed by a teacher that 15 infants were away from the Old Bedford Road School with Measles, and *that many of the children present were red-eyed, etc.* I at once saw the Clerk to the School Board, and asked him to discover why my request to be kept in constant touch with the department had not received due attention. It was reported to me next day by the Clerk that the Mistress did not send the suspects home and communicate with me as the school would have been so attenuated in numbers. This action, or rather, want of action, prevented my closing for the first case, or the first few cases. The next day being Thursday, I saw the Clerk, and got him to arrange with the Committee to close the school until the following Monday, and meanwhile to disinfect it thoroughly, and further, to arrange that on the Monday no child should be admitted into the building who showed the slightest signs of preliminary catarrhal symptoms of Measles. On the 17th of December notice was given to all the head teachers of Infant departments to send home immediately all suspects. On December 21st I advised the authority to close the Old Bedford Road Infants', owing to a serious outbreak of Measles, from December 16th to December 24th, which meant, owing to the holidays, a closure of about three weeks. There were 40 known cases. To December 31st only 3 deaths resulted, entirely due to the clemency of the weather (except for a few cold days). The death rate from Measles in Luton always seems to depend upon the weather. If it becomes and continues severe, those mothers who have no fear of Measles before their eyes, allow their children to be exposed to extremes of temperature, with the unfailing results that affections of the lungs lay with unrelenting hand so many of their children low. This is one class of case in which Health Visitors and School Nurses ought, by combatting the ignorance or carelessness of mothers, to be the means of decreasing the infant mortality which we so much deplore, and which is so unnecessary and preventible. The death knell of " it's only Measles " ought soon to be rung. The same ignorant cry landed Gloucester a few years ago in a severe Small Pox epidemic, a supposed case of Measles being religiously visited by the children round about —with the most untoward results.

This lightly-regarded disease is the most fatal by far of the seven zymotic diseases. Of late years its mortality, unlike that of Scarlet Fever, has shown a tendency to increase. The following table is from the Registrar-General's returns, and represents the average rates per million living. The rate for 1905 was 324 per million at all ages, for England and Wales.

	All Ages.	Under 5 Years.	From 5—10 Years.
1871-1880	334	2579	208
1881-1890	406	3127	271
1891-1900	414	3247	221

Sixty per cent. of the mortality occurs in children under two years (Squire)—the maximum mortality as well as the maximum rate of mortality being in the 2nd year of life. I introduce this table to emphasise the remark that every effort should be made to postpone Measles by guarding the children religiously from infection until after the 5th year, for after that period the mortality is comparatively slight. How is it possible to inoculate the ordinary parent with this certain bit of knowledge? If Measles break out in mild weather the mortality is often slight, and the disease appears to be almost one *pour rire*, but let a cold snap come, as it came two years ago, and then the mildest of mild diseases, is suddenly tranformed into a most deadly one.

The following are the measures that have been suggested up-to-date for preventing or influencing favourably a Measles epidemic :—

1. Compulsory notification.
2. Voluntary notification of 1st cases.
3. School notification.
4. School notification, *combined with* visits of nurses to the homes of the affected children.
5. School closure for—1st, a number of cases; 2nd, for the 1st case.
6. Excluding, immediately, every child from school who appears to have premonitory symptoms of Measles, as evidenced by sneezing, heaviness, red eyes, etc.
7. Isolation in home or hospital.
8. Keeping all the children in an infected house from school.
9. Keeping only the contacts attending the infant department from school, together with older children only who have not had the disease, and who, therefore, are not immune.

Before considering these suggestions *seriatim* I would make a few remarks which may be helpful to the proper understanding of the difficulties and often heart-breaking results of any one of the proposed methods of procedure, Measles is transmitted by *direct contact* in nearly every instance: it is possible that the disease may be transmitted by a third person—but there are exceptions. I would remark, to every rule. It is said to be very rare for the disease to be contracted from apartments previously occupied by Measles patients. Numerous instances are on record where families, with susceptible children, have, with impunity, moved into rooms quite recently occupied by Measles patients. If two weeks have elapsed a room is considered to be safe without disinfection. The immunity produced by one attack of Measles is usually complete and lasting—again exceptions prove the rule, and second attacks are very rare and negligible. German Measles is, in these cases, usually the disturbing cause. Infection is probably always acquired by inhalation due to direct, or almost direct contact: the poison can apparently be carried a short distance through the air. It is difficult to isolate children unless a separate open-air space intervenes. Exposure for half-an-hour has been sufficient for infection, in a ward where the children were in opposite beds, and with apparently no other than ærial means of convection. An authority states: "The infection in Measles is not spread rapidly except by contact with the actual sufferer, and it is extremely unlikely that it can be spread by clothing among older children, the great majority of whom are themselves immune." He further says: "On the whole subject of the exclusion of child contacts in Measles the greatest differences of opinion and practice prevail, but the more recent method of excluding only the infants and susceptible older children seems to be that which is most gaining ground." The disease is most frequently transmitted through schools. One child in the stage before the eruption appears can infect any number of children: this explains the occurrence of a number of cases on nearly the same day. Children's parties are a fertile source of infection, and this must be so whilst mothers cannot refuse their children anything, either where their own real good is concerned, or where selfishness conflicts with duty to their neighbours. Susceptible children should on no account be allowed to visit Measles infected houses: this has often been done because the disease is considered so harmless that it would not matter if the child visitor contracted it. Under 5 years such a course may almost amount on the part of the parent to manslaughter, and over 5 years a very reprehensible thing to permit. We now come to the preventive measures before alluded to:—

(1) *Compulsory notification.* Notification under the Infectious Diseases (Notification) Act has in a few places been adopted by Local Authorities, but the majority are said to have given up the practice as ineffective. I should imagine if the Sanitary Committees of those places disliked seeing, as my Committee would, half-crowns disappearing without apparently adequate results, this would satisfactorily account for the removal of Measles from the list of notifiable diseases. The Local Government Board now decline to issue an

order for certain diseases, Measles being one, being made compulsory notifiable diseases in any district *until they are satisfied that such notification will lead to some satisfactory action as a result.* Mere notification is useless unless remedial measures are taken to restrict and control the notifiable disease in question. The Bicester Urban District Council applied for permission to include Measles, Mumps and Whooping Cough. The Board replied to the effect that the advantages of notification were largely dependent on the notification, together with the attendent measures of prevention, being maintained for a reasonable number of years, covering both epidemic and non-epidemic periods, and they would not issue the order for less than five years, so as to permit a proper judgment to be formed of the advantages of the system of notification.

(2) *Voluntary Notification of first cases* has been tried in Paisley and Wigan notably. If compulsory notification fails one could hardly expect voluntary to succeed. This measure was suggested to avoid expense, and in the belief that the result would be as effective.

(3) *School Notification.* The Local Authority is informed by the school teachers and the Attendance Officer of the occurrence of cases among the children attending the schools. This is not a perfect course, because it starts with the assumption that measles is *only* spread by school influence, which is not correct, and its success depends upon very intelligent co-operation, which is not always available ; also because school notification does not give sufficiently early information of the individual cases ; in fact, notification by itself is said to be a barren measure.

(4) *School Notification, combined with Visiting Nurses.* This is in all probability the best and most effectual way of combatting the disease and controlling, not only the number of the cases, but through the advice given, the mortality of the disease. The advice may be to call in a Doctor if the case be a severe one, or a few useful Nursing hints, pointing out at the same time how to avoid complications if the case be a milder one.

(5*a*) *School Closure for a number of cases.* There is quite a chorus of approval for the adoption of this measure in some rural districts where children from isolated homes attend the same school. Here we seem to be on sure and safe ground, and HERE ONLY. I cannot do better than quote extracts from a letter I have received from Dr. Archibald, your Medical Officer of Health, on this subject. "With regard to the closing of schools, the utility of this in Country Districts is undoubted, and it was a familiar practice in Glasgow up till last winter. Our experience has somewhat modified Dr. Chalmers' views on the subject. In the early Autumn, when it was evident that the disease was about to prove epidemic, efforts were made to prevent its spread by closing the infant departments of schools only, but notwithstanding this, the number of cases rapidly increased. When the New Year's holidays came along, Dr. Chalmers suggested the extension of these to a period of three weeks (by which time school infection might be said to have passed), but the enclosed chart, which I prepared with Mr. Jones, our principal Clerk, shows that the "peak" followed the opening of the schools (13th January). It was this demonstration which modified the Doctor's views. Dr. Chalmers has collected a large amount of information as to the sickenings (not cases notified) before, during and after the holiday period, and will deal fully with the matter in the next Annual Report. Measles is, of course, not notifiable in Glasgow, and as a check on the "bookings" a chart of the weekly deaths was prepared. The correspondence in the curve of the two charts suggest that a large and very uniform proportion of the cases came to our knowledge. The magnitude of the outbreak may be summed up in one figure—from June 1907, to June 1908, 21,812 cases were booked." Dr. Archibald has also very kindly furnished me with the following statement, which justifies my action of two years ago. He says : "For 18 months I investigated every case of Measles discovered in Glasgow, but was unable to find *a single instance* of undoubted *indirect infection.*"

(5*b*) *School Closure for one case.* I mentioned this in my last year's Report, and had hoped to have made trial of it, having had unofficial information from the Upper Board that such action would not meet with their disapproval; circumstances were, however, too strong for me. Later, when I asked my Committee whether they would have approved of such action on my part I gathered that it would have to be successful if it were not to be reprobated. The Medical Officer of Health of St. Helen's states: "We ought not to close schools because a case of Measles has occurred, or because 1, 2, 3 or 10 per cent. are absent from school on that account." He calls it a blind and drastic step to take, suggests that it does no good with respect to the prevalence of Measles, and always does harm educationally. He believes in daily medical inspection of those children attending the Infant department, and says there is a tendency to expect too much from this procedure. It appears to me that as education matters very little to a child under 5, but good health matters everything, and as the Measles mortality of children under 5 is very high, we have no right to expect them to attend school, with exposure to such awful risk, when the parents of the so-called better class would not dream of sending their own children. One of our authorities, a time back, rather demurred to the closing of an Infant department on account of Measles. I asked him, point blank, if he would send his *own only child* to the school *under the circumstances.* He replied, "Certainly not!" We then at once decided to close the school.

(6) *Excluding immediately every child with premonitory symptoms of Measles.* It would be well always to exclude, if possible, at the door of entry, not as is usually done—after the child has entered the schoolroom. This good or evil result depends upon the willing co-operation of the teachers, and with the most alert, cases which had, or ought to have had, premonitory symptoms (without apparently showing them plainly enough) escaped exclusion from school and developed Measles.

(7) *Isolation in Home or Hospital.* One need only say that in the majority of school cases isolation, even if practicable, would be a farce, and in these distressful days who would advocate the expense of Hospital Isolation, without the promise, which no Medical Officer of Health could give, of anything like a satisfactory return for the money? Remember too, Measles occurs in epidemics, and that the large Hospital would stand empty for a long time on end, with all the numerous expenses of maintaining it going on. Both these measures are, therefore, impracticable at present, whatever they may be when nearing Utopia.

(8) *Keeping all the children in an infected house from school.* This used to be the rule, and in Scotland was compulsory. In 1907 an amending Act was passed, and under this children may be permitted to attend school from an infected house, under certain conditions.

(9) Allowing only those older children to return to school from a Measles house who have previously had the disease, and are therefore considered immune, and excluding, besides the infectious cases, the younger children, and those older ones who have not had the disease, and who are therefore not considered immune. Thus to every course some objection offers. There appears to be no *in medias res* in which one may safely and surely walk.

Diphtheria.

Eight deaths were registered against 11 in 1907, and 16 in 1906. Of these deaths 2 occurred in the 1st quarter, 4 in the 2nd, 2 in the 3rd, and none in the 4th quarter. One death occurred under 1 year, 3 between 1 and 5, and 4 between 5 and 15. Fifty-six cases were notified, viz.: 17 in the 1st quarter, 11 in the 2nd, 13 in the 3rd, and 15 in the 4th quarter. There were 9 cases notified in December, 8 in February, 7 in August, and 6 each in January and April, leaving only 18 for the remaining 7 months, and of these 1 case only occurred in September, and 2 in October. There were 17

cases under 5 years, viz.: 1, aged 9½ months; 1, 1 year; 4, 2 years; 6, 3 years; and 5, 4 years of age. There were 39 cases of 5 years and upwards. Of these 22 were between 5 and 10 years, 13 between 10 and 15, 2 aged 16, one 24, and another 35 years of age. Every case was supplied with Company's water. The milk was supplied by a multiplicity of milkmen, without a shadow of suspicion attaching to any one supply. The drains were noted to be good in every instance. Ten were supplied with ashpits, and all the rest with tins. Every house but one was stated to be in good condition, and every one had a water-closet. Queer enough, in only 6 houses were cats to be found, and in one of these 2, and in one only a cat and a dog. Seven households boasted of a dog, and one of 2. Four householders kept fowls, and only one rabbits. Only in four households had there been recent cases of Diphtheria. The Day Schools, were, I believe, all involved, no suspicion falling on any one, and the same may be said for the Sunday Schools. Of the three Wards, there was no particular incidence in any one of them, there being 13 cases in the North Ward, 22 in the East Ward, and 21 in the West Ward. The smaller incidence in the North Ward is very probably owing to its higher elevation, so much of it lying above the Lea Valley.

The following table gives the number of cases notified and the mortality from Diphtheria and Croup for the last 12 years:—

1897	12	cases,	3	deaths.	1903	18	cases, 0 deaths.
1898	42	„	13	„	1904	4	„ 1 „
1899	56	„	7	„	1905	7	„ 0 „
1900	18	„	5	„	1906	104	„ 16 „
1901	14	„	2	„	1907	103	„ 24 „
1902	17	„	0	„	1908	56	„ 8 „

Diphtheria has now been epidemically present in our Borough for two and a half years. It will be observed that no death occurred in the 4th quarter, though 15 cases were notified. This looks as if the disease is declining in virulence, and there is reason to believe at the time of writing that this is so. I still hold fast to my opinion so frequently expressed, that we have been the victims of one of those cyclical waves which so often sweep over the country at intervals of a few years, and are followed by periods of comparative quiescence. I went into this question last year, alluding to the climatic conditions described so ably by Newsholme, and further, suggested that we were being plagued with virulent bacilli, as suggested by Dr. Davies. I would refer you to my reports for 1906 and 1907 for full information with regard to the influence of climatic conditions and the virulence of the Diphtheria bacilli.

To show how easily infection may be conveyed to an unsuspecting Borough, I had a communication on May 6th from the Medical Officer of Health for Northampton, stating that 3 cases of Diphtheria had occurred in a caravan attending the Fair, and that the caravan had recently hailed from Luton. Northampton, it was stated, had been Diphtheria free for some weeks. The Medical Officer of Health presumed that the infection had been contracted in Luton, or its vicinity. I was able to reply that we were then fairly free from Diphtheria, having had only 6 cases in the previous month, and none so far in May, and that the April cases had not been in the neighbourhood of the Fair; there the matter was left.

I will now endeavour to bring things up-to-date with regard to the transmission of the infection of Diphtheria.

The infection of Diphtheria may be conveyed by milk, the domestic cat, slate pencils, slates, spoons, handkerchiefs, drinking vessels and personal infection, especially through the medium of school attendance, and possibly, according to the explanation of the late Dr. Thorne Thorne, of a progressive virulence of the infective property. Water has never been known to convey infection. There is no satisfactory evidence of the convection of the poison by winds for any distance. Until quite recent times, and especially during the

earlier years of my work in Luton, sanitary defects were usually credited with the power of infection. Now these defects are only considered to be of secondary importance, and act by lowering the health of the individual, and so making him less resistent to the action of the bacilli. There is one known means, it appears, of decreasing the number of cases, and that is by granting holidays, the effect being very marked from ages of 3 to 13—those of school attendance. School attendance, however, is only a means of the spread of infection. The study of the effect of school attendance abroad is by no means conclusive as to the special spread of infection in this manner.

MILK. It appears that if you innoculate a cow with the bacillus of Diphtheria, and later feed a cat upon its milk, a disease apparently equivalent to human Diphtheria is produced. Klein considers that the above result explains certain milk epidemics of Diphtheria, and clearly shows that apart from infection of milk by humans the cow may be a milk infecting agent. Such outbreaks he referred to as occurring at Croydon, Enfield, and three other places.

SLATE PENCILS. It is very apparent that a slate pencil could hardly help conveying the infection if, sucked by an infected child, it is shortly after conveyed to the mouth of a healthy one; the same applies almost in the same way to slates, spoons, and drinking vessels, and handkerchiefs, in their way, are equally dangerous.

PERSONAL INFECTION is the most potent means of infection, Diphtheria being a highly infectious disease when infectious cases come into close contact with healthy ones. You have only to visit an elementary school and see the small children standing just opposite each other, to understand how a healthy child may escape infection with difficulty if almost breathed upon, under those circumstances, by a child with commencing Diphtheria, or suffering from one of its mildest forms, especially nasal Diphtheria; in these cases there may be a profuse infectious discharge from the nose, with little or no constitutional disturbance, and only perhaps the front portion of the nose invaded. In addition, the infected child's vis-a-vis may be a so-called "Carrier" case of Diphtheria. Can a Medical Officer of Health urge the attendance at school of children under 5, knowing that if they can only manage to avoid infectious diseases until after 5 years of age they will have a much fairer chance of combatting these diseases, if attacked later?

PROGRESSIVE VIRULENCE. Dr. Thorne Thorne called attention to the special incidence of Diphtheria in schools, and concluded "that apart from age and susceptibility, 'school influence,' so-called, tends to foster, diffuse and enhance the potency of Diphtheria, and thus, in part at least, by the aggregation of children suffering from that 'sore throat,' which commonly is prevalent antecedent to and concurrently with true Diphtheria." The period of life at which there is most susceptibility to acquire Diphtheria is from 3 to 12 years of age, and school attendance increases the risk of personal infection by the aggregation and prolonged association of children together. I hope those of our Education Committee, who with such a light heart send *other* people's children under 5 to school, whether Diphtheria, Measles, Scarlet Fever, or Whooping Cough, are prevalent or not, will read Dr. Thorne Thorne's words of weighty wisdom. In 1906 you authorised me to visit all the infants' classes and examine throats wholesale; this I did, finding any number of sore throats, especially at Chapel Street Infants', where later a number of deaths occurred, so that we closed that and four other infants' schools. I hope that if this condition of antecedent and accompanying sore throats occurs again that your Medical Officer of Health will promptly close all the infants' departments, and be very slow to open them again. I shall certainly support him in this matter, having very strong ideas on the subject. When you put the small amount of learning a child under 5 will acquire under any circumstances, it is perfectly ridiculous, and worse, to balance that against the child's life. Many of these infants are only sent to

school to be out of the way, and one hears of them being propped up one against the other for sleeping purposes. If they must go school, provide a school with double the cubic space per child; accustom them to open-air treatment, and provide a school nurse, with possibly relays of the older girls—instead of a trained school teacher. Dr. Thorne Thorne also pointed out that outbreaks of true typical Diphtheria, *following* minor throat illness, occurred in particularly isolated places and under conditions not apparently allowing of infection from a previous case; consequently, an idea grew up that possibly ordinary sore throats may be able to acquire a progressive degree of the property of infectiveness, and so after all occur *de nov*. This theory, however, so far is non-proven.

THE DOMESTIC CAT. There is little doubt but that this domestic animal is quite able, if infected itself, to convey infection. This universal favourite has been accused of infecting many of the cases occurring before school age. Very small children are never so happy as when they are pulling a cat about, and are often to be seen pressing the cat's face to theirs. It is now almost certain that fowls do not suffer, as has been alleged, from a disease which is able to convey the infection of Diphtheria to a human.

Cyclical Diphtheria, so-called, is not a special form, but only an explanation that the disease tends to occur in cycles; this has been my consistent explanation of the unusual number of cases occurring in this Borough during the last three years. I asked Dr. Archibald to give me his opinion as to the cause of our long-continued Diphtheria outbreak. He informed me that "Diphtheria has been recently on the increase all over the British Isles. The increase was noticed in England before it showed itself in Scotland, but it is now general, and is in all probability 'a cyclical wave.' Luton has had a similar experience, and it is to be hoped that the drop in this year's numbers points to the wave having passed over, leaving the trough behind. And further, in Luton, as cases of Diphtheria are not removed to Spittlesea, Antitoxin should be supplied to those unable to pay for it."

It is a great source of satisfaction to me in resigning office to know that you have sanctioned a Bacteriological Laboratory, and that Dr. Archibald is prepared to examine throat swabs sent to him by the medical men of the Borough, and to make them a report as to the probable nature of the disease within 24 hours. If he can find time, when Diphtheria is rife, for a routine bacteriological examination of immediate, and when necessary, of more remote contacts, we, in Luton, shall be very fairly up-to-date in preventive measures—of course, combined with early notification, and with prompt and complete isolation at home, or in hospital. Of course, Antitoxin is largely used as a preventive measure, but such use of it is by no means general. I myself might advocate its use under exceptional circumstances. I am firmly persuaded, however, that directly the disease has declared itself that Antitoxin should be immediately injected: if there is much delay the toxins formed will have been absorbed, and Antitoxin may then be too late and get the credit of a fatal termination.

Scarlet Fever.

No death was registered during the year. Forty-nine cases were notified: of these 21 were under 5 years, and 28 from 5 years and upwards. The disease has not at any time assumed epidemic proportions, though in February such an occurrence seemed not improbable, for 13 cases were notified; there were 7 notifications each in August and September, and 6 in November—total 33—leaving only 16 cases to be distributed over the remaining 8 months. Twenty-five cases were admitted into Spittlesea Fever Hospital, of which 18 were discharged cured, and 1 died shortly after admission, with severe complications. Spittlesea being beyond the Borough boundary, deaths occurring there are not

registered as within the Borough. Six cases remained in on December 31st. The average duration of detention of the discharged cases was about 45 days.

The disease has been in most cases of the mildest description, only in two or three of them were the throat and general symptoms of a severe character, and even these had no troublesome *sequelæ*. Scarlet Fever has possibly not decreased in frequency in the country generally, but it most certainly has in virulence during the last 30 years. When I was first appointed Medical Officer we used to see a very different sort of disease. The younger practitioners can have no knowledge, except that derived from books, of the dreaded disease which Scarlet Fever used to be. I used most strongly to object to the term, Scarlatina—which people gave to mild cases of the disease—and never used it myself, for its "only" Scarlatina meant, with a certain class of people, that no precautions were deemed necessary, or would be taken.

The following table, compiled from the Annual Reports of the Registrar-General for England and Wales, gives the mortality from Scarlet Fever during the last 30 years. These figures, after certain corrections, denote rates per one million living :—

	All Ages.	Under 5 Years.	5—10 Years.	10—15 Years.
1871—1880 ...	649	3504	1522	326
1881—1890 ...	312	1667	763	154
1891—1900 ...	158	884	353	81

The rate for 1905 was 112 at all ages.

These figures show a decided and continuous abatement of the mortality from Scarlet Fever. They, of course, only show diminished virulence, but diminished prevalence has kept it company. The tables of the administrative County of London for the 10 years, 1894—1903, shew likewise a marked diminution of the fatality at all age periods. It is not only in this country that the disease has diminished in virulence. In the State of Massachusetts the death-rate per 1,000, which was 6·8 in 1866 to 1870, and 8·6 in 1871 to 1875, diminished gradually to 2·4 in 1891 to 1895, and 1·0 in 1896 to 1900. In Boston, U.S.A., previous to 1876, the average rate of mortality was 11·22, while from 1877 to 1904 it was 2·61.

It is stated that after the age of 15 an acquired immunity seems to exist; but it is quite possible that those who have arrived at that age without apparently falling victims to Scarlet Fever, have, in the majority of cases, in reality, had mild and unrecognisable attacks. This is rather borne out by finding in attendance at our schools children in a state of desquamation whose parents appeared to have no idea that their children were the subjects of the disease. The medical inspection of schools, and the watchfulness of the school nurse, may possibly help to determine this question: their services in this direction will doubtless be of some real value.

There are various ways in which the infection of Scarlet Fever is conveyed:

(1) *Directly from the patient* by the breath, secretions of the nose and mouth, the throat, the ears, and perhaps the kidneys, as well as by the desquamation of the skin. The poison may probably be inhaled or swallowed.

(2) *Infected milk supplies*—in two ways. First, by the milk being infected through human agency, such as the milkman, who may be the subject of it himself, or his family. Secondly, the Hendon outbreak points to infection from some other than a human source, and on a most exhaustive enquiry into the cause of the epidemic, many of the cows were found to be suffering, or to have recently suffered, from vesicles or ulcers upon the teats and udders. These were readily demonstrated to be infectious. From these ulcers, Klein isolated and cultivated a bacillus which was identical with those he had obtained from the skin and blood of Scarlet Fever patients. He designated it the *Streptococcus Scarlatinæ*, and regards it as the microbe of Scarlet Fever, but this opinion is contested by other great authorities; in fact, there has been no discovery that so far definitely proves Scarlet Fever to be a bacterial disease.

(3) *Infected clothing and bed linen, etc.* The poison clings with such persistence that articles of bedding and clothing which have been stored away for years may, unless thoroughly disinfected before use, convey the infection. This presupposes that these articles were either not disinfected, or imperfectly so, before being put away. Many return cases are doubtless caused by articles of clothing, etc., which have escaped disinfection. Sanitary wash-houses to which clothing and bedding can be sent to be thoroughly disinfected and washed, would help considerably in limiting the disease. Glasgow has devoted a large building to this purpose.

(4) *Return cases.* Of course, if after a patient has returned from the Fever Hospital, one or more cases occur in the same house, due to infection from the returned case, it would come properly under No. 1 of personal infection. Last year we had a well marked case of coincidence, which in all probability accounts for many of these so-called return cases. A child was to have been sent home on a certain day, but was retained in hospital; in the meanwhile another child at his home fell a victim to the disease; it was morally certain that if the child had not been retained in hospital he would have been credited with infecting the 2nd case. These cases are frequently coming under notice, and probably account for one or two return ones to which we have to plead—shall I say—guilty, this year. I will later on explain why guilty is too strong a word to employ. A case occurring in a house shortly after the return to it of one treated in a fever hospital is very annoying to all parties, and often gives rise, and perhaps not unnaturally, to adverse, though unjust, criticism of the institution and its officers. In connection with return cases, Notter and Firth quote Thompson; he investigated the circumstances under which Scarlet Fever manifested itself anew in certain households to which patients from Bromley and Beckenham D.C. Hospital had returned, on recovery from Scarlet Fever. He found that whilst a distinct proportion of re-invasions were due to the return of hospital patients, it was not improbable that other agencies were in operation, such as excess in that class of household of persons at the ages most susceptible to Scarlet Fever; season and stage of the epidemic had an important influence, for with a decadence of the epidemic, the number of return cases sensibly declined. Millard, however, considers that, in the majority of cases, the infection is really carried by the patients leaving hospital. The secretions from the nose and ear appear to contain the virus when infection is unduly prolonged. Niven showed that the phenomenon is essentially a hospital one, and that there are good grounds for believing that it is due to recent association of the discharged patients with acute ones. By placing patients in a convalescent ward for 2 weeks before their discharge, and systematically disinfecting the skin, noses, and auditory canals, not a single return case occurred in connection with the Manchester patients discharged from the convalescent wards. Dr. McCollom investigated many so-called "return cases," and found there was an intermediate case, and sometimes two, so mild in their nature as not to attract attention, and that these were the cause of the outbreak of the disease, and not the patient discharged from hospital. In institutions where children, as a rule, are more carefully watched for eruptions, it was the general experience that so-called return cases never occurred. This last observation, if followed up in Luton, may be of the greatest service to us: it points to the advisability of visiting those houses weekly where some member of the family is under detention at Spittlesea, so that mild and ordinarily unrecognisable cases may be detected, and thus save the reputation of the Medical Officer and Matron from undeserved criticism. Parents who appear to be very thankful at the time for services rendered at the hospital are often not slow to round on one on slight and insufficient grounds. I am not speaking from my own experience, for I have never had one unpleasant incident in this connection. Until the last two years we have never had to trouble about return cases.

HOSPITAL ISOLATION. In spite of much criticism of Dr. Millard and others, directed against the usefulness of isolation in hospital of cases of Scarlet

Fever, the great consensus of opinion is, I believe, decidedly in their favour. Dr. Nash, of Norwich, strongly holds the view that, properly administered, fever hospitals have proved of very great assistance in checking outbreaks of Scarlet Fever, perhaps chiefly through limiting the number of secondary cases occurring in individual families. For a fever hospital to prove effective it must be in closest touch with the public health department, for rapid removal of early notified cases to it. Delay in notification or removal defeats the main object of a fever hospital, which ought to limit the spread of the disease, especially in an individual family. Speaking generally, there is no earthly object in removing nearly a whole family to a hospital; the home, in such a case, ought to be the temporary hospital, and all neighbours and relatives ought to be warned off. There are exceptions to this rule, but they are only comparatively rare exceptions. The reason why so much cubic space is demanded per patient is to diminish the risk of those with discharges infecting others; it is quite possible that with deficient cubic space the disease may become more virulent; evidenced often too by the number of patients in one ward suffering from complications. This experience, I believe, we "enjoyed" a few years ago, and that it has not occurred oftener has been due more to luck than to the merits of our Scarlet Fever wards, aod as regards fresh air and sufficient cubic space they are lacking. Dr. Nash also considers that, properly administered, a hospital can only work for good, but under bad management or insufficient control it may easily be a source of evil.

Time of Detention in Hospital. We have this year, as in former ones, detained the patients in hospital until all primary and secondary desquamation has ceased. This works out at 45 days per patient. Much more evidence has accumulated, tending to show that secondary desquamation is not infective, and more than ever attention has been directed to the condition of the nose, ear and throat, as regards discharges and eruptions. A patient with a slight nasal discharge, it is said, may be infective long after desquamation has ceased. It would appear, therefore, safe to release a patient in less than six weeks if he has desquamated once, and is quite free from discharges and rashes at margins of orifices; but persistent nasal discharge may necessitate retention for a long period, greatly exceeding the duration of even secondary desquamation. Dr. Newsholme has drawn attention to recrudescence of Scarlet Fever, when all the symptoms may begin over again. He believes the germs lie dormant until perhaps a chill causes recrudescence. Mild cases, says Dr. Nash, and "recrudescent cases" and "Carriers," account largely for the fact that infective diseases like Scarlet Fever and Diphtheria persist after the most exhaustive pains have been taken as regards isolation and disinfection. If anything could lead to pessimism with regard to the prevention of these infectious diseases, commend me to the above observations of Drs. Newsholme and Nash!

Epidemic Diarrhœa.

Sixteen deaths were referred to Epidemic Diarrhœa against 11 in 1907, and 55 in 1906. Thirteen of these deaths were of infants under 1 year, and 3 between 1 and 5. In the third quarter there were 5 deaths under 1 year, and one between 1 and 5, and in the fourth quarter there were no fewer than 8 under 1 year, and two between 1 and 5. In 1906, 52 out of the 55 deaths were registered in the third quarter, and the remaining three in the fourth. In 1908, out of the 11 deaths referred to this disease, 5 were registered in the third, and 6 in the fourth quarter. It is of course very unusual for the fourth quarter to claim more deaths from Diarrhœa than the third, and queer enough it has happened in two consecutive years, viz., in 1907 and 1908. In 1906, as I have before stated, 52 out of 55 deaths occurred in the third quarter. I have no note of any excessive heat in October of that year, whereas in the two following years I have. In 1907, it was noted that "unusually warm conditions prevailed, and flies had for October been unusually active in attacking food, and offensive as regarded the person." In 1908, the closing days of September were marked

by a period of exceptional warmth. At Epsom, on September 28th, it was 107.9 in the sun, on the 29th, 112.2, and on the 30th, 113.°. On October 1st, in London, a maximum shade temperature of 78° was recorded at 2 p.m., and an hour earlier 112° was registered in the sun. These figures constituted a record for the opening day of October, extending back to 1886. A remarkable feature of this Autumn heat wave was the general distribution of high readings of the thermometer in Luton, as well as all over the kingdom. No fewer than eight sea-side places broke all the previous records for the month. In spite of morning mist, there was an average of nearly 10 hours' sunshine over England. Except in 1859 and 1886, nothing approached the heat of the first four days of October. It is therefore not surprising to have to record more deaths from Epidemic Diarrhœa in the fourth quarter than in the third. Out of 10 deaths reported to me of infants under 1 year by the Health Visitor, where the people were in very moderate or poor circumstances, 4 were hand-fed, 1 breast-fed, and 5 were breast and artificially fed. In four instances the house was reported to be clean; in five moderately so; 1 dirty, and 1 of the former required whitewashing, but was otherwise cleanly. In five instances there were a great number of flies, in one they were said to be swarming—this house was the dirty one—in 4 there were not many flies. In every case the drains were in order, but 5 had only pans with no direct water supply. In eight instances the yards were paved, in one partly so, and in one there was a cobbled yard and the ashpit was offensive. Six houses were supplied with milk from six different sources; in the other instances the milk supply was not stated. The infants were aged respectively 1 month, 2 months, three 3 months, two 4 months, two 6 months, and one 7 months.

After 30 years' experience, I have come to the following conclusions:—

1.—That if all infants were breast-fed, deaths from Diarrhœa would give us little concern, in fact, they would be almost a negligible quantity.

2.—If the infants who cannot be breast-fed, but have to be brought up by hand, were all children of the well-to-do, there would be comparatively very few deaths.

3.—Given a very unseasonable summer and early autumn, with a deficiency of sun heat, and at all events no continued sun heat, weather inclined to be cool or even cold, and with more than an average rainfall infant diarrhœa, even among the poorest classes, may be almost noticeable by its absence, and the mortality consequently almost *nil*.

The subject of breast-feeding of our Luton infants is now receiving great attention, through the visits paid to the poor classes by the Health Visitor. We must always bear in mind that it is impossible for some mothers, even among the middle classes, to nurse their own infants, and it is therefore unreasonable to expect every badly-fed mother to be able to do so. How is it that the infants of the well-to-do so rarely fall victims to infant diarrhœa, even if artificially fed? The answer to this question is a most important one, and one that cannot be answered with certainty. I would suggest that the quality of the milk supplied, the *preparation and storage of it*, the abundance of flies and the ease with which they get at it, the ignorance of the parents, and in many cases the filthy condition of the house, combined with the *later time at which medical advice is called in*, furnish many reasons for the excessive mortality among the children of the less well-to-do inhabitants. The former class, too, have much greater knowledge of what to do and how to do it, and, perhaps, what is quite as important,—what not to do. How is it that a very seasonable summer and autumn conduce to a high diarrhœa mortality? This I will endeavour to answer further on. We must remember, however, that even when these *very seasonable* conditions prevail, diarrhœa mortality is largely prevalent, and almost entirely fatal only among the poorer classes, and only then among hand-fed children.

We can easily arrive at two conclusions.

1.—That it ought to be our most earnest endeavour to make hand-feeding the exception and not the rule.

2.—That a food ought to be provided during the spells of hot weather for the hand-fed children of our poorest inhabitants, which food should be bacterially pure, and which could hardly be contaminated by flies or otherwise without gross carelessness.

A writer says that if all infants could be breast-fed, that even meteorological conditions would not cause diarrhœa deaths to be anything but almost negligible; and another, speaking of improper feeding, declares that all infants not breast-fed are improperly fed. Why, he asks, if infants are hand-fed in a variety of ways does Diarrhœa only occur in the summer months, and he deduces the fact that the mere chemical composition of the food given is not in itself a cause of the disease. It lies in the different bacteriological composition of the food. In cold weather the growth of bacteria in foods is inhibited. Milk is a medium in which, immediately on exposure to air, bacteria rapidly multiply. All the cows' milk sold, except when sterilised and sold in bottles, contains large numbers of bacteria, mostly harmless. When, however, the milk is impregnated with a pathogenic, or harmful form of bacteria, say by a fly—which has just before been straying on a manure heap, &c., then the danger arises. In the winter flies are practically absent. Infants are peculiarly susceptible to the form of bacterial poison conveyed in this way, and as those artificially fed are fed on milk or combinations of milk with other things, in which the bacteria thrive when the milk is warm, it is the artificially fed who suffer. In Paris, so thoroughly is the danger of artificial feeding appreciated, that mothers are fed before and after the birth of their infants, so that they may in turn be able to feed them. If a food be not provided in hot weather, as suggested above, it is more than ever imperative to ensure the perfect purity of the milk supply from the cow to the consumer. Then the poor consumer, who is bringing up a hand-fed infant, must be visited regularly by the Health Visitor, who will see that the home is kept in a cleanly condition, that the milk is properly stored and prepared, the bottle regularly cleansed, and that abomination, the long tube, is not in use, that no "comforter" is employed, that medical attendance is promptly sought, and that soiled napkins are disinfected.

Dr. Prudence E. Gaffkin, whose recommendations to check the decline of the birth-rate I have before alluded to, gave as her third recommendation the training of midwives. This training will undoubtedly come in time, but probably not until the older untrained midwife has retired from practice. As soon as we have the services of a superior class of midwives, the Central Midwives' Board ought to be induced to make infant management and feeding an important branch of the training of midwives. The late Medical Officer of Health of Warrington, computed that 75% of the total number of births were attended by a midwife. The class of population whose ignorance is the greatest was attended by midwives alone.

The number of midwives in Warrington who qualified by "experience" alone was about 30%, in Huddersfield about 95%.

Her fourth recommendation was Notification of Epidemic Diarrhœa. This would be of the greatest service, but I am much afraid that you yourselves will stand in its way, and that it can't be carried out at present. Diarrhœa was in Warrington more fatal than Measles, Scarlet Fever, and Diphtheria combined (44 to 147), and even including Whooping Cough (77 to 147).

The fifth recommendation was the inspection of all children put out to nurse. This ought to be regardless of legitimacy or illegitimacy, whether by relatives or strangers, and notification should be required from all persons adopting a child, no matter how high the premium. In Dresden, the work of inspection of foster-children has for many years been very complete.

I will now consider more fully the question of what might, in my opinion, be practicable to diminish the Epidemic Diarrhœa mortality in Luton, in the hot season of what might be called a Diarrhœa Year.

Given the necessary conditions before alluded to, the infant mortality from Diarrhœa will inevitably be excessive all the country over. It will be worse

in town than country, and worst of all in those very large towns or cities where people are more huddled together, and where no determined attempt has been made to checkmate the enemy, not so severe in country districts because breast-fed children more abound, and more healthy general conditions obtain. I do not believe that in a comparatively small Borough like ours we are called upon to set up a municipal milk depôt, at great expense, for the supply of sterilised milk, of which I am not greatly enamoured. With immediate notification of Epidemic Diarrhœa—a counsel of perfection doubtless—our Health Visitor would at once visit the home, if a poor one; if she found the infant other than breast-fed, she would give the parent an order to obtain, for, say half the retail price, a tin of Glaxo or whatever food the Medical Officer of Health had decided upon. The milk powder (Glaxo) or food would only require the addition of boiled water, so that even in a dirty home there would not be the slightest chance of infection. One must, however, bear in mind that among the poor a fire is a great consideration, and in hot weather it is only required for culinary purposes —and sticks and coal are not procured gratis—therefore there might be a tendency to make enough food at one time to do for two or three feeds, and the second and third would possibly be lying about uncovered, exposed to all the risk arising from dust and flies. If a cheap kettle and spirit lamp could be procured, this source of possible mischief would be neutralised. Another alternative, and one that I have discussed with Dr. Archibald, is that the authority might supply, from the Sanitary Office, solutions, say, of Glaxo, on receipt of an order. These would be sent out of strengths suitable for the tender age of the infants requiring them. I would suggest that the food need only be supplied during hot spells, and not at all in an unseasonable summer and autumn, when Diarrhœa deaths are almost negligible. Of course if an infant commenced with the food, the mother would be supplied with it during the whole of the illness. The question of the deficit would be a matter for the Town Council, the Board of Guardians, or the generous public. For such a good cause the necessary funds would doubtless be easily forthcoming. I believe, however, that the Town Council ought to be looked to, for they "tap" all the burgesses, more or less, mean and generous alike, otherwise the mean ones escape as is usual. The food bought in bulk could be retailed at no great loss.

I will now endeavour to answer the question why a very seasonable summer and autumn conduce to an excessive Diarrhœa mortality.

I will first make the assertion that it is no longer a contestable matter that flies are directly concerned in the dissemination of infant Diarrhœa. I have a letter from Dr. Nash, of Norwich, late of Southend, in which the only question with him is as to the *priority* of the discovery, which seems to rest between Dr. Newsholme and himself. Fortunately, a very hot summer in 1906, and some local conditions existing in Coventry, put Dr. Snell, then Medical Officer of Health, in position of adducing facts showing the great influence flies have in spreading infection, and as he puts it in his able paper, "facts, from which there can be no appeal." The city of Coventry possessed no refuse-destructor. As every annual report for the past twenty-two years had demanded one, no blame could possibly attach to the Medical Officer of Health. For two years everyone had practically agreed as to the necessity, being educated gradually by the Medical Officer of Health's insistence, but the question of site stood in the way. The refuse of city was "tipped" in a situation which until comparatively recently was fairly well-removed from houses. The City had gradually grown up towards and around that site. Then came the hot summer of 1906. The average temperature for the third quarter was not only above the average for the previous ten years. but it was higher than any of those years except one, viz., 1899. The record of the 4ft. thermometer was not only above the average for the previous six years, but it was above that for each of these years except 1900.

The rainfall was not only far below the average in the corresponding quarter in the previous ten years, but below the average for any of those years. These meteorological records in themselves made one expect a heavy mortality from Epidemic Diarrhœa. Not only was that heavy mortality recorded, but Coventry headed the 76 great towns with a mortality of 6·51 per 1000 from this disease alone.

Towards the end of August deaths were occurring inordinately in the N.E. quarter, and on September 4th this was reported to the Committee, and the opinion expressed that the excessive incidence was due to the refuse tip. The figures exhibited showed that of a total of 132 deaths, 88 occurred in the N.E. part, and 44 in the other quarters.

In order to avoid possible fallacy, the deaths were divided into Wards. Of the three Wards abutting on the "tip" the population of Stoke is the furthest from it: The figures show that these three Wards had between them 69 deaths, or more than half of the total in the whole 12 Wards. Also that as regarded percentages F. and S. Wards, whose population most nearly abut on the "tip," easily head the list: the third place is held by a Ward containing many courts, the fourth and fifth places by two Wards, which were nearly adjacent to the tip, and which were affected by the plague of flies afterwards alluded to. In August and September there existed on a portion of the N.E. quarter a veritable plague of flies. A map was shown in which the dark area was a zone surrounding the situation of the tip, and the lighter one a zone outside the darker one and covering nearly the whole of the N.E. quarter of the City. When a plague of flies is alluded to—*it is no exaggeration.* "I never saw anything like it before," Dr. Snell says. In one house they literally swarmed, and half a bucketful were caught. It was quite impossible to pick up any food which had not immediately before been covered with flies: to keep food and milk uncontaminated would have been next to impossible. A visit to the neighbourhood could leave no doubt as to their origin: the tip was the source of most offensive odours, and as one walked across it one walked in a cloud of flies, and surrounded by the "buzz" of those disturbed. No other cause for the unequal distribution of these Diarrhœa deaths was apparent, nor was further search necessary.

Dr. Snell records the above facts, not to let Coventry down, but because the facts demonstrated in a way, which had never come home to him so clearly before, the great and pernicious influence which flies can exert in the way of spreading epidemics. The exertions of sanitarians in insisting on the early removal and destruction of all decomposable animal or vegetable matter, *i.e.* the breeding grounds of flies, are not being mis-spent. He concludes, "In the face of such a lamentable experience, I hope it will be impossible for any one to say that insanitation has nothing to do with infant mortality."

I have only been prevented the last year or two from endeavouring to carry out, with your consent, some such scheme, owing to the difficulty of finding a food or milk to recommend. Whatever was suggested had to have this merit, that it was to be, like Cæsar's wife—above suspicion. I do not think for the short time, *i.e.*, for the few weeks that each infant would require the food, that we need trouble about the possibility of rickets, all our trouble need be about a bacterially pure food.

Now, with regard to Glaxo, it is the best dried milk that I have come across, and I am using it in my own house: it goes very well with tea and coffee, and is a very nice drink when boiled: other dried milk samples were not so satisfactory in these respects. Glaxo is manufactured in New Zealand, where the dairy industry is said to be unrivalled even by Denmark. At Sheffield, Finsbury, &c., experiments have been conducted, and the use of Glaxo has been attended by results pointing to its being the key to the infant feeding problem. This dried milk is *prepared within two hours of milking*, and from selected cows regularly inspected by Government officials. In the preparation of Glaxo, it never comes into contact with the hand, sterilised gloves being employed all

through the process. It is said to retain from 25% to 27% of the natural fat of fresh whole milk, and in the stomach of the infant is transformed into a digestible flaky curd.

Typhoid Fever.

No death was referred to this disease during the year. Nine cases were notified. Of these one each occurred in the 1st two quarters, five in the 3rd, and two in the 4th quarter. All the cases were over 5 years of age. Careful enquiries were made in every instance. Six cases were admitted into the Fever Hospital, and 5 were discharged well. The 6th is making a good recovery after a very severe time. Of the 5 cases in the 3rd quarter two were notified in August, and three in September. After careful enquiry no history of infection could be obtained in four of these cases; the 5th was almost certainly contracted at a fashionable watering-place. The danger of infection being derived from Typhoid "Carriers" was borne in mind. In the last case notified during the year there was a history of the mother having suffered from Typhoid Fever many years previously. On September 11th I was informed that a youth in a neighbouring town was notified to be suffering from Typhoid Fever. As he had worked in Luton at a bakehouse up to the time of his illness, the suggestion was that he had contracted the disease here. After very careful consideration, we could not satisfy ourselves that he had; the youth had had a short holiday away from both towns, where he might have contracted it, so that the Luton theory could not be substantiated.

Is Typhoid Fever on the increase, or is there good reason to think that it is diminishing? To answer these questions I propose to quote a table given by the Medical Officer of Health for Woolwich. It shows that the death-rate from the disease has come down to one-third of what it was in 1871—'80, but that the reduction of notifications since 1891 is not very great. There has, however, been a coincident and nearly equal fall in fatality. Infection, he says, is now commonly, if not usually, imported from outside London.

Period.	Death rate per 1,000 population.	Case-rate per 1,000 population.	Case mortality per cent.
1871—1880 ...	0·240		
1881—1890 ...	0·190		
1891—1895 ...	0·132	0·78	17·26
1896—1900 ...	0·142	0·82	17·50
1901—1905 ...	0·084	0·52	15·46
1906 ...	0·060	0·30	16·20

Typhoid Fever has a very variable stage of incubation, *i.e.*, the time during which the poison lies dormant in the system. The usual duration is about 12 to 14 days, but it is said to range from a few days to 30. When the poison is introduced by water, or milk, this stage is said to be shorter than when introduced otherwise. The onset is so insidious that it renders any exact determination difficult. The duration of the illness, usually, is about 3 or 4 weeks, but it is quite often protracted. Some cases have more than one relapse; some consider immunity for life to be conferred upon the survivor of an attack.

I will now discuss how the disease is disseminated, bringing it up-to-date. The disease is disseminated by—(1) water, (2) milk, (3) vegetables, (4) shellfish, (5) dried fish, (6) ice, (7) ice-creams, (8) clothing (soiled linen, etc.), (9) dust (India, etc.), (10) Enteric Carriers, (11) flies.

Suspected Causes—(1) Conditions of soil, (2) butter and cheese, (3) sewer air, etc.), (4) fleas.

(1) *Water.* So far water has not been convicted of carrying the infection of Measles, Scarlet Fever, or Diphtheria, but there is abundant evidence to show that the micro-organism associated with Typhoid Fever (rod-shaped bacillus of Eberth and Gaffky), when it gains access to drinking water, becomes the principal agent in the distribution of the disease. In 1872 an outbreak,

traced to the drinking water, occurred at Lausanne, in Switzerland. In 1878 a large outbreak occurred at Caterham and Redhill, the drinking water being contaminated by the stools of a workman with mild fever, employed in the Company's wells. In 1890 to 1891 one of the largest and most extensive epidemics occurred in the Tees Valley, 1,334 cases occurring in Darlington, Stockton, and Middlesborough. Worthing, in 1893, also suffered terribly in the same way, from specific water contamination, 1,315 attacks occurring, and 168 deaths. In 1897 an epidemic broke out at Maidstone, with 1,800 cases, and at Lincoln, in 1905, with 1,021 cases. The two latter are among the most recent water-borne epidemics of Typhoid Fever. Whether sewage, unless specifically contaminated, can give rise to Typhoid Fever, is still a moot point. Thirty years ago the frequent question arose, does Typhoid Fever occur *de novo*, and still the answer is an uncertain one.

(2) *Milk.* Milk, unlike water, may convey the poisons of Diphtheria, Typhoid Fever and Scarlet Fever, and they both may convey Cholera. The poison is conveyed by milk, adulterated with water containing the specific microbe, or by the use of the same in washing out the milk vessels, or by a person, whose hands are soiled by the specific poison, milking a cow. The epidemics caused by milk have many distinguishing characteristics, besides affecting the rich more than the poor, and attacks being rare among those who drink little or no milk, or only boiled, or in tea or coffee.

(3) *Vegetables* are dangerous only when uncooked. Danger may arise from their being grown on land which has been fertilised by specific material, or the water used in washing them may be infected, or possibly from their being handled by a Typhoid Carrier. Danger, too, possibly may arise from specific dust settled down on them when exposed for sale.

(4) *Shell-fish.* I have so frequently alluded to the part oysters play in dissemination of Typhoid Fever that I only just mention the fact. Cockles and mussels, however, are equally dangerous. The Medical Officer of Health for Portsmouth reports that the total number of cases notified in Portsmouth in 1907 was 233, and out of these cases 80 were traced directly to the ingestion of articles of diet specifically contaminated with the Typhoid bacillus. The one article of diet, which in Portsmouth has a special relationship to "Typhoid," is shell-fish, and during last year 80 persons, or 34 per cent. of the total number attacked, contracted the disease from this source. He says that oysters, cockles, mussels and butter-fish, are continually picked up from polluted sources round about Portsmouth, and consumed with a total disregard to the results certain to ensue. Incredible sight! persons are constantly to be seen picking up shell-fish off a bank, within 300 yards of the main outfall of the Portsmouth sewerage. The character of the fever produced by these shell-fish is of a much more severe character than the ordinary type, 17·5 per cent. of deaths against 10·5. I am particularly interested in acquainting you with the above, for the same Medical Officer of Health was consulted about a peculiar outbreak in Guildford, in which 13 people were suddenly taken ill with vomiting and Diarrhœa, and great abdominal pain. On enquiry, all these people had partaken of a parcel of butter-fish, sent from Portsmouth to Guildford. Butter-fish are a sort of glorified cockle, being 3 or 4 times its size. The Butter-fish had been picked up 300 yards west of the sewage outfall. The Assistant Medical Officer of Health of Birmingham reported that during the past 4 years 74 cases occurred there in which mussels were suspected. After a thorough bacteriological enquiry, he stated that "the fact is clearly shown that mussels exposed to specific contagion by the typhoid bacillus can take up these germs and retain them for a considerable time. This experiment emphasises the need for protecting mussel layings from all possibility of sewage contamination. The import to us is that our townspeople eat shell-fish in large quantities, and are great sea-side holiday makers. If they go to Portsmouth, happy will they be if, eating mussels, they *suffer no bad consequences.* Life, it is said, always hangs upon a thread, but it is upon that which is threadier than a thread for the

individual who partakes of shell-fish promiscuously. *Dried Fish* ought possibly to have been placed among the suspected causes, as there is only one small epidemic reported as occurring in London, fairly recently, in which many of those infected had eaten dried fish from one shop which had not been properly cleaned.

(5) *Ice* has frequently been under suspicion, but has only occasionally been proved to have conveyed the bacillus. An epidemic has been reported due to ice at the St. Lawrence State Hospital, near Ogdensbury, N.Y.: 39 cases occurred. The epidemic subsided as soon as the ice was discontinued.

(6) *Ice Creams.* The conditions under which ice creams are so often made by dirty itinerant vendors and others—often in bedrooms—predisposes one to believe the worst with regard to them. They may be a source of Typhoid infection, the process of freezing not killing the bacillus. An epidemic has been reported from Govan. In 5 days 19 patients contracted the disease: all had eaten ice creams from one store. The proprietor had been presumably ill with influenza, but it turned out to be Typhoid Fever. During his illness he had assisted in the manufacture of the ice creams. The milk supply was proved to be innocent of offence.

(7) *Clothing, Soiled Linen, &c.* Clothing has been a means of infection in troops crowded in barracks and camps. In the Spanish-American war clothing, blankets and tents became infected. In Luton, some years ago, in Bolton Road, we had 4 or 5 cases in one house, where the children had been playing about on infected linen. Soiled linen requires the most careful disinfection, and must be a fertile cause of conveying infection, though usually difficult to prove.

(8) *Dust* may be, and often is, supposed to be a cause of this disease in India. Typhoid baccilli soon die if dessicated, but if the interval be short they may survive. In South Africa dust storms are frequent, and the dust frequently covered the food. Barringer has suggested that the dust on railway tracks may spread the disease, as there is much opportunity for infection by excreta dropped from the trains. This dries and bacilli are blown about with the dust.

(9) *Typhoid Carriers.* Numbers of cases have up to quite recently eluded the most diligent search for their mode of causation. It is only quite recently that much light has been thrown upon the subject by the discovery of a new and not uncommon mode of causation, viz., that by means of so called typhoid carriers. Carriers are divided into two classes:—

(i) "Acute Carriers," who, having no symptoms, yet may carry and excrete bacilli for a short time, and in small numbers, when they have been in direct contact with patients.

(ii) "Chronic Carriers," who have had Typhoid Fever recently or possibly years previously, and who may excrete for months or years typhoid bacilli.

Of these two classes the chronic is the more dangerous: about 4% of typhoid patients are said to become carriers: the condition is most common in women. The bacilli appear to be harboured in the gall-bladder, or the bile passages, whence they are from time to time discharged with the fæces. This condition has been known to exist for 29 years. Colliers are pre-disposed to contract the disease through the lack of sanitary arrangements in mines, and through the infective exhalations being carried by air currents along the roadways and workings of mines. Dr. Sweeting enquired into the prevalence of "Typhoid" at the Borough of Leigh, where Typhoid, especially among the miners, had been endemic for years. The doctor attributed the disease mainly to the condition of excrement disposal obtaining at the various collieries. As it is now common knowledge that a patient may remain an effective "carrier" for a long time, it is not surprising that the underground workings of a mine should afford ideal conditions for dissemination of the disease.

The Medical Officer of Health of Bristol gave two instances of outbreaks of Typhoid Fever, and he believed that they were the first recorded ones in England, traced to the influence of a Typhoid carrier. "Typhoid" broke out

at an Institution, and, after many cases had occurred, Mrs. S. H., who was engaged in dairy work, by a system of exclusion, was suspected of being a "Carrier"—this was proved up to the hilt. Later it was also discovered that she had had an attack of "Typhoid" more than 4 years previously. Later on it was discovered that an outbreak at a Girls' Home 2 years previously had been due to the same Mrs. H., who was acting as cook and diligently attending to the preparation and boiling of the milk consumed by the children. It still later transpired that the same good woman one year previously had infected a girl at another home for children where she was taken on as cook, but fortunately for the children, made a short stay. Dr. Davis says there is apparently little doubt that the manufacture of infection by carrier cases may be defined as gross.

Soper, of New York, recorded the case of a cook who, in five years, lived in four families, and gave rise to 28 cases of "Typhoid." Figures tend to show that yearly about 500 typhoid carriers are let loose in England and Wales, capable, under certain conditions, of spreading the disease.

The occurrence in Bristol, in 6 months of 4 distinct outbreaks, due to typhoid carriers, cannot fail to put all Health Authorities on the alert.

A recent outbreak in Glasgow revealed the fact that an elderly woman, who had had the disease 16 years previously, was still infected, as shown by bacteriological tests. She appears to be responsible for the first eight cases, including a woman whose illness was at first diagnosed as pneumonia.

It is satisfactory to know that Dr. Archibald is prepared to place Vidal's reaction at the command of all his medical brethren. Unfortunately, owing to the tremendous time taken in the examination of one sample ot fæcal material, he will not be able to take that on. It looks as if the time will soon come when a special bacteriologist will have to be engaged—perhaps not for Luton alone, but for an area—say for Bedford and Luton.

Flies. Much evidence of late has come to hand proving satisfactorily that flies carry the specific infection of typhoid fever. This infection is said to be carried in two ways, either by the matter which adheres to the fly being deposited on food, or the fly may first swallow the bacteria and then deposit them later. It is said that the bacilli can live in a fly for 23 days, and on their heads and legs for some days. Both in the Spanish-American and South African wars flies played a large part in the transmission of the disease. In camps, where lime had been used for disinfecting privy pits, flies, with their feet covered with lime, were seen walking over the food. Flies were particularly noticed to hang about typhoid patients. This conduct of flies has been frequently noticed and commented upon at our Fever Hospital. In Chicago, in 1902, "Alice Hamilton" reported that infection due to flies had occurred in one district in which the sanitary arrangements were very defective. In many yards, where fæcal matter was exposed near the houses, flies were caught in the privies, sick rooms, &c., and tubes were inoculated from them. In 5 out of 18 instances typhoid bacilli were found. An epidemic at the gaol at New Haven was attributed to infection carried by flies from patients across the street. In rural communities, the spread of the disease is in many instances probably due to flies. As typhoid patients undoubtedly attract flies, it is quite possible for these flies to pick up bacilli, carry them off and so infect food. Last October I frequently drove off flies from a typhoid patient: these settled on all exposed parts of the body, and seemed to have a special predilection for the disordered secretions of the mouth, everlastingly alighting on the lips, and evidently enjoying the very foul exhalations from the alimentary canal. When typhoid occurs in a general hospital in which such patients are treated, flies may be reasonably suspected.

Jackson, of New York, has found as many as 100,000 fæcal bacteria on the legs, body and mouth of one fly, and has shown that in that city there is an exact correspondence between the prevalence of flies and the mortality from diarrhœal diseases. By means of cages and traps placed in various parts of the city, flies were caught and counted daily. The fly census was proved to be an

accurate gauge of the sanitary condition of the city. Where sanitation was good they were few in number, where bad they were in myriads. Having determined the prevalence of flies throughout the summer months, Dr. Jackson showed that over a period of five years there was almost a precise correspondence between the temperature curves which indicated the activity of flies and the curves of typhoid fever and other intestinal diseases. "This so-called innocent insect," says Jackson, "is one of the chief sources of that infection which in New York City causes annually about 650 deaths from Typhoid Fever and about 7000 from other intestinal diseases." Professor Nutall has shown that flies also carry the plague bacillus. Celli has proved that they can carry tubercle bacilli both as outside and inside passengers, and can excrete them in their excreta. The fight with the fly, says Sir James C. Brown, will be a stiff one. One fly would lay 1000 eggs, and may, on the snowball system have 25,000,000 descendants in a season, and it is only by systematic attacks on their breeding places that this multitudinous disease carrier can be routed. Recently acquired knowledge as to the part played by flies, mosquitoes, etc., in the transmission of the bacilli of infectious diseases has given the quietus to "Malaria," bad smells, etc., to which cases of infectious disease could always be relegated in the absence of any other known cause.

With regard to suggesting a remedy for this danger, which is ever present during the hot summer months, I would suggest scrupulous cleanliness in streets, houses, and surroundings; acquaint every householder with the danger, and let him make constant war on the intruder, and trust your whole-time Medical Officer of Health to keep such watch and guard, and be ever so active, that our Borough shall be second to none for cleanliness and comparative freedom from the newly-discovered enemy of the race.

Here I will quote what Dr. Archibald writes me about the sanitary state of Luton as he finds it. "The sanitary condition of the Borough of Luton appears to be in a most satisfactory state. The water supply is good and ample. The drainage is well laid out, and the sewers are in good repair. The Sewage Farm is objectionable, the land being "played out," and liable to become sodden and flooded. This, however, will soon be remedied. In the factories, the conditions under which the people work are excellent, and the continued low death-rate speaks for the healthiness of the town."

The four only suspected causes of Typhoid Fever were—(1). *Conditions of the soil.* The endemic character of the disease, especially in rural communities, may be largely due to local soil infection, and it has been shown that the bacilli may live long in sewage-soaked earth. This particular mode of infection is non-proven.

(2). *Butter and Cheese.* It is doubtful if they are ever sources of infection.

(3). *Sewer Air.* It is not proved that the breathing of noxious gases has the power of conveying the disease. We had one case of a scavenger, some years ago, who was taken home ill from the sewers, and who developed Typhoid Fever.

(4). *Fleas.* In an outbreak of "Typhoid" recently at Workington, the Medical Officer of Health, in his report, discusses the conveyance of infection by means of flea-bites. With the advent of the first cases at the Hospital, the Matron was struck with the fact that about 90% of the total number of patients showed evidence of flea-bites, and large numbers of fleas were found on their bodies. The absence of a bacteriological laboratory at Workington prevents this hitherto unrecognised means of personal infection being more than borne in mind. I remember reading some time ago that Typhus, which is one of the most infectious of Fevers, infecting nurses and medical men alike, was in all probability due to fleas passing from the patient to those in close contact. This explains why those were attacked who had been within a very close radius of the patient. No one in the case mentioned was allowed to go near or touch the patient without having on a waterproof and other protective articles.

Even in far-off Colombo, the Medical Officer states that Typhoid Fever, Cholera, and Dysentery may be conveyed by flies, and it is therefore necessary, in order to prevent being infected—(1). To prevent flies from breeding; (2). To prevent such as are bred from becoming infected; (3) To prevent such as have become infected from contaminating food and drink. He says flies feed upon all sorts of foodstuffs, and upon filth generally; they lay their eggs in filth. They prefer to lay them in human excrement, horse and cattle dung, and the droppings of sheep and goats. It takes about nine days for the eggs of a fly to hatch out into a full-grown fly, during which time it passes through four stages. Each fly lays about 120 eggs, so that in a few weeks each fly is capable of producing millions of flies. To prevent flies breeding, no accumulation of filth must be allowed near the dwelling, and drains, privies, &c., kept scrupulously clean. To prevent flies becoming infected, all excreta must be deposited in the night-soil bucket covered with cori fibre, and buckets kept scrupulously clean. All food should be protected in a fly-proof safe or under cover. All milk should be boiled before use, as it may be infected before it reaches the house. All fruit and vegetables should be thoroughly washed before eaten, as they may carry infection on their surface. Only pipe water should be used for household purposes and drinking. Well-water is particularly dangerous. It appears that what is knowledge in Colombo, is still a very debateable matter here.

The *Lancet* stated some little time back that the discovery of the spread of disease by flies is one of the most striking of recent years, opening up an entirely new field of research, and revealing a novel source of danger, suggesting the adoption of prophylactic measures which would have seemed ridiculous only a generation ago. A list of about twenty diseases spread by flies followed. Another article in the *Lancet* gave over two dozen of the principal breeding places for flies in a manufacturing town. I will only mention a few which obtain in Luton. *Refuse heaps and "tips" (of course with our refuse destructor only ancient heaps in existence). *Stables, manure pits. Dairies, cow sheds, cow middens. Milk shops. *Slaughter houses and butchers' shops. Ashpits (no privies or pail closets). Domestic refuse receptacles (movable). Hide and skin broker's yards. *Fried fish and chip shops. Knacker's yards. Marine stores. Confectioner's shops, &c. Fish offal deposited in ashpits. Poulterer's refuse and offal. *Restaurant kitchens and basement cooking places. Any accumulation of decomposable refuse.

*Indicates the worst.

Phthisis.

Forty-three deaths were referred to Phthisis. Of these 14 occurred in the 1st quarter, 5 in the 2nd quarter, 13 in the 3rd quarter, and 11 in the 4th quarter. Five deaths occurred between 5 and 15, 18 between 15 and 25, and 20 from 25 to 65. No death has been registered over 65. Last year I reported that the average number of deaths for the ten previous years was 38·3; the ten prior to that period, 42·7; and that of the previous eight years, of which I had record, 54·5. When we take into consideration the rapid increase of population the last year or two, we may feel very sure that the Phthisis rate is a diminishing one. It will now be my pleasure to point out to you how I think that rate may be still further decreased in the immediate future, the recent Government legislation *re* the Poor Law, tending rapidly to accelerate such decrease.

How does the Bacillus of Tubercle enter the body? By the mouth for the most part; it then penetrates a vulnerable area, thus effecting a lodging within the body. The latest information still teaches that the bacillus passes into the body through the mouth, but several series of ingenious experiments show that the most frequent route by which the bacilli reach the lung is *viâ the intestine*. This is utterly subversive of the teaching of Koch, who taught us to

regard dried expectoration as the most potent danger, and the lung the early destination of its particles. Now, we look upon food and milk as the principal vehicles by which the bacilli reach the intestines: they pass through the mucous membrane of the bowel and the lymphatic glands of the abdomen, and then make their way through the thoracic duct and venous circulation to the smallest blood-vessels of the lungs; here they lodge and begin operations, destined so frequently to be ultimately, after prolonged suffering, fatal.

Modes of Infection.

Through Meat and Milk. Fortunately meat, if properly cooked, is probably quite safe eating. Yet the value and practicability of regular meat inspection is not open to question. The very latest information at our disposal, furnished by the third interim report of the Royal Commission, "banishes even more hopelessly the optimism once based on Koch's contention, that human and bovine tuberculosis were distinct, and mutually incommunicable diseases." Previous reports had proved his theory false, and that a terrible amount of infant mortality was due to the milk of tuberculous cows. The present report shows that the danger is by no means confined to cases in which the cow's udder is itself tuberculous. In some cows, obviously tuberculous without any udder disease, and in others where only the tuberculin test revealed their condition, it was proved, as the result of experiments, that the milk was highly dangerous, being infected either directly, or by the breath of the cows, and the dirt of the cow-shed. Directly the community realises this terrible danger the milk supply will be placed above suspicion, to the immense saving of infant life.

There are many other modes:—Breast-fed children may be infected from their mothers. Infected handkerchiefs may, and frequently do convey it; in poor families one handkerchief does a lot of duty. Of course, they ought never to be used. The infection can be conveyed from parent to child in many ways, such as by food, drinking cups, door-knobs, glasses, towels, etc. Food may be contaminated by the feet and excrement of flies which have previously revelled in sputum. Also, it is stated, by cockroaches and lice. Dogs and cats may infect by bringing in sputum on their feet, and dogs especially by their common dirty habit of licking—especially small children they are fond of. "Whom the gods love die young." This might be one explanation, altering the word "gods" to "dogs."

Inhalation of Expectoration. Inhalation of the fine spray emitted from a consumptive, especially in an advanced stage of the disease, in the act of hawking, speaking loudly, coughing, or sneezing is highly dangerous. Ordinary breathing is not dangerous. Railway carriages, especially third-class smokers, have been credited with conveying infection, and doubtless justly, for the germs of tuberculosis in shoals have been time and again discovered in them. It is satisfactory to know, as I will explain further on, that this source of danger to untold thousands is being vigorously combatted.

Book-licking. People who turn over books and bank notes, and cheques, etc., with a licked finger, at least practice a very dirty habit, which is in all probability dangerous in this connection. The Medical Society of St. Louis has requested the Postmaster-General to take effective measures to protect the public against danger from this practice by those who handle mail matter. The Society desires that stamp-sellers, postmen, clerks, cashiers, sales people, waiters and conductors, addicted to this habit, and who persist in it after warning, should be sacked, as they constitute a menace to the general health. Sanitary and medical condemnation of this beastly practice rests on the fact that the bacteria of many of the most virulent diseases are often abundantly present in the secretions of the human throat and mouth.

Laundries. The enumeration of the above modes of infection makes one almost wonder that Tuberculosis is not even more widespread and fatal than it is. Fortunately, God's fresh air and sunlight, the two great enemies of the

tubercle bacillus, are being more and more thoroughly appreciated and brought to bear upon the enemy's strongly-entrenched position. There has been perhaps a tendency to make too much of the bacillus—the seed—and too little of the soil—the individual. There is no doubt but that a healthy life amid healthy surroundings, raises the tissue resistance of the individual, and makes the attack upon him by the bacillus fail of its purpose. A writer says: "More perhaps than any other single factor, the state of the *dwelling* determines the issue of the conflict between the tubercle bacillus and the human subject. According as the dwelling is wholesome, or the reverse, the onset of the micro-organism is reinforced or impeded. In a room which is unvisited by air and sun the bacillus outside the animal body can survive for long, or even multiply. Tuberculosis is a pestilence that walks in darkness." "Man," he says "is resistant when normal to a moderate degree of infection, but *persons infected* are not normal when their vitality and tissue resistance are depressed by want, or debauchery, by living in rooms which are damp and sunless, and ill-ventilated—in brief, by exposure to that order of conditions which is associated with absence of light and air. Houses which are close set, or built back to back, have a special incidence of consumption. Consumption is not so much a disease of the poor, but the packed. It is by these aids that a natural or hereditary liability to consumption is artificially exaggerated, and that the disease seizes on and gets firm hold of multitudes, who, in better circumstances, would have all their lives remained free from it, or would have overcome it if attacked. The infection is not moderate where a phthisical patient is housed or employed under the above conditions. In a room which is close, either by defect or fixation of windows, bacilli launched by coughing hang thickly in the still air, infective as they hang, or they settle invisibly in the dust of the roof, walls, and floor, and await the opportunity of further mischief. In houses which are damp and dark the organism holds tenaciously to life, and experiment justifies the belief that on the sodden effluvium-tainted wall-paper of damp and crowded rooms the bacillus is not only able to survive, but also to grow and multiply. If promiscuous spitting is practised, the body of infection is rendered massive, and the risk of communicating the disease becomes extreme. *A reinforcement* effect is produced when a person of weak power of resistance is exposed to such a massive charge of infection."

Now, how are we to cope with this redoubtable enemy, and decrease his illimitable power for mischief. The above-quoted writer says that whatever makes for good health is embraced in the term sanitation, as applied to human beings. But the agencies which promote good health in man are exactly those which make for bad health in the Tubercle Bacillus. HUMAN SANITATION IS BACILLARY INSANITATION, BACILLARY SANITATION IS HUMAN INSANITATION The bacillus flourishes in dirt and darkness and foul air. In these conditions man pines and dies. The man thrives and strengthens in cleanliness and sunlight, and pure air, but the bacillus pines and dies. THESE are the principles of Phthisis prevention, It was in making use of such knowledge that the sanitary authorities of Liverpool, formerly one of the most unhealthy cities—if not the most unhealthy—in the Kingdom, set to work to put its house in order, and purge itself of its narrow streets, insanitary rookeries and cellar dwellings, deficient water supply, absence of baths and washing accommodation, absence of hospitals, except those extemporised by the Poor Law for epidemic outbreaks, scavenging by paupers, a complete absence of anything which is to-day regarded as essential in sanitary administration, such as the supervision of food supply, prevention of overcrowding in lodgings and other houses, disinfection, control of workshops and offensive trades, and a host of other things which now form the basis of administrative measures.

Open-Air Schools are, in my opinion, one of the best means at our command for prevention of the disease, for I maintain that we ought to go in strongly for nothing short of *prevention*, which is always better than cure, and especially the so-called cure of consumption. In these cases the disease has fastened

itself on the individual, and is SUPPOSED to be finally arrested. If we want to save the lower classes from consumption we ought to begin with the delicate child, delicate from birth, or by environment, etc., after birth. Such children should not be taught in ordinary schools exposed to every infectious disease, and from their very delicacy only too likely to contract it, and thus still further lower their vital resistance, so that if there happens to be a case of Phthisis in their own homes, the soil being so ripe for it, the seed of tubercular disease is sown with a dead certainty. No delicate child ought on any account to be sent to an ordinary elementary school under five years, until proper open-air school accommodation is provided, *unless* Dr. Archibald, in our Borough, finds the child's home to be of such a character that the risk of attendance at school would be far preferable. The delicate children for whom open-air school treatment would be suitable would, it is to be hoped, convert their parents, so that they may see the advantage of, and practise the introduction of fresh air into their homes, not only in the day, but in the night, when so much mischief can be done, and so much good done in the day to the children be undone. Thus we might reasonably expect these delicate children to so improve in health that the soil would no longer almost invite the bacillus to settle down, but the children would become quite resistent to its malign influence. Who could estimate, if this policy were carried out all over the kingdom, how much suffering would be saved the children, how much distress, grief and expense the parents, and how much gain would accrue to the community generally, for each sound life has a certain value and consequent profit to the nation. Then, delicate children have in the past, and perhaps in a somewhat lesser degree now, been the recruiting ground, when surviving to adult age, for paupers. Paupers often become permanent burdens to the community, so that instead of the delicate child becoming sound and well, and a source of profit, he becomes a source of permanent loss to the community, and becoming possibly phthisical has a way of increasing the population often above the average rate, and so perpetuating in a vicious circle this unhappy state of things so much to be deplored, so preventable, but unhappily not prevented. Think, too, of the amount of infection conveyed to and infecting others, and quite unnecessarily. The experiment of open-air schools by the London County Council has been so successful that half-a-dozen more are to be established. The results of the experiment were simply wonderful. Boys and girls wasted and ill-looking were transformed in three months into bright, healthy-looking children. Photos showing their bodily condition on admission to the school and at the end of the school term showed that fresh air, well directed exercise and rest, and good food, will transform sickly-looking children into bright and healthy beings, so changed in fact, that parents and friends could hardly believe that fresh air and good food could do so much. Until now we have been in the habit of beginning at the wrong end, and have so frequently shut the door when the horse has been stolen. We are indebted to Germany, as for so much else, for this glorious idea of Open Air Schools.

Sanatorium Provision. For the last year or two I have advocated some sanatorium provision, not for Luton only but for the whole County, such provision to be furnished by the Bedfordshire County Council. So far the matter has not been taken up and my Committee has up to the present turned a deaf ear. It is rather too early even now to give any definite and satisfactory results of Sanatorium treatment. The results of some are stated to be very good. In one of them it is reported that in the four years ending August, 1903, 150 patients were treated; of these, 78, or about 51% were restored to health and were following their occupations at the end of 1907. Many individuals made too short a stay and for one cause or another gave up the treatment, whereas cases in a later stage than the former persevered two or three winters and did very well.

Apart from results achieved by a long stay at a Sanatorium, we have to consider the result to those whose stay can only be long enough to be of an

educational value. Here we seem to stand more on *terra firma*. Individuals who have been to a Sanatorium in a fairly early stage, and who, after a residence of a few months, return to their homes greatly benefited, become at once apostles of pure air to all with whom they come in contact. They are not afraid of draughts, but court them: they can go out of doors without a hat without "catching cold": they do not hang over fires, but day and night invite into their rooms heaven's pure air, and are completely happy if at night when, lying upon their beds, they can view the stars. Their relatives and friends are proud of them, and by degrees emulate their example. Open-air men and women bring up open-air children, for whom open-air has no terrors: these grow up strong and well, and are almost strangers to colds.

The word Sanatorium ought to become synonymous in the minds of everybody with open-air. The Sanatorium movement has already revolutionised public opinion with regard to the value of fresh air nd the relation it bears to good health. It has given an impetus to municipal .eform. Garden cities are springing up. Recreation grounds and parks are regarded as public necessities. Schools, partly through its influence, are being better ventilated, and *public buildings and churches will have to follow suit.* Slums, rookeries, and low-class properties are more than ever looked upon with an eye to their early disappearance, and everywhere the desire is to let in heaven's pure air and sunshine, not only to the dark spots of our land, but even in mansions, from which they had formerly been rigorously excluded.

Infirmaries. If no other provision be made for advanced cases of Phthisis, a couple of wards for male and female patients ought, in my opinion, to be set apart in every Infirmary. If such provision were made, we should at once strike a heavy blow at one of the most potent means of disseminating the disease. The compulsory notification of all cases of pulmonary tuberculosis coming within the official purview of the Poor Law Authorities is a first step in the right direction, and there is said to be good ground for the confident claim that, now, for a mere trifle, the "white scourge," or, as John Bunyan called it all those years ago, "the Captain of the Kings of Death," will be in time effectually checked. The disease causes 60,000 deaths annually in England and Wales alone. Already, a great number of cases come under the care of the authorities. In London between 32% and 35% of all deaths from Phthisis occur in the Poor Law infirmaries; in Brighton about 20%,; in Salford and Sheffield about 25%; for the country as a whole only about one-fifth or one-sixth. It is estimated that about 33⅓% of all fatal cases in the country are treated either as indoor or outdoor patients. It certainly looks as if there were a better time coming. May Providence stir us all up to hasten it!

Abattoirs. Some few years ago I commented upon this subject, and came to the conclusion that a public abattoir was not one of our local needs. But I am beginning to have my doubts, and especially when I consider that during the year not a single carcase came under my notice for condemnation for tuberculosis.

The total of bovines in Great Britain in June, 1906, amounted to 7,010,856 animals, including 2,738,411 cows and heifers in milk or in-calf. It has been stated that it is impossible to fix definitely the number of those diseased, for it is only fair to state that cows, which, because of their maternity and milk-giving, are much more infected with tubercle than are oxen. In Edinburgh, in a public abattoir—no private slaughter houses are permitted—the 1906 report states, "The number of cows slaughtered during the year was 257. Out of this number, 31 were condemned for tuberculosis, being a percentage of 12·062." Twelve animals out of every 100 cows offered for slaughter affected with such a malignant disease is fearful to contemplate. In Edinburgh, all animals with localised as well as with general tubercle are condemned. In England the practise, absurd the writer calls it, of passing animals as fit for food when they have tubercular disease affecting the glandular system, is encouraged by the permission (unwise?) of the Local Government Board's recommendations.

Consequently only about 4% are condemned in England, so that presumably the other 8% of more or less tuberculous animals are sold and eaten.

Pigs are also afflicted with Tuberculosis. There were in Great Britain, in June 1906, 2,323,461 swine. Dr. Buchanan's report to Government in 1906, with regard to tubercular pigs, shows that the abattoir is essential to get correct information and for preventing the sale of diseased meat that ought to be condemned and destroyed. The report shows that in Glasgow (abattoir and no private slaughter-houses) under a system of veterinary inspection of its public abattoirs the proportion of pigs found affected by tubercular disease amounted to 4·24%, whilst at other places in England, where private slaughter-houses exist, we find 1% and 1½% only condemned. Thus 3% more animals are reported diseased in a city which has a civic abattoir than in those with private slaughter-houses. Three per cent. shows 69,702 pigs to be affected in England with tubercular germs. This is said to be a depth of insanitation unreasonable to contemplate or permit, and done under law and so-called government.

Public abattoirs ought to be the sieve through which diseased food cannot pass to the consumer. Private slaughter-houses afford opportunities for surreptitious strippings of tuberculous pleuræ, for "faking" diseased meat, and for dealing with "fallen" or diseased food animals—animals killed to prevent them dying. These slaugher-houses are often dark and dirty, and ill-adapted for the purpose, and often cramped and cruel to the animal waiting to be slaughtered.

The authority whose useful information I have utilised, makes seven recommendations, after stating that the law must be altered:—

1. The compulsory erection and use of public abattoirs in every town and village.
2. Suppression of private slaughter-houses.
3. To amend the permissive recommendations, which permit the flesh of animals to be utilised suffering from localised tuberculosis, and stringent penal clauses substituted prohibiting the sale of any part of an animal when once the glandular system is affected.
4. Provision to tabulate all animals used as food or as milk providers, so that they may be traced back to their breeding herds and to their grazing farms.
5. The records of all breeding and grazing farms, and of all slaughtered animals to be compulsorily tabulated and reported to a Central Government Authority, and with their places of breeding or grazing, so that steps may be taken to obliterate the sources and spread of such disease.
6. That as the transmission of tubercle, bovine or human, is now placed beyond suspicion (Royal Commission, 1907) it is imperative that the Government should, at the national cost, take steps to stamp out animals infected with tubercle, and that in the effort to wipe out the dire disease of consumption a law should be enacted for reasonable compensation to owners for such destruction of tubercular animals living or dead.
7. Most important of all, a Minister of Public Health should be appointed who should be in the Cabinet, so as to regulate, co-ordinate. and watch these and all other matters relative to the preservation of the public health—to the fullest extent.

Notification may be voluntary or compulsory. Notification is now obligatory upon Poor Law Officers to the great satisfaction of those of us who are, or who have been specially concerned with public health matters. This subject will be alluded to further on in the Report. Voluntary Notification obtains in many districts and has no doubt proved useful. It is quite probable that the step taken by the Board goes as far on the way of compulsion as the country would willingly endorse at present. When the general public has been educated a little more on the subject, general compulsory notification will probably follow as a matter of course.

Railway Sanitation. It is essential that in endeavouring to remove all known causes of the transmission of tuberculosis that railway carriages should come in for their full share of attention. Take a third-class smoking carriage,

the worst specimen of its kind, and imagine ten people boxed up from London to Edinburgh, on a cold day, with shut windows, and expectoration of a specific character on the floor, some recent and moist, and some in the form of fine dust. Is it possible to imagine a more dangerous state of things, not only to the individual whose soil may be above suspicion, but to one whose soil is so bad that it is only waiting to be invaded by disease germs of any kind, and on whom the bacilli of tubercle, if present, must necessarily fasten, perhaps never to relax their grip. The *Sanitary Record* states that the railway carriage microbe has had its day. Almost unchecked he has gambolled on the cushions year after year, but the advent of a new mechanical cleaner has sealed its doom. Several leading railway companies are employing this ruthless microbe dispatcher. It is a modification of the ordinary vacuum cleaner, but it is very powerful: it is passed slowly over the cushions, and as it moves draws out every particle of dust from the horsehair and brings the microbes along with it. In a single day it has extracted as much as a bucket and a half of fine dust from the cushions: it has taken the place of the beaters, who would, without respirators, have nearly been choked with the dust. Third-class carriages have to be cleaned three times as often as first or second-class ones. Each machine costs over £400, but the trains are practically "microbeless."

The Milk Problem. This enters largely into the endeavour to reduce the Phthisis mortality, and it will soon have to be tackled in a most thorough manner, even though the price of milk is affected thereby. I will allude further to this subject later on.

Laundry Workers. It would seem essential that there should be a severe penalty for anyone sending infected clothes to a laundry, without giving notice, and without having previously subjected them to treatment by some special disinfectant. The infection, as I have said before, apparently occurs from the laundresses inhaling dust in a dry state laden with the bacillus. Here, again, we may make the trite observation—preventable, why not prevented!

The General Policy of Prevention. The Sanitary Committee of our Borough Corporation, through their Medical Officer of Health, can effect much directly and indirectly. By improving the living condition of the people, by better housing, if necessary, or what in Luton may be quite sufficient, endeavour to make them more cleanly in their persons and surroundings. A pure water supply we possess; but a purer milk supply and unadulterated food come within their province. It is their duty to do everything which lies in their power to advance the public health. Disinfection after death is always effected, but it may well be desirable to disinfect occasionally a room or rooms inhabited by a phthisical subject. The dryness of the subsoil, to which I have always largely attributed our decreased mortality from phthisis in recent years, ought ever to be their great concern. Good drainage should be furthered, for bad drainage lowers individual tone and plays into the hands of the bacillus. The necessity for the sanitary construction of houses and workshops stands to reason, and more especially of schools, where so much highly susceptible juvenile life is gathered together, and exposed to every infection, whether of an epidemic or endemic character—endemic like phthisis. I am afraid the proper control of tuberculous meat and milk is at present a counsel of perfection, as far as Luton is concerned. A supply of milk jealously guarded from contamination from the cow to the consumer—and the poor or rather dirty consumer, well kept under observation, is the thing to be aimed at, and as regards the cows themselves, not one of them ought to be tuberculous, for the Tuberculin test ought to have disposed of them, with proper compensation to the owners. With regard to meat, a public abattoir, where all the meat consumed in the Borough would come under skilled inspection, would again probably be a counsel of perfection, and in the absence of it the inspection of private slaughter houses should be frequent and *unexpected*. But here, again, if all beasts and pigs were subjected to the Tuberculin test, possibly an abattoir would not be called for. Further, the Committee should do everything in their power, by lectures

and frequent visits of Inspectors, Health Visitor, and School Nurse, to dissipate ignorance and inform the mind, not only of those who really desire information, but of those who never trouble about such matters. Water will in time wear away a stone, and by steady perseverance in well-doing, much, and very much, may be accomplished.

The recently-instituted Poor Law action with regard to Phthisis has, among other advantages, that it makes two bodies, the Poor Law and the Sanitary Committee of the Town Council, work together in harmony for one great beneficent end.

If the Committee will authorise their Medical Officer to examine samples of sputum, it will be of great service to the busy general practitioner, and of great service to the public health, for when the bacillus is found in the sputum, the danger to the public of infection more especially begins, and the Health Officer must be on the alert to proffer useful advice, both to help the individual and to safeguard the public. For the patient the bacillus indicates the necessity for treatment, and to the friends it ought to indicate the necessity of looking out for themselves, and taking the fullest precautions to that end.

Whether you will some day go in for general notification of cases of Phthisis, is a matter for the future to decide; probably you will when the public are better informed on the subject. You will, doubtless, supply portable spit-bottles for out-of-door use to those unable to procure them, and this will be an outlay which will repay you over and over again. It is essential that the sputum should not be allowed to dry, and that after it is received into the receptacle it should be burned, buried, or poured into a drain. The receptacle should be scalded with boiling water twice a day, and lined with paper, which should be removed many times a day, and the contents with the paper thrown into the fire. Spitting promiscuously must be rigorously interdicted. If sputum remain moist, it cannot become dust, and so infect the air. Handkerchiefs should be avoided, and everything relating to this and kindred subjects should be issued to the public in printed leaflets in the most popular language at the command of the Medical Officer.

The risk to young children in consumptive houses should ever be borne in mind, for they play about on the floors, and not only inhale the dust, but take it into their mouths on their fingers. Children often crawl on the floor with eatables in their hands, and it may well be that dust mingles with the buttered bread and enters the stomach with it, and, passing later into the bowel, sets up glandular mischief, &c., which bears fruit in Tubercular Phthisis—after *many* days. Insist, in season and out of season, on fresh air and bright sunshine—on the open window night and day, and the passing of as many hours as possible in the open-air. By these means "colds" will be avoided, not *induced*, as is still the popular belief of the ignorant and the coddlers. Overcrowding, *whether of one family* or more in a house, must never be allowed, and whether in a house or a workshop. I believe most thoroughly in whitewashing the houses of the poor very frequently: if the house is properly whitewashed it is comparatively bright, and then other things have a happier way of being kept bright and clean too. A house with a dark and dirty ceiling gives a bad tone to a room, and tends to depress the energies of the occupants, who then have no inducement to cleanliness in other directions.

Last year an International Congress on Tuberculosis was held in Washington, and was attended by representatives of almost all civilised peoples, as the problem of Tuberculosis has aroused world-wide interest. Over 6,000 members registered, and thirty-three nations attended officially.

The resolutions included, said Dr. Philip, insistence on compulsory notification, so that health authorities may be enabled to put in operation adequate measures for prevention. Notification *not to be delayed* until the health authorities have made provision for treatment. The resolutions insisted on precautionary measures against the conveyance of infection from man to man, and from animal to man, the provision of dispensaries as centres of anti-tuberculosis

operations, the establishment of sanatoriums for the treatment of curable cases, and of hospitals for the segregation of advanced cases. In addition, the resolutions emphasised the value of larger hygienic measures for insuring sanitation in dwellings, factories, workshops, schools, colleges and universities. Koch maintained his ground against an increasing number of critics. There was too, a juster appraisement of the specific value of tuberculin both in the diagnosis and treatment of tuberculosis.

Professor Dr. G. Pennwitz considered Koch's standpoint, with reference to the isolation of patients afflicted with open tuberculosis, of special importance, viz: that at the present state of propogation of tuberculosis he does not consider it possible to lodge all cases in institutions, and that consequently, the segregation of such patients within their family must be brought about by providing suitable dwellings for them. This standpoint is in keeping he says with the practical circumstances of the present time, and will perhaps also assist in removing the hidden opposition which undoubtedly still exists among practical physicians against the modern anti-tuberculosis campaign. For the further study of milk supply a commission was appointed with the right of co-optation. The restriction of disposition will be assisted by the resolutions passed at the Congress with reference to the establishment of health stations (day camps), the regulation of factory work, especially in the case of women and children, the improvement of dwellings, the encouragement of sport, exercise and outdoor games.

Now comes the most interesting question: Is our country ahead in the crusade for the abolition of tuberculosis? Is it possible that we, who have been the pioneers in nearly all sanitary reforms, are somewhat behind in this all-important fight with the arch enemy? If anyone takes the trouble to see what has been done and is doing in America he must come to the conclusion that our seat is most certainly a back one. Of coursé one might say: that may well be, the Americans are of our own stock, and more go-ahead. I will therefore give you a few particulars as to what has been done, or suggested, in Sweden, France, and Finland, and it will be seen how much greater grasp and initiative those countries not only seem to have, but have in reality, on this great Tuberculosis question. Sweden, for instance, has Public Sanatoria, a Tuberculosis museum, a National Anti-Tuberculosis Association, lecturer on Tuberculosis in connection with the Association, scholarships (six) to encourage doctors to study the disease scientifically at the Public Sanatoria, homes for consumptives, a Parliamentary Committee on Tuberculosis (1905), which goes to the root of things and is not concerned, like our Local Government Board, with a number of diseases, but gives its whole attention to one particular disease; Anti-Tuberculosis Dispensaries, protection of the children of consumptives, social hygienic experiments, dwellings for consumptive workmen, Anti-Tuberculosis work in the country districts, Anti-Tuberculosis stamps, private Sanatoria for consumptives. In France they also appear much ahead of us in many ways. I give just a few. Meat and milk are zealously guarded, and every cow suspected of Tuberculosis is tested with tuberculin and destroyed, if result show it to be necessary, and the owner is compensated. Sanatoria for poor adults are erected, also for the children of the poor, popular *Marine* Sanatoria for children and adolescents (22 in all), Agricultural Colonies for tubercular convalescents, Rural School Colonies, and Dispensaries for the tubercular. In 1898 the Finnish Government appointed a Commission to suggest measures for the prevention and arrest of Tuberculosis. Owing, unfortunately, to the Russian interregnum (1899 to 1906) most of the efforts were more or less arrested. Recently, much activity has been manifested. It is refreshing to enumerate the full suggestions which were proposed in 1905 to be carried out:—

(1) Provision of means for the protection of children from Tuberculous infection.

(2) The protection of school-children from mental over-exertion, and the encouragement of physical training.

(3) Provision for suitable treatment of all affected children.

(4) The prevention of overcrowding in dwellings and the establishment of hygienic houses.

(5) The regulation of factories and workshops.

(6) The promotion of instruction concerning Anti-Tuberculous measures.

(7) The preparation of special legislative enactments concerning Tuberculosis.

(8) The establishment of Sanatoria for scrofulous children and for Tuberculous patients.

(9) The construction of separate wards for Tuberculous patients in all public hospitals.

(10) The founding of nursing homes for Tuberculous patients in the various parishes.

(11) The establishment of holiday camps.

A special Commission had previously dealt with Bovine Tuberculosis and measures against infection by milk and food.

When we read the above, and remember that these measures are proposed, not in progressive *England*, but in Finland, belonging to *Russia*, we must feel amazed. Let us in Luton ask ourselves, except for measure 5, where we come in with the above measures ; and the answer must be, almost nowhere. Besides disinfecting houses *after death*, and circulating pamphlets some time back, nothing has been done in this direction. This year, under the new Act, pauper cases will receive some consideration, and Dr. Archibald is prepared to examine expectoration sent to him in the belief that it is tuberculous.

Sanatoriums. It is even now too early to give any satisfactory and definite results of Sanatorium treatment. The results of some are alleged to be very good. In one instance, in the four years ending August, 1903, 150 patients were treated ; of these 78, or 51%, were restored to health, and were following their occupations at the end of 1907. Many patients make too short a stay, and for one cause or another give up treatment ; whereas cases in a later stage, who have persevered for one or two winters, have done well.

Apart from results achieved by long stay at Sanatoriums, we have to consider the result to those whose stay can only really be of an educational character. Here we have nothing but praise to offer. Any individual who has been to a Sanatorium in an early stage, and who, after a residence of a few months, returns to his home greatly benefitted, becomes at once an apostle of pure air to all with whom he comes in contact. HE is not afraid of a draught, but courts it ; HE can go out of doors without a hat without suffering ; HE does not hang over fires, but night and day invites into his room heaven's pure air, and is happy, if at night, when lying on his bed, he can see and count the stars. His relatives and friends are proud of him ; they, by degrees, emulate his example. Open-air men and women bring up open-air children, who are brought up to rough it as regards the admission of fresh air, and consequently, growing up strong and well, are almost strangers to colds and the evil effects of "catching" cold. The word, Sanatorium, ought to become synonymous in the minds of everybody with open-air. The Sanitorium movement has already revolutionised ideas with regard to fresh air and health resulting from it. It has given an impetus to Municipal Reform, providing garden cities, recreation grounds and parks, and more extensive school play-grounds. Schools, through its influence, are becoming better ventilated, and public buildings and churches will soon have to follow suit. Slums and rookeries are more than ever looked upon with an eager eye to their demolition, and everywhere the desire is to let in heaven's pure air and sunshine, not only to the dark places of our land, but even into mansions from which formerly they had been rigorously excluded.

At my request, Dr. Archibald has written me on the subject of hospital accommodation for advanced cases of Phthisis. "Supposing," he says, "it were provided (either by the Borough, or more probably, by the County) would it serve its purpose? Remember: 1st, home ties; 2nd, spes Phthisica—

patients always thinking of betterment; 3rd, people like to die at home; 4th, the general hopelessness of these hospitals. Some would gladly enter, but the majority would decline. Poor Law Regulations are in the right direction, and soon County Councils will follow."

Public Health (Tuberculosis) Regulations, 1908.

Under section 130 of the Public Health Act, 1875, as amended by the Public Health Act, 1896, the Local Government Board are empowered to make and to provide for the execution of Regulations for preventing the spread of endemic or infectious diseases. Accordingly, as Pulmonary Tuberculosis is an endemic and infectious disease, the Board have drafted the above Regulations, the salient points of which are as follows:—

1. They shall come into operation on 1st January, 1909; shall have effect throughout England and Wales, and shall be executed by every Council, every Board of Guardians, every Joint Committee, and every Board of Managers.

2. PROCEDURE. (*a*) All Boards of Guardians must provide and supply to their Officers a sufficient supply of printed copies of each of the forms A, B, C, D, and E, set down in the schedule. Each form has its own special use.

(*b*) These must be forwarded, duly filled in, within 48 hours, to the Medical Officer of Health for the district, and the notification *must* be on the printed form.

3. The Notifications apply only to pauper patients who may either be:

(*a*) Inmates of a Poor Law Institution;

(*b*) Any poor person on whom the District Medical Officer is attending according to his agreement with the Board of Guardians.

4. Superintending Officers of Poor Law Institutions must inform the Medical Officer of Health of the actual or intended address of any person so suffering, who is leaving the Institution, and who has already been notified to the Medical Officer of Health. Relieving Officers must also notify changes of address of pauper patients. Both the above must be made within 48 hours.

5. REMUNERATION. (*a*) Poor Law Medical Officers and District Medical Officers receive 1/- for each notification, but where any one case is notified for a second or third time, the rate shall be 6d. for each after the first.

(*b*) Superintendents of Poor Law Institutions and Relieving Officers receive 3d. for each notification.

(*c*) The Remuneration is payable by the Council of the District for which the Medical Officer of Health acts.

N.B.—It is clearly stated that nothing in the Regulations shall have effect so as to apply or to authorize any one to restrict any person notified, or to interfere in any way with his employment, means of livelihood, &c., &c.

6. PRECAUTIONS. Under Article IXa of the Order, any Council, acting on the advice of its Medical Officer of Health, may, for the purpose of preventing the spread of Tuberculosis:

(*a*) Take such measures, or do all such things as are authorized in any case of infectious disease.

(*b*) Take measures for the disposal or destruction of infectious discharges, spit, &c.

(*c*) Afford or supply all facilities, or articles, to obviate or diminish the risk of infection.

(*d*) Supply any apparatus or utensil to assist in precautionary measures.

(*e*) Publish placards, handbills, &c., giving summaries of information and instruction respecting Pulmonary Tuberculosis.

The other Articles of the Order refer to the expenses incurred by Boards of Guardians, the dealing with appeals by the Local Government Board, and other matters which call for no comment here.

Up till 17th January, 1909, six cases have been notified to the Medical Officer of Health of the Borough by District Medical Officers.

Infant Mortality.

There were 152 deaths of infants under one registered during the year, equal to an annual rate of 117·6 deaths per 1000 births. This rate was once lower, viz: in 1907, when it was 104·3, the lowest rate in our Luton records.

I mentioned last year that from 1893 to 1899, both inclusive, there was an average of 164·4 whereas from 1900 to 1906 the average was only 131·3. I did not include 1907 because it is unusually favourable. The average for the five years ended 1908 is 122·1 and for the five years ended 1903 is 140·9. Satisfactory as is this result it would be much more so if we compare with earlier years. This I will hope to do in my 30 years' review. There were 36 deaths in the 1st quarter, 29 in the 2nd, 40 in the 3rd, and 47 in the 4th quarter, or 152 in all.

In the 1st quarter *11 deaths were referred to premature birth*, 7 to wasting, 3 to convulsions and 4 to bronchitis, or 25 out of 36.

In the 2nd quarter *13 were referred to premature birth*, and 4 to bronchitis or 17 out of 29.

In the 3rd quarter *11 were referred to premature birth*, 5 to epidemic diarrhœa, 2 to enteritis, 2 to wasting, 4 to convulsions, or 24 out of 40.

In the 4th quarter *12 were referred to premature birth*, 8 to epidemic diarrhœa, 4 to enteritis, 6 to bronchitis, 3 to wasting, 6 to convulsions, a total of 39 out of 47.

Premature Birth was therefore accountable for no fewer than 47 deaths out of 152 or nearly *one-third* of the whole. I think this large mortality from such a cause will be quite an eye-opener. Under the head of the declining birth-rate I have gone rather thoroughly into this unsavoury subject, which is one that requires most urgent consideration. If we sum up the deaths from this cause with those from wasting diseases and convulsions we arrive at a total of 74 deaths out of 152, equal to one half save four. *These* are among the preventable deaths and it ought to be our most earnest endeavour to prevent them. For the whole year, in addition to those above mentioned and among others, 13 were referred to epidemic diarrhœa, 7 to enteritis, 16 to bronchitis, 2 to whooping cough, and 29 tabulated as "all other diseases."

The causes of Infant Mortality are many. Among others it has been ascribed to the following:—

1. Improper Feeding.
2. Insanitary conditions.
3. Meteorological causes.
4. Ignorance of mothers as to tending and caring for their children, often combined with administration of drugs such as paregoric, in complete ignorance may be of their injurious effects.
5. Use of abortifacients causing still and premature births.
6. Non-attendance at confinements of Medical men or even properly qualified midwives.
7. Overlaying.
8. Mothers working in rooms during pregnancy and up to the last moment before confinement.
9. Infant Insurance.

(1) *Improper Feeding.* Proper feeding is undoubtedly breast feeding, therefore all other modes may be said to be improper. Artificial feeding for at least eight months in the year may induce rickets, wasting, &c., but is is only in the hot summer and autumn months, perhaps four in all, that improper mixtures of artificial foods appear to be deadly in their results. The mere chemical composition of the food is not the cause of the diarrhœa mortality. The Medical Officer of Health for Coventry says we must look further for the explanation. It lies, he says, in the different bacterial composition of the food! In cool weather the growth of bacteria in milk is inhibited: milk is a medium in which, immediately on exposure to air bacteria rapidly multiply: all the cow's milk

sold, except when sterilised and sold in bottles, contains large numbers of bacteria, mostly harmless fortunately. When, however, the milk is impregnated with a harmful form of bacillus, say by a fly off a manure heap, then the danger arises; in the winter flies are practically absent, they are met with in the summer, and wherever decomposable animal or vegetable matter abounds, there they multiply. Infants are peculiarly susceptible to the form of bacterial poison conveyed in this way: and as those artificially fed are fed on milk, or combination of milk with other things, in which the bacteria thrive when the milk is warm, it is the artificially fed who suffer.

The foregoing shows that if we would successfully combat disease among infants we must reduce to the smallest limits the number of those who are artificially fed, and for these the provision of a bacterially pure food is essential. In Paris women are fed at different stations, as it is considered that if they are well fed before the birth of a child they will be much more likely to suckle their infants. Municipalisation of the milk supply looms before us in the future, unless private enterprise wakes up and does the absolutely essential. If farmers would only co-operate, as they are talking of doing in Bedfordshire, they ought to go in for model cowhouses and supply milk above suspicion. The disappearance of the middle man would help on matters.

(2) *Insanitary Conditions.* Many authorities have denied that insanitary conditions affect the infant mortality from diarrhœa. I can quite understand from my own experience this difference of opinion. In Luton we have always been fairly alive to the advisability of the expeditious removal of ashes and refuse, and before the advent of the Destructor they were tipped fairly on the outskirts of the borough. Under the heading of Diarrhœa I have already shown how such tippings caused a severe epidemic of diarrhœa in Coventry where the town grew up to the tipping place and no destructor has been provided. The merit of your foresight in this direction in providing a destructor becomes very apparent.

(3) *Meteorological Conditions.* It has been consistently stated and concluded that the summer rise in the diarrhœa death-rate only commences when the mean temperature of the 4ft. soil-thermometer has reached 56° F. This has recently, I believe, been contested. Short spells of hot weather which do not raise the soil temperature to 56° F usually are insufficient to set diarrhœa going. This subject is further considered under the heading of Diarrhœa. Diarrhœa and Infant Mortality are so closely connected that one can hardly consider the one without the other.

Unseasonable weather is, in my opinion of many years, as a rule, healthy, *i.e.*, weather warm when you would ordinarily expect it to be cold, and cool when you might expect it to be hot. A green Christmas *does not* make a fat kirkyard. It is in all probability conjunction of hot soil, deficient rainfall, sanitary defects, and abundance of flies, which together set going an epidemic of diarrhœa.

(4) *Ignorance of Mothers.* This ignorance, which accounts for so many infant deaths, we hope to combat by the means of the Health Visitor and School Nurse. Poor people have usually quite as much love for their offspring as the more well-to-do, but they are sadly handicapped by their ignorance of what to do and how to do it, and often by the urgent necessity of earning their daily bread. Let those who run them down go through half the hardships which poor mothers do, and they would soon change their tune. "Put yourself in their place" is an appropriate maxim. The abuse of Paregoric, Soothing Syrups, and giving a diet suited for an adult, are illustrative examples of the result of ignorance.

(5) *Use of Abortifacients.* These act by bringing children prematurely into the world and frequently still-born. This subject has been alluded to under declining population.

(6) It has been more than ever the fashion, I believe, to dispense with

medical men and to entrust useful lives to nurses undeserving of such trust. Recent legislation ought to cut at the root of this evil.

(7) *Overlaying.* A number of deaths are thus accounted for annually, and will be until it is a criminal offence for mothers not to have a separate cot for their infants.

(8) Mothers working in rooms during pregnancy and often up to the last moment before the confinement. In some manufacturing towns this state of things obtains to a very large degree. To this may be added the return to work soon after the confinement, leaving the baby to the tender mercies of an older child, or putting it out for the day, &c. I have not so far alluded to the use of the long tube often improperly cleaned, &c.: these tubes are forbidden by law in Germany. The common use of the so-called "comforter" induces belly-ache as one of its least evils.

(9) *Infant Insurance.* I cannot speak upon this point with any certainty, and have not come across any cases in Luton in 30 years bearing directly upon this point. In one single instance I remember bringing Milton to my aid in a case where the mother's tears seem to dry up too quickly, and I suspected the insurance money was a welcome solatium. I quoted "some natural tears she shed, but wiped them soon." I may have been mistaken.

Dr. Davies, of Bristol, by comparing the Infant Mortality statistics of Bristol with those of Huddersfield, maintains that the great improvement upon which Huddersfield rather plumes herself is very possibly fallacious. Both are industrial centres, and one would naturally expect a higher mortality in Bristol with an estimated population of 367,967, than in Huddersfield with only 94,814. In Huddersfield there was a reduction of 18% against one of 15% in Bristol. The years under review were 1905-6-7. Dr. Davies adds "an improvement in Huddersfield, probably represented by the slight difference between their figures and those of Bristol, may be due to the special measures adopted there, and it is worth some labour even to secure even small results in the matter of Infant Mortality. There is no advantage, however, in deceiving ourselves as to the extent of the improvement. It seems to me that the slight difference in favour of Huddersfield may very probably be accounted for by the larger size and age of Bristol, with naturally much more slum property in proportion. We will now see what steps have been taken in other places with the object of reducing Infant Mortality.

In St. Pancras the Medical Officer of Health's action has been based upon the physiological law that infant life is dependent upon the mother from 9 months before birth until 9 months after birth, and she has been made the centre round which all the agencies revolve for the protection and preservation of the health of both mother and infant. Special advice has been sent to the mother of every infant born, and personal visits made at the home. The St. Pancras Mothers' and Infants' Society, on the lines of one at Ghent in Belgium, has as its main idea to teach maternal duties to every mother in as practical a way as possible. Expectant mothers are provided with a wholesome mid-day meal (1½d. cost), only remitted after close enquiry. The dinners are utilised as object lessons in the economic provision and preparation of nourishing food. A provident maternity club provides special advantages for those who join early in pregnancy. Infant consultations and fortnightly weighings give the opportunity for personal instruction in elementary infant hygiene. Practical lessons in the washing and clothing of infants, and other useful and economic hints, *e.g.*, the use of a banana crate as a cradle, bring the lady voluntary helpers into frequent sympathetic touch with mothers. It is too early to give results but they must be good.

In the Huddersfield scheme the principle is "Help the mother to nurse her infant in her own home." This scheme is not so complete as at St. Pancras, where the mother's education begins before the birth of her child. Compulsory notification of births in 48 hours is in operation, the result of special Act (1906).

The home is visited by a lady Assistant Medical Officer of Health, advice is given, and appropriate action taken where necessary. Later visits are paid when necessary. A Voluntary Association has been formed, the Borough divided into separate districts. About 150 births per annum is about the approximate number for each district. Over each district a lady superintendent is appointed with lady helpers under her, varying in number according to the number of babies likely to be born. No one lady helper should have more than 15 to 20 babies on her list. No dole is given in any form.

The Staffordshire County Council. The Medical Officer of Health says it is hopeless to educate the present race of mothers. He, however, thinks the operation of the Midwives Act may do some good in this direction, for a midwife has a great influence over mothers, and sound advice given during early weeks of a child's life is calculated to do good. He states, and with this I thoroughly agree, that "No real headway will be made until the rising generation of *both* sexes are systematically taught health principles at school." Educate, he says, the teachers that they in turn may educate. This is attacking the problems by quite other methods than those of St. Pancras and Huddersfield. In the last two years (1905-6) Miss Curwen has been engaged by the Education Committee in conducting classes in practical hygiene for the school teachers: the work has been very satisfactory.

Birmingham. In December, 1907, funds were raised to help the Birmingham Infants' Health Society further in their beneficent work of dealing with some of the causes of the high rate of infant mortality persisting in some parts of Birmingham. Infant consultations were held weekly by the honorary physicians of the Society. Medical treatment is not given, only advice upon infant rearing. Cases of illness are referred to medical agencies. Also a staff of efficient voluntary lady workers will visit regularly in the district, to watch and report upon the progress of the children. Weekly "At Homes" were proposed for newly-married women and mothers with children, talks on health, and instructions in sewing, cooking, home nursing, &c., taking place.

Paisley. The Medical Officer of Health, in his Annual Report for 1907, says that fully one-third of the deaths under one year could be prevented, and are due to the ignorance of mothers of infants and domestic hygiene, resulting chiefly in improper feeding and unsuitable clothing. He proposes to educate the mothers by constant visits of competent and sympathetic lady visitors, who will visit at intervals houses where a birth has occurred, and give advice and instruction in the feeding and care of infants. We must, too, he says, educate those who are to be future parents. All girls should be well trained in domestic economy and hygiene. (Note.—One Medical Officer of Health suggests girls should be 16 to 17). "It is easier," he says—and with much truth—"to inculcate into your children habits of cleanliness, and the elementary laws of health, than to eradicate from people's minds wrong ideas and old superstitions." He refers to poverty, ill-health, and abuse of alcohol as potent causes of infantile mortality.

It is satisfactory to think, says a writer, that, taking the country as a whole, the last few years has seen some slight diminution in the mortality of infants. This has been effected by various agencies, municipal, social and legal. Much remains to be done, and still the loss of life under one year is, especially in some places, appalling. It has been stated that where infant mortality is high, while the general death rate is normal in comparison with other towns similarly situated, there must be some blame resting on the municipality itself. It behoves us to look to it that we do not, as we have not, I believe, up to now, come under such condemnation. It ought to be easy for us to avoid it now, having so many extra agencies for good at our command, and spending so very much more, to secure efficiency in this and other directions in the safe-guarding of the public health.

I cannot do better than make, in my final report, a strong appeal to our Luton mothers to nurse their offspring, borrowing for that purpose the beautiful language of the late Dr. Charles West—the children's doctor and friend *par*

excellence, and who, in his classical work on Diseases of Infancy and Childhood, wrote: "Nature's object in the law by which she governs the brute creation, appears to be to fit the young animals, as soon as possible, to provide for themselves, and to shorten the period during which they must depend for sustenance on their mothers: and, therefore, they begin to cut their teeth much sooner, and the process is completed within a much shorter time than in the infant. . . . . For the difference in this respect between the lower animals and man, it seems to me that a moral reason, not altogether visionary, may be assigned. The young animal has to learn nothing more than how to apply those instincts with which Almighty power has endowed it for its own support and the perpetuation of its species. But the infant is to be trained to become a man: its moral as well as its physical nature is to be cultivated; parental influence is to be the means of doing this; and Providence may have wisely determined that the infant shall for months be dependent on its mother for support, in order that her instinctive feelings may lay the firm foundations of love that causes her to cling to her little one with a fondness that surpasses all other affection, and which gives her the patience, the gentleness, the untiring energy, that make her the child's best guardian, friend, and teacher during its early years."

My report on the vitally important subject of Infant Mortality will not be comp.ete without informing you of the resolutions of the National Conference on Infantile Mortality, held on June 13 and 14, under the Presidency of the head of the Local Government Board. At the close of the Conference, it was unanimously agreed that the Conference resolve itself into a Committee to give effect to the following resolutions, and with power to remit to an Executive Committee to carry out the same.

Resolution (1) Had regard to systematic training of girls in the senior classes in the practice and principles of personal hygiene and the elements of dietary.

(2) To enabling Sanitary Authorities to establish and support depôts for the supply of pure, or modified, or sterilised milk, and to defray cost out of monies available for public health purposes.

(3) Notification of still-births in 48 hours, and no burial without medical certificate.

(4) Notification of all births within 48 hours to the Medical Officer of Health of district.

(5) Consideration of subject of Insurance and Infant Mortality.

(6) (*a*) Mothers not to return to factory work under three months, instead of one, and satisfactory evidence must be produced as to proper care of the child.

(*b*) No employer of labour shall allow a woman near full time to engage in factory work without a Certificate satisfying Authority.

(7) (*a*) Places where children are put out to nurse, and persons receiving them, to be under supervision of Local Sanitary Authority.

(*b*) The Infant Life Protection Act to be amended to remedy further abuses.

(8) Regards certification of infant foods by Government Analyst as non-injurious, and analysis of food on the packet.

(9) Certain amendments of the Dairies, Milk Shops and Cow-sheds Order, which is defective: definition of disease as applied to animals to be extended, and provisions of regulations by local authorities to be compulsory: scope of regulations to cover dirty milk, and authorities to be empowered to prohibit sale of any milk not complying with conditions of purity agreed upon.

(10) Appointment of qualified women, specially trained in the hygiene of infancy, necessary as an adjunct to public health work.

(11) Midwives' Act, 1902, should be extended to Scotland and Ireland.

Before dismissing the subject of Infant Mortality, I should like to draw your attention to a remarkable letter which has recently appeared in the Public Press. It is headed "The Step-Children of the State," and its purport is to the effect that the rate of infant mortality in Workhouses is between two and three times as great as in the large towns. The figures quoted are, to say the least, startling. The writers of the letter know of 450 Workhouses where the Infant death-rate was more than double the usual rate, and mention that in ten of these the death-rate was 330 per 1,000 (*i.e.*, one in every three dies before reaching the age of 1 year). Compared with any standard, this sacrifice of infant life is appalling, and calls for serious and immediate investigation by those in authority.

Cancer.

No fewer than 45 deaths were referred to this, the *bête noir* of diseases. There were 14 deaths in the 1st quarter, 11 in the 2nd, 9 in the 3rd, and 11 in the 4th. Twenty-two of these deaths were between 25 and 65, and 23 from 65 and upwards. Thirty-four deaths only last year were thus referred, against 47 in the previous year (1906). In the Registrar-General's report for 1907, in reviewing the mortality statistics, he says: "It is encouraging to notice that a break has at length occurred in the sad increase in Cancer fatality which has persisted for so many years, the recorded death-rate from Cancer in 1907 being slightly lower than that of the preceding year." I do not see much encouragement, as our mortality also considerably declined last year, 34 deaths against 45 this year. In our Medical Journals, and in the Public Press, there are renewed suggestions of Cancer cures. Last year I visited Middlesex and Brompton Hospitals, and interviewed the experts at both institutions as to any likely new remedy. At neither institution did I get a grain of hope of any new discovery of any value—so far—and the recommendation, as of old, was that immediate operation, if the disease were removable, was the only known remedy—for operation is sometimes a remedy, thank heaven!

Sanitary Inspector's Report.

According to my instructions I embody the Report of the Sanitary Inspector, Mr. Wright, who, together with his able Assistant, Mr. Peck, has done most excellent work during the year, and to whom I offer my most hearty thanks for most loyal co-operation and assistance. The results of my own visits with the Sanitary Inspector are included in his Report, which is as follows:—

Infectious Disease Notification and Prevention Acts. The following table will show the number of cases reported under the provisions of the Infectious Disease Notification Act. I am pleased to be able to state that there is a decrease of one hundred and nine cases as compared with last year. I give for comparison the number of cases reported each year since the adoption of the Notification Act within the Borough.

Name of Disease.	Number of Cases each year.												
	1896	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907	1908
Scarlet Fever	236	185	75	43	62	268	89	68	65	30	180	92	49
Erysipelas	35	53	36	52	40	59	30	35	49	46	52	40	20
Typhoid Fever.....	16	37	16	28	22	19	7	5	5	6	9	9	9
Diphtheria	13	12	39	50	11	12	17	18	4	7	103	103	56
Puerperal Fever.....	3	6	2	8	8	8	3	7	6	3	...	3	4
Membranous Croup..	2	...	2	6	7	2	...	...	1	...	1	...	...
Continued Fever ...	1	6	3	1	2	2	4	...	1	...	...	...	...
Variola.....	1	...	...	...	...	2	5	...	...	...	...	...	...
Choleraic Diarrhœa..	...	1	...	...	...	...	...	...	...	...	...	...	...
Anthrax	...	...	1	...	...	...	...	...	...	...	...	...	...
Totals	307	300	174	188	152	372	155	133	131	92	345	247	138

The following list shows the number of houses and the different wards in which cases of Infectious Diseases occurred during the past year.

Name of Disease.	No. of Cases.	North Ward	East Ward.	West Ward.	No. of Houses Infected.
Scarlet Fever	49	19	17	13	37
Erysipelas	20	4	5	11	17
Typhoid Fever ...	9	4	1	4	9
Diphtheria	56	11	23	22	49
Puerperal Fever ...	4	2	2	...	4
Totals	138	40	48	50	116

STREETS IN WHICH INFECTIOUS DISEASES OCCURRED. The following tabulated list shows the various Streets in which Infectious Diseases occurred, and also Streets from which cases were removed to Spittlesea Hospital:—

Name of Street.	Scarlet Fever.	Typhoid Fever.	Diphtheria.	Erysipelas.	Puerperal Fever.	Total.	Removed to Hospital		
							Scarlet Fever.	Typhoid Fever	Total.
Albert Road.....	1	...	...	1	...	2	...	...	...
Alma Street	1	...	...	...	...	1	1	...	1
Ashton Road	...	...	1	1	...	2	...	...	...
Ash Road.....	...	2	...	...	...	2	...	1	1
Bury Park Road.....	4	...	2	...	...	6	...	...	...
Beech Road.....	...	...	...	2	...	2	...	...	...
Boyle Street	...	...	1	...	...	1	...	...	...
Buxton Road	1	...	...	...	...	1	1	...	1
Barber's Lane.....	...	1	...	...	...	1	...	1	1
Clarendon Road	2	...	1	...	1	4	1	...	1
Chobham Street.....	2	...	...	...	...	2	2	...	2
Cambridge Street	1	...	...	...	...	1	1	...	1
Cardiff Grove	...	...	1	...	...	1	...	...	...
Cromwell Road	1	...	1	...	...	2	...	...	...
Collingdon Street	2	...	2	1	...	5	2	...	2
Cobden Street.....	...	...	...	1	...	1	...	...	...
Cardigan Street	1	...	1	...	...	2	...	...	...
Cowper Street.....	...	...	2	...	...	2	...	...	...
Church Street..	1	...	2	...	...	3	...	...	...
Cumberland Street.....	1	...	...	...	...	1	...	...	...
Castle Street	...	...	1	1	...	2	...	...	...
Clipstone Road	...	...	...	1	...	1	...	...	...
Dale Road	...	...	2	3	...	5	...	...	...
Dunstable Road	...	1	...	1	...	2	...	1	1
Dorset Street	1	...	...	...	...	1	1	...	1
Dudley Street	...	...	...	1	...	1	...	...	...
Duke Street.....	2	...	...	...	...	2	2	...	2
Essex Street.....	...	...	1	...	...	1	...	...	...
Ebenezer Street	...	...	...	1	...	1	...	...	...
Farley Road	...	...	3	...	...	3	...	...	...
Frederick Street	1	...	1	...	...	2	...	...	...
Granville Road	...	...	1	...	...	1	...	...	...
Grove Road.....	...	...	1	...	...	1	...	...	...
Havelock Road	2	...	...	...	...	2	...	...	...
Hastings Street	1	...	...	...	...	1	1	...	1
Hampton Road	1	...	...	...	...	1	...	...	...
Hitchin Road	...	...	1	2	...	3	...	...	...
High Town Road	...	1	...	...	1	2	...	...	...
Hibbert Street.....	...	...	2	...	...	2	...	...	...
Highbury Road	3	...	...	...	...	3	3	...	3
Harcourt Street	...	...	1	...	...	1	...	...	...

Name of Street.	Scarlet Fever.	Typhoid Fever.	Diphtheria.	Erysipelas.	Puerperal Fever.	Total.	Removed to Hospital		
							Scarlet Fever	Typhoid Fever	Total.
Kimpton Road	...	...	4	...	...	4	...	...	...
Lea Road	...	...	2	...	...	2	...	...	...
Liverpool Road	...	...	...	2	...	2	...	...	...
Lyndhurst Road	...	...	..	1	...	1	...	...	...
Langley Street	...	...	...	...	1	1	...	...	...
London Road	...	...	1	...	...	1	...	...	...
Mill Street	1	...	...	...	...	1	...	...	...
Midland Road	...	1	...	...	...	1	...	...	...
North Street	1	...	1	...	...	2	...	...	...
New Bedford Road	1	...	...	...	...	1	1	...	1
Old Bedford Road	...	...	1	...	...	1	...	...	...
Oak Road	...	...	2	...	...	2	...	...	...
Peache Street	1	...	...	...	...	1	...	...	...
Park Street	...	1	2	...	...	3	...	1	1
Park Road West	1	...	1	1	...	3	...	...	...
Park Street West	5	...	1	...	...	6	3	...	3
Princess Street	2	1	...	...	...	3	2	1	3
Russell Street	...	...	4	...	...	4	...	...	...
Ridgway Road	...	...	...	...	1	1	...	...	...
Round Green	...	1	...	...	...	1	...	1	1
Salisbury Road	1	...	...	...	...	1	1	...	1
St. Ann's Road	2	...	...	...	...	2	2	...	2
Stuart Place	1	...	...	...	...	1	1	...	1
Tavistock Crescent	..	...	1	...	...	1	...	...	...
Tennyson Road	...	...	1	...	...	1	...	...	...
Vicarage Street	1	...	...	...	...	1	1	...	1
Windsor Street	...	...	1	...	...	1	...	...	...
Wellington Street	1	...	3	...	...	4	...	...	...
Wenlock Street	...	...	3	...	...	3	...	...	...
Winsdon Road	1	...	...	...	...	1	1	...	1
York Street	1	...	...	...	...	1	...	...	...
Totals	49	9	56	20	4	138	27*	6	33

* Two of these cases were notified on December 31st, 1908, but not removed to Spittlesea Hospital until January 1st, 1909, and are therefore not included in the number of cases treated at the Hospital for 1908.

Information as to the number of deaths from these Diseases will be found in the Medical Officer's Report.

The appended table shows the ages of persons who during last year suffered from Infectious Diseases.

Notifiable Diseases.	At all ages.	At Ages—Years.					
		Under 1	1 to 5	5 to 15	15 to 25	25 to 65	65 and upwards
Diphtheria	56	1	18	33	3	1	...
Scarlet Fever	49	...	24	21	3	1	...
Erysipelas	20	1	...	...	...	16	3
Enteric Fever	9	...	...	3	3	3	...
Puerperal Fever	4	...	...	...	1	3	...
Totals	138	2	42	57	10	24	3

Disinfection and other precautionary measures for the prevention of the spread of disease were duly carried out free of cost, children from infected

families were advised not to attend school, and any nuisances in the houses or localities were remedied. Disinfectants were also freely supplied to all who applied for them at my office. The cost of disinfectants for the year was £58 : 13 : 9, which sum also includes the bulk of the disinfectants sent to Spittlesea.

SPITTLESEA HOSPITAL. Twenty-five cases of Scarlet Fever and six of Typhoid Fever were removed to Spittlesea during the year, making a total of 31 cases as against 54 last year.

INSPECTION OF STREETS. I have, in conjunction with the Medical Officer, regularly visited the streets and alleys during the year, and have taken the necessary steps to remedy all the defects found in connection with these visits.

NUISANCES. The following list shows the nature of the nuisances which were enquired into and dealt with during the year :—

Insanitary Dwellings	302
No Receptacles for Ashes	138
Workrooms requiring Limewashing	127
Drains and W.C.'s Blocked	118
Water Apparatus to W.C.'s out of order	117
Defective W.C.'s	97
Defective Bell-traps	35
Accumulations of Manure	32
No Constant Water Supply to W.C.'s	27
Defective Ashpits	16
Defective Pavings	15
Defective Drains	9
Sinks not Disconnected	9
No Receptacles for Manure	6
No Separate Accommodation for Sexes	3
Insufficient Sanitary Accommodation	3
Other Nuisances	15
Total	1069

Six hundred and seventeen preliminary and two legal notices were served in connection with the above nuisances.

INSANITARY DWELLINGS. Three hundred and two houses were reported to be in an insanitary condition. The whole of these, with two or three exceptions, have been thoroughly cleansed and whitewashed, and the remainder are in hand.

HOUSE DRAINS. Nine sink waste-pipes were found directly connected with the drain. These were made to discharge on to 6in. earthenware syphon gulley traps.

CLOSET CLEANSING. During the year 14 loads of Night Soil were removed from Privies and Dumb-wells. The charge made for emptying same was £1 6s., and the expenditure in wages £1 5s.

ASHES, OFFAL, AND TRADE REFUSE COLLECTION. 16,572 loads of ashes, offal, and trade refuse were collected by the Corporation teams. This is the largest quantity of ashes and refuse ever collected in one year. The cost of labour in connection with the collection and disposal of ashes was :—

	£	s.	d.
Horse drivers (31,648 hours)	614	3	8
Fillers (40,898 hours)	830	2	3
	£1444	5	11
Hired horses at 4/- per day	£130	19	0

The disposal of ashes was as follows:

	Loads.
Destructor...	13,422
Sewage Works and Farm	51
Elsewhere...	3,099
	16,572

Last year's total was 16,243 loads.

The income in connection with this Department was as follows:—

	£	s.	d.
Collecting Trade Refuse	161	17	4
Tins, Old Iron, Bottles and Clinkers	40	1	5
Collecting Offal from Slaughter Houses ...	28	10	5
Ashes	16	15	0
	£247	4	2

The collection of ashes for the last four years has been:

1905	1906	1907	1908
15,021	15,706	16,243	16,572

VENTILATING SHAFTS. No additional shafts were erected during the year. The total number of ventilating columns in the Borough is 46.

DESTRUCTOR. The total amount of refuse burnt at the Destructor during the year was 13,422 loads, giving an average of 36¾ loads per day. The wages paid for burning the refuse have amounted to £697 7s. 4d., or just over 1/- per load. The sale of tins and other residuals has been £40 1s. 5d.

DISINFECTOR. This has been used on numerous occasions for the disinfection of bedding and clothing from infected houses.

FOOD AND DRUGS ACT. In connection with this Act 130 samples were submitted by me to the Public Analyst. The samples were as follows:—78 samples of New Milk, 16 of Butter, 3 each of Irish Whisky, Gin and Demerara Sugar, 2 each of Margarine, Lard, Scotch Whisky, White Pepper and Coffee, and 1 each of Brandy, Rum, Citric Acid, Cream of Tartar, Milk of Sulphur, Sweet Spirit of Nitre, Tincture of Rhubarb, Mustard, Arrowroot, Oatmeal, Malt Vinegar, Cheese, Mixed Chocolates, Russian Toffee, Jap Nuggets, American Gums and Acid Tablets; of these, two were adulterated in the manner shewn in the statutory report hereunto annexed.

Article submitted for Analysis.	Who submitted the Sample.	Result of Analysis.	The sum paid for Analysis	Observations.
Butter	Sanitary Inspector	Genuine	10 6	
Margarine	,, ,,	,,	10 6	
Butter	,, ,,	,,	10 6	
Butter	,, ,,	,,	10 6	
Lard	,, ,,	,,	10 6	
Butter	,, ,,	,,	10 6	
Butter	,, ,,	,,	10 6	
Butter	,, ,,	,,	10 6	
Butter	,, ,,	,,	10 6	
Margarine	,, ,,	,,	10 6	
New Milk	,, ,,	,,	10 6	
,,	,, ,,	,,	10 6	
,,	,, ,,	,,	10 6	
,,	,, ,,	,,	10 6	
,,	,, ,,	,,	10 6	
Butter	,, ,,	,,	10 6	
,, (Pearksown Milk blended)	,, ,,	,,	10 6	

Articles submitted for Analysis.	Who submitted the Sample.	Result of Analysis.	The sum paid for Analysis	Observations.
Butter (Pearksown Milk blended)	Sanitary Inspector	Genuine	10 6	
,, ...	,, ,,	,, ...	10 6	
,, (Breadmate Milk blended)	,, ,,	,, ...	10 6	
,, ...	,, ,,	,, ...	10 6	
Lard	,, ,,	,, ...	10 6	
Butter	,, ,,	,, ...	10 6	
,, ...	,, ,,	,, ...	10 6	
,, ...	,, ,,	,, ...	10 6	
New Milk	,, ,,	,, ...	10 6	
,, ...	,, ,,	,, ...	10 6	
,, ...	,, ,,	,, ...	10 6	
,, ...	,, ,,	,, ...	10 6	
,, ...	,, ,,	,, ...	10 6	
Irish Whisky	,, ,,	,, ...	10 6	
Scotch Whisky	,, ,,	,, ...	10 6	
Gin	,, ,,	,, ...	10 6	
Irish Whisky	,, ,,	,, ...	10 6	
Gin	,, ,,	,, ...	10 6	
New Milk	,, ,,	,, ...	10 6	
,, ...	,, ,,	,, ...	10 6	
,, ...	,, ,,	,, ...	10 6	
,, ...	,, ,,	,, ...	10 6	
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,, ...	,, ,,	,, ...	10 6	
,, ...	,, ,,	,, ...	10 6	
,, ...	,, ,,	,, ...	10 6	
Gin	,, ,,	,, ...	10 6	
Irish Whisky	,, ,,	,, ...	10 6	
Scotch Whisky	,, ,,	,, ...	10 6	
Brandy	,, ,,	,, ...	10 6	
Rum	,, ,,	,, ...	10 6	
New Milk	,, ,,	,, ...	10 6	
,, ...	,, ,,	,, ...	10 6	
,, ...	,, ,,	,, ...	10 6	
,, ...	,, ,,	,, ...	10 6	
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,, ...	,, ,,	,, ...	10 6	
Demerara Sugar	,, ,,	,, ...	10 6	
,, ,, ...	,, ,,	,, ...	10 6	
New Milk	,, ,,	,, ...	10 6	
,, ...	,, ,,	,, ...	10 6	
,, ...	,, ,,	,, ...	10 6	

Articles submitted for Analysis.	Who submitted the Sample.	Result of Analysis.	The sum paid for Analysis	Observations.
New Milk	Sanitary Inspector	Genuine	10 6	
,, ...	,, ,,	,, ...	10 6	
,, ...	,, ,,	,, ...	10 6	
,, ...	,, ,,	,, ...	10 6	
,, ...	,, ,,	,, ...	10 6	
,, ...	,, ,,	Adulterated 28% of added water	10 6	Vendor fined £25 and 30/- costs
,, ...	,, ,,	Genuine	10 6	
Citric Acid	,, ,,	,, ...	10 6	
Cream of Tartar	,, ,,	,, ...	10 6	
Milk of Sulphur	,, ,,	,, ...	10 6	
Sweet Spirit of Nitre...	,, ,,	,, Poor quality	10 6	
Tincture of Rhubarb	,, ,,	,, ...	10 6	
New Milk	,, ,,	,, Poor quality	10 6	
,, ...	,, ,,	,, ...	10 6	
,, ...	,, ,,	,, ...	10 6	
,, ...	,, ,,	,, ...	10 6	
,, ...	,, ,,	,, ...	10 6	
,, ...	,, ,,	,, ...	10 6	
,, ...	,, ,,	,, ...	10 6	
,, ...	,, ,,	,, ...	10 6	
,, ...	,, ,,	,, ...	10 6	
,, ...	,, ,,	,, ...	10 6	
White Pepper	,, ,,	,, ...	10 6	
Mustard	,, ,,	,, ...	10 6	
Coffee	,, ,,	,, ...	10 6	
Arrowroot	,, ,,	,, ...	10 6	
Oatmeal	,, ,,	,, ...	10 6	
New Milk	,, ,,	,, ...	10 6	
,, ...	,, ,,	,, ...	10 6	
,, ...	,, ,,	,, ...	10 6	
,, ...	,, ,,	,, ...	10 6	
,, ...	,, ,,	,, ...	10 6	
,, ...	,, ,,	,, ...	10 6	
,, ...	,, ,,	,, ...	10 6	
,, ...	,, ,,	,, ...	10 6	
,, ...	,, ,,	Adulterated 8% deficient in fat	10 6	Vendor fined 14/- including costs
,, ...	,, ,,	Genuine	10 6	
Malt Vinegar.....	,, ,,	,, ...	10 6	
Cheese	,, ,,	,, ...	10 6	
Pepper	,, ,,	,, ...	10 6	
Coffee	,, ,,	,, ...	10 6	
Demerara Sugar	,, ,,	,, ...	10 6	
Mixed Chocolates.....	,, ,,	,, ...	10 6	
Russian Toffee	,, ,,	,, ...	10 6	
Jap Nuggets	,, ,,	,, ...	10 6	
American Gums	,, ,,	,, ...	10 6	
Acid Tablets	,, ,,	,, ...	10 6	

DAIRIES, COWSHEDS, AND MILK SHOPS. Under the Dairies, Cowsheds, and Milk Shops Order, 1885, twenty-one persons were registered as Purveyors of Milk, and one as a Cow-keeper.

At the end of 1908 the Register contained the names of persons keeping 13 Cowsheds, the approximate number of cows being milked is 177; there are also 101 Purveyors of Milk on the Register, of which 12 reside outside the Borough, but retail milk within. All cowsheds have been thoroughly limewashed. Defective floors and drainage were found to exist in three; these have been properly repaired.

SLAUGHTER HOUSES. The Slaughter Houses were regularly visited during the year, and on the whole were found to be in a satisfactory condition. Thirty-three new licenses have been granted.

On October 5th a cow, consigned to Mr. A. E. Fisher's, George Street, was examined by Mr. S. W. Jones, V.S., the Medical Officer of Health, and myself, but although no definite evidence of tubercular disease was manifest, except in the udder, the carcase was ultimately destroyed in our Destructor, Mr. Fisher doing this on his own initiative.

MARKETS. I have visited the Markets regularly, and on September 19th I seized a quantity of Pears which were exposed for sale; these were afterwards condemned by a Magistrate. On October 3rd I attended Court to give evidence in this case, when defendant was fined 30/- including costs.

On January 27th I inspected 27 rabbits; on March 28th, 20 rabbits; on July 7th, 6 Half-Sieves of Cherries; on July 10th, 13 Half-Sieves of Cherries; on September 21st, 1 Barrel of Herrings; and on October 27th, 2 boxes of Sprats (at the request of the owners) before being exposed for sale. These I found to be unfit for human food, and forthwith caused the same to be destroyed.

FACTORY AND WORKSHOP ACT. The number of registered Workshops in the Borough at the end of the year was 694. These include straw hat manufacturers, block makers, box and cartoon makers, tip and lining manufacturers, bakers, confectioners, milliners, dressmakers, upholsterers, tailors, joiners, tinplate workers, jewellers, bootmakers, rope makers, cycle makers, laundresses, etc. The following table shows the number of inspections, and the result of such visits.

1.—INSPECTION.

Premises.	Number of		
	Inspections.	Written Notices.	Prosecutions.
Factories	214	43	...
Workshops	685	128	...
Work-places	38	4	...
Home-workers' Premises	919	33	...
Totals	1,851	208	...

2.—DEFECTS FOUND.

Particulars.	Number of Defects.		
	Found.	Remedied.	Prosecutions.
Nuisances under the Public Health Acts :—			
Want of Cleanliness	127	126	...
Want of Ventilation	...	...	...
Overcrowding	1	1	...
Want of Drainage to Floors	...	...	...
Sanitary Accommodation (Insufficient	1	1	...
Sanitary Accommodation (Defective	1	1	...
Sanitary Accommodation (Not Separate for Sexes	2	2	...
Other Nuisances	...	...	...
Totals	132	131	...

OTHER MATTERS.

MATTERS NOTIFIED TO H.M. INSPECTOR OF FACTORIES :—

Failure to affix abstract of the Factory and Workshops Act (sec. 133)	0
Matters notified by H.M. Inspector	15

UNDERGROUND BAKEHOUSES (sec. 101)

In use at the end of 1907	28
In use at the end of 1908	26

LIST OF OUTWORKERS RECEIVED FROM EMPLOYERS :—

Twice in the year.	*Once in the year.*
Lists, 62. Outworkers 587.	Lists 227. Outworkers 2,028.

ADDRESSES OF OUTWORKERS :—

Forwarded to other Authorities...	146
Received from other Authorities	0

HOMEWORK IN UNWHOLESOME OR INFECTED PREMISES :—

	Wearing Apparel.	Other.
Notices prohibiting homework in unwholesome premises ...	0	0
Cases of infectious diseases in homeworker's premises ...	46	0
Orders prohibiting homework in infected premises (sec. 110)	46	0

Report of Health Visitor.

The Health Visitor, Miss McCleverty, who was appointed on August 28th, 1907, makes the following report :—

In accordance with your request, I beg to make the following report on my work for the year 1908. I have paid in all 3,778 visits, including 1,367 visits to births, 123 visits in connection with the deaths of children under one year of age, 546 visits to school children, 919 visits to outworkers' premises, and 553 visits to cases specially needing my attention.

During the three months February, March, and April, I also worked several afternoons a week, under the direction of Dr. Lloyd, in connection with the medical inspection of school children, but was relieved of this work in May by the appointment of a School Nurse.

The adoption last February by this Borough of the "Notification of Births Act" has been of immense service to my work, enabling me to visit the infant at a very early period, and to impress upon the mother the extreme importance of the right and proper feeding of her baby. I have also found the early notification has been of advantage in enabling me to deal with cases of discharge from the eyes, of which I have found a considerable number; and, when one remembers that many cases to be found in the Asylums for the blind may be traced to want of care and attention to the eyes at this time, the importance of the early discovery of these cases cannot be over-estimated. The notifications are sent in very regularly on the whole, the doctors and midwives in the town co-operating in a way for which I am most grateful, and there is very little friction and almost no failure to notify. Since giving up my work under the Education Committee, I have inspected the Outworkers' Premises, chiefly straw workers. The work is clean, and any defects found were easily remedied.

Spittlesea Hospital. Twenty-five cases of Scarlet Fever and 6 cases of Typhoid Fever were removed during the year, against 52 cases of Scarlet Fever and 2 of Typhoid Fever last year. Eighteen cases of Scarlet Fever were discharged well and 1 died. Five cases of Typhoid Fever were discharged well. On December 31st, there remained in the Hospital 6 cases of Scarlet Fever and 1 of Typhoid Fever.

School Closure. Only two Infant departments were closed for Measles during the year, viz: Christ Church on November 24th, and the Old Bedford Road on December 21st.

Attendance in Court. I was not called upon to attend the Court once during the year.

Sewage Works. The total amount of Sewage pumped during the year was 713,851,450 gallons, against 737,936,110 gallons last year, being an increase of 45,915,340 gallons, or 119,928 gallons per day.

Common Lodging Houses. The Chief Constable reports "There are four Licensed Common Lodging Houses in the Borough, an increase of one on the number licensed last year, containing 25 rooms, 112 beds, and providing accommodation for 132 persons per night. The total number of persons provided for at the Houses during the year was 25,141, an increase of 3,922 persons as compared with last year, and gives an average of 68.87 received in these Houses each night throughout the year."

Water Analysis. The Engineer to the Luton Water Company, Mr. W. R. Phillips, writes me under date, March 10th, 1909, "I enclose copy of the last analysis of the Luton Company's Water, which is pumped out of three tube wells each 320 feet deep from the surface, and iron tubes are inserted down the bores so that no water can percolate into the bore holes until the depth of 100 feet from the surface. All the domestic pipes in the houses are galvanized iron, *lead not being allowed.*" Enclosed with the above was the Analyst's report. "In accordance with your instructions I have examined the sealed sample of Luton Company's water, submitted to me for analysis on the 8th instant, and I am now able to report that the condition of the Company's water is highly satisfactory.

The following are the analytical data upon which the report is based:—

	Grains for gallon.
Total Solid Matter	25'90000
Chlorine as Chlorides	1.10000
Nitrogen as Nitrates	0.26517
Nitrogen as Nitrites	0.00000
Nitrogen as Free Ammonia	0'00000
Nitoogen as Albumenoid Ammonia ...	0'00386
Poisonous Metals	0'00000

Signed, EDWARD MARSH.

(This water was taken on the 8th February from the main in Crescent Road).

It is very gratifying to be able to make such a satisfactory report about one of the "staffs" of life. We can in Luton, certainly, with a good conscience, advise people to drink our Company's water, its hardness being its only drawback. I consider our pure sparkling and plentiful water supply a sanitary provision of the first importance. How different in some districts, where to tell people to consume unboiled water might be the equivalent of signing their death warrant. In spite of all this I believe it is the bounden duty of our Sanitary Committee to have, from time to time, an independent water analysis. After the typhoid scare this was done for a short time and *then omitted.* While writing this a reverend gentleman reports to me that four people drank water from a pond in a neighbouring county while on an outing; three of them died, and the remaining one has been operated upon a number of times at Addenbrook Hospital, Cambridge, and will in all probability have to undergo still further operations.

Local Government Board. Weekly and Annual Returns of the Notifiable Infectious Diseases in the Borough have been forwarded to the Local Government Board. Weekly Returns of the Notifications in Borough Urban Districts have been regularly forwarded to me. The Local Government Board have required the Weekly Returns not later than every Tuesday morning. With two exceptions, one of which was the very last I have had the honour to forward, my returns have reached the Board by the first post on the Monday morning.

County Council. The usual monthly returns of all Notifiable Diseases in the Borough have been forwarded regularly, and corresponding monthly returns of all the Sanitary Boroughs and Districts in the County have been received. In addition, the Annual report has been forwarded, and due notice of closure of Elementary Schools for Measles.

Infectious Diseases and Prevention. (i) *Notification.*—One hurdred and thirty-eight cases were notified.

(ii) *Isolation.*—Thirty-one cases were removed to Spittlesea, and the usual precautions taken with those not removed from their homes. As usual these removals were effected with the least delay.

(iii) *Disinfection* was carried out in all the notifiable diseases except Erysipelas and Puerperal Fever, and after death in cases registered Phthisis and Cancer.

(iv) *Investigation of possible Sources or favouring conditions of Infectious Diseases.*—Investigations were made systematically. As I reported last year "the latter-day information as to 'carrier' cases of Diphtheria (and I can now add 'carrier' cases of Typhoid Fever) and the prolonged infectiousness of Scarlet and Typhoid Fever lessen considerably the sense of failure," eluding in so many cases our most careful investigations as to their causation.

(v) *The Channels of Infection* were controlled to the best of our ability.

With regard to these channels of infection, I would remark that while people are often so recklessly indifferent to their duties to their neighbours, and think nothing of taking infectious children by tram or train, infect lodging-houses, especially at the sea-side, by taking their children before they are quite free from infection, send infected clothes to laundries, borrow books from libraries for use in infected rooms—and such like—how can it be wondered at that we are so often unable to control the channels of infection.

In addition to the above, there is one mode of infection that can never be controlled, which is the coin circulation system (*Sanitary Record*). Money passes from hand to hand and pocket to pocket, undoubtedly carrying with it all sorts of bacteria. Probably the least infected coins, says the *Sanitary Record*, are those carried in the pockets of smokers—the tobacco of which they are redolent, being an effective germicide. It goes on to allude to the public laundry system. Bacteria laden clothing is placed in baskets, and is conveyed to the public laundry in the same vans that bring back the clean linen. Are these vans ever fumigated or disinfected, asks the *Sanitary Record*.

Hospital for Infectious Diseases. The Scarlet Fever Wards have been in use practically all the year, twenty-five cases having been admitted. I hope your new Medical Officer of Health will give you his candid opinion about them. It is unfortunate that the worst wards are almost constantly occupied, whereas the Typhoid and Small Pox ones which are much better stand almost idle. We cannot exchange wards, for, the superior Typhoid ones would not accommodate so many children and would be very inconvenient for nursing purposes. Of course the Small Pox Wards are not available, even if we knew they would never be required for Small Pox cases; they are too far away from the administrative building to be of practical service. As I said last year our Typhoid and Small Pox Wards have been erected since the Scarlet Fever ones and are consequently not so antiquated. The reason alleged for not erecting a permanent Fever Hospital is the tremendous cost involved in carrying out any scheme which the Local Government Board would approve, and as you always aver that you will not put up any more temporary buildings of wood and iron, we naturally never get any further, and have come to a decided FULL STOP.

If you had been in my place the last two and a half years you would have seen in what an awkward fix I have been at times owing to your making no provision for Diphtheria cases, only on one or two occasions have we chanced it, and utilised the Small Pox building for the purpose. Six cases of Typhoid Fever have been treated in the Typhoid Wards during the year and they have all recovered, as did all the Scarlet Fever cases save one which went up in a hopeless condition with Pleurisy, &c.

Infectious Diseases, Advice as to:—Advice was given regarding the closing of Christ Church Infants' Department on November 24th, and as to the

time for re-opening. Following my advice the Old Bedford Road Infants' Department was closed from December 10th to December 14th, and thoroughly disinfected. On December 17th instructions were given to send home immediately from all the Infant Departments children suspected of sickening for Measles. On December 21st, by my advice, the Sanitary Authority ordered the closing of the Old Bedford Road Infants' Department. Also by my advice during the quarter, 25th June to 29th September, all floors were scrubbed and the schools disinfected owing to the prevalence of Diphtheria, and Mr. Hoyle, the Clerk to the Education Committee, arranged the future action as follows:—All floors to be scrubbed ten times a year; walls to be sprayed at regular intervals. When any case of a dangerous character is notified, the school to be thoroughly disinfected at the earliest possible moment. Directly a case of Diphtheria was notified, Mr. Hoyle was to be communicated with; if it were a child of school age attending school up to time of illness, desks, floors, walls, &c., were to be thoroughly sprayed with disinfectant and the department ventilated to the utmost extent; at the same time children with sore throats were to be excluded from attendance.

The Local Government Board issued a circular letter, dated December 2nd, 1908, with their instructions with regard to the Annual Reports of Medical Officers of Health. This Circular, together with the usual Memorandum, intimated that the provisions of the Infectious Diseases (Notification) Act, 1889, might be extended, after due notice, to include Anthrax, Glanders and Hydrophobia. The inclusion of them would in all probability cost next to nothing, and at the most a few half-crowns, whereas the exclusion of them might at some future time prove you to have been "penny wise and pound foolish." These decreases are among the most TERRIBLE that afflict humanity. If you decide to exclude them it will, I am persuaded, be because you are badly acquainted with the three diseases in question. If you had to decide which of them should terminate your own mortal existences you would find yourselves in almost a worst predicament than did David of old, when the prophet bade him choose one of three miserable alternatives. Dr. Archibald will probably save you from coming to a wrong decision in the matter.

The Memorandum draws the attention of Medical Officers to a number of subjects on which some information is required; among others, to house accommodation, especially for the working classes: its adequacy and fitness for habitation, etc., etc. Action under Parts I, II, and III., respectively, of the Housing of the Working Classes Act, taken or needed.

(i) In my opinion, there are no unhealthy areas calling for demolition, and consequently no workmen to be re-housed.

(ii) We have no insanitary houses or obstructive houses to close, and no reconstructive scheme is called for.

(iii) There is, in my opinion, no necessity for the establishment of working class lodging-houses.

I do not mean to say that we have no houses which may not sooner or later require closing. In the nature of things there will be some, but I doubt whether there are any houses calling at all urgently for closure. The dirty class of tenant, and we have many, would make a pig-stye of any houses they inhabited. This class of tenant will gradually die out in Luton, I hope never to be replaced. I do deplore the high rents the very poor have to pay in comparison with their small incomes. To pay from one-fourth to one-third of their incomes in rent is out of all proportion to what other classes of the community are paying. "The poorer you are the more rent you have to pay?" questioned the Coroner at an inquest on a baby at Southwark. The doctor then remarked that high rent was the cause of more misfortune and misery than drink in such places, and often LED to drink. These poor people, buying coals in small quantities, buy dearly. What with rent out of all proportion to their incomes, and dear coal, the very poor are poor indeed!

Another subject, as to which information is required, is the water supply. I will here only remark with regard to any plumbo-solvent action, that all the pipes are of iron, and the water is too hard to have any deleterious effect, even on lead. The analysis, etc., has been already given.

With regard to information as to the milk supply, it has been already given. As to Tuberculous milk, we have not yet taken any action in the matter. The sooner, however, combined action is taken by Law all the country over the better. The Medical Officer of Health tells me that he is prepared to examine a few samples of milk for the presence of the tubercle bacillus.

Information as to examination of slaughter-houses has been given. As no carcase or even part of a carcase, save in one instance where one was destroyed, came to our notice during the year I have my doubts, and incline to either the strictest supervision of slaughter-houses, or what would be far better, a public abattoir.

Information is also required as regards the methods of control of Tuberculosis, hospital accommodation, etc. In the body of the report will be found much information of the sort required. I would remark that we have no special method of control, except disinfection of rooms inhabited during life by a Phthisical individual. We attend most carefully to all drainage matters, and the dryness of the subsoil, and endeavour by Health Visitor and School Nurse to so improve the health of the juvenile population as to render Tuberculosis, among other diseases, less prevalent. Phthisis has considerably declined in Luton during the last 30 years, and we used to attribute it largely to the drying of the subsoil.

We have no system of Notification, either voluntary or compulsory, for that recently provided under the Public Health (Tuberculosis) Regulations, 1908, did not come into force this year.

There is no hospital accommodation for cases of Pulmonary Tuberculosis. The Infirmary returned, however, two deaths this year, and on an average two cases were present in the wards all the year through.

Information as to most of the other subjects will be found in the body of the report, but with regard to the administration of the Midwives' Act I am informed that it has been carried out fairly satisfactorily in Luton. I have this on the authority of the Inspector of Midwives, and the further information that Luton was quite up to the rest of the county in this respect. There were no Puerperal deaths, against three last year.

The Notification of Births' Act was adopted here in February, 1907. It is too early to enter into the question of the relation it bears to infant mortality, but I believe the effect will be salutary. I would here remark that a brother medico was proceeded against for non-Notification, and a fine imposed. This may be Law, but it is very hard lines, and in my humble opinion the placing of such responsibility upon the long-suffering medical profession is an imposition on their good nature. The Law requires and will have to be altered in this respect. A fine was imposed in the case mentioned. Being the first case under the Act, a fine seemed to be unnecessary, to say the least, only publicity really being called for.

With regard to Medical Inspection of School Children, and the Memorandum, November (1907), I would remark that Dr. Lloyd has written a fairly exhaustive report on the subject, and has worked in thorough harmony with me during the year. I have before me a cutting: "The instances that have come under our notice of the way in which so-called 'medical inspections' of children are carried out in the London Council Schools does not induce a desire for the indefinite extension of such perfunctory performances." Dr. Lloyd's work was by no means perfunctory. One only wants to know what it is going to lead to in the way of good results accruing therefrom, and what object has been served

by examining children LEAVING School. To Dr. Lloyd's, and my way of thinking, to have examined children on entering school, and at about the seventh year, would have been so much more advantageous.

Sanitary Requirements. Last year I mentioned five special requirements of our Borough. The fifth was the serious necessity of immediately tackling the sewage question. I am pleased to report that that matter is well in hand. In November I went over the Sewage Works at Norwich, and with the Assistant City Engineer inspected the new and splendid sewage tanks. A few days later I visited Hampton with the Sanitary Inspector, and was conducted over the Sewage Works by Mr. Travis's brother and the manager. From what I had the great pleasure of seeing, both at Norwich and Hampton, and after reading up the subject thoroughly, I came to the conclusion that Luton would again, in the matter of disposal of sewage, be in the forefront, as of old. For when our last system was inaugurated, in the time of Mr. Leete, our most able Borough Engineer, and now for many years in the service of the Bedfordshire County Council, strangers came from all parts of Britain and abroad to see and approve what we had done, and well it stood the test of time! Naturally, when the population increased enormously, and the land did not increase in size, the conditions being entirely altered, we had either to purchase more land, or alter our system. Suitable land apparently being out of the question, we had to look and travel about and see what other towns and districts were doing. After infinite trouble and pains, and minute inspection of many sewage works, the system instituted by Dr. Travis, at Hampton, was adopted, with some modifications. A model tank has been erected at the works, and, so far, I understand, everything is *couleur de rose*. We have had complaints of extraordinary odours in the East Ward during the last year or two, and with much reason. It could hardly have been otherwise, for the land was to some extent sick and water-logged. But as Rome was not built in a day, neither could a new system be inaugurated until after many days, for failure to do the right thing would have involved the town in much further expense to rectify the result of undue haste, and those who had egged on our rulers to display such an error of judgment would have been the first to declare their incompetency.

I am afraid that I must again draw your attention to the four remaining requirements of last year, which are still unsatisfied.

(1) Provision for cases of Phthisis; Sanatorium treatment for early cases; Infirmary treatment for advanced ones.

(2) Instruction of the older children in Hygiene, and the older girls in secondary schools and continuation classes in the care and practical management of children.

(3) Superior accommodation for Scarlet Fever cases.

(4) Some provision for Diphtheria, if possible, nearer at hand than Spittlesea.

NOTE.—The simplest solution of 3 and 4 would be the provision of a new Hospital.

To the above I would add :—

(5) Bacteriological diagnosis of Diphtheria by the examination of swabs, which is urgently required, on account of the delay in getting a reply when swabs are sent to bacteriological laboratories elsewhere.

(6) Examination of blood serum in cases of Typhoid Fever—Vidal's test, or reaction. I am pleased to state that owing to your provision of a Bacteriological Laboratory, Dr. Archibald will undertake both these examinations, and, in addition, is prepared to examine samples of Phthisical—or supposed Phthisical sputum.

There are three other subjects which will ere long rapidly come to the front, and we shall then have three other requirements, viz. :—

(7) Model Cowhouses, with all that they involve, which will be none other than milk drawn from the cow and conveyed to the consumer with every regard to the strictest cleanliness.

(8) The Erection of an Abattoir. The public have only to grasp, as they will shortly, the fact that if meat and milk were to reach them in a condition above suspicion, that there would be an immediate and important decrease in the deaths from Phthisis.

(9) Sanitary Washhouses, of which Glasgow, Dr. Archibald informs me, has two. Infected articles of clothing, bedding, etc., are taken away to the Washhouse to be thoroughly disinfected, and returned in *another* conveyance back to the owner. The utmost care is taken in every way, the different infectious diseases being separately catered for.

Conclusion. It is very gratifying to me, in giving the final account of my stewardship, to be able to report that, taken altogether, the year 1908 was, from a public health point of view, a satisfactory one.

The death-rate was only 13·9 per 1,000, against 14·9 in 1907; the birth-rate 32·3, against 27·6; the Zymotic rate 0·08, against 1·3 in 1907 and 3·0 in 1906; the infant mortality only 117.6, but higher than in 1907, which was a record for us, being only 104·3—the lowest rate since Luton was created a Borough, and probably an *absolute record*. The number of Notifications was the lowest for three years, and those relating to Diphtheria were only 56, against 103 each for 1906 and 1907. The deaths referred to Diphtheria were 11 against 24 in 1907, and 16 in 1906.

We have this year rejoiced in the services of a Health Visitor, who is also qualified as an Inspector of Nuisances, and a School Nurse, both working in conjunction and in the utmost harmony with the Inspector of Nuisances and his Assistant. Another School Nurse will shortly be appointed, if the labours of the School Inspector are to bear full fruit.

I am, therefore, you will see, bidding farewell to work which shows no signs whatever of stagnancy, but rather of continuous and orderly progress, with highly satisfactory results to show for it. No ploughing of the sands here!

For thirty years, ending Christmas Day, I have had the honour and the pleasure of being associated with Sanitary matters in this Borough, as the Medical Officer of Health. During all that time I have endeavoured to gain and deserve the confidence of successive Sanitary Committees, and have advised them to the best of my ability. That I have succeeded, you and the members of the Town Council have testified in the most felicitous manner by the illuminated address presented to me in open Council, with, in addition, the gift of a most easy chair, in which to pass my declining days. I resigned my office, not because I was tired of it, for I had never enjoyed the work more, or found it more congenial, but because I believed that you thought the time had come when Luton would be benefited by the services of a Medical Officer of Health, who would give his whole time to the work. In addition, he would combine, as I could not find time to do, the office of Medical Officer of Health with that of School Medical Officer, and also take up Bacteriological work, which I was not qualified, naturally, by want of training, to perform. So it came about that I placed my resignation in your hands, to do what you thought best in the interests of Luton. I am quite persuaded that you came to a right decision, and heartily congratulate you on the result of your choice, for in Dr. Archibald you have a man by whom I am proud to be superseded, and who had previously held the office of Assistant Medical Officer of Health to the City of Glasgow, the second city in the Kingdom, and second to none in sanitary affairs. If you had made a different choice I should have resigned with much more than regret. I have taken the greatest trouble over this, my final Report, and I only hope that you will appreciate it, and so compensate me for the time and trouble taken in its

preparation. To write an Annual Report to-day is a very different matter from the writing of my first, thirty years ago. Then, two-and-a-half pages of loosely printed matter sufficed. The headings related only to between one-third and one-fourth of the subjects one has to allude to to-day. The general public cared nothing about sanitary matters then, and in some districts men went upon the Sanitary Committees, not to *advance*, but to stifle progress. Now, it is very different, many members of the public are taking the deepest and most practical interest in all that concerns sanitary progress, which is consequently advancing by leaps and bounds. I have endeavoured, especially in recent years, to instruct myself in all up-to-date measures proposed, or carried, so that my Committee might always, through me, be up to the latest, whether with regard to the danger of Smallpox through the perigrination of tramps, or the pernicious infectivc influence of the common "harmless" fly, or the subtle danger we are all exposed to by the newly-discovered and infective influence of Typhoid and Diphtheria "carriers." In addition, I have worried you about the declining birth-rate and infant mortality; the latter, though excessive, has been much reduced in recent years.

I am proposing later to review the progress we have made in Luton during the last thirty years, and it will be for you to say whether you will adopt the report and then print and circulate it. It will be to me a labour of love and a labour which few Medical Officers of Health will have been privileged by Providence or their Authorities to attempt. The time comes to say farewell, but before taking my leave of you, I must, in justice to Dr. Lloyd, thank him for his able assistance and advice. He has been, during the last ten years, my able assistant, and during my illnesses and holidays my invaluable *locum*. He did me a great service by offering to undertake, at my request, the School work for one year, and you too, for he demonstrated very quickly to you the onerous nature of the work and showed you what great ability and patience it required to do it efficiently and well. For nearly my whole term I was assisted in the most kindly and helpful manner by your late deceased Town Clerk, my most valued friend, without whose great assistance in the early days of 1878 and onwards I might have come off badly.

I desire also to thank the present Town Clerk for his kind and valuable assistance. To Mr. Wright, your Inspector of Nuisances for the last 16 years, I have already expressed my great acknowledgment, and Mr. Peck, his able lieutenant, deserves, and I hope soon will be promoted to the rank of Assistant Inspector, a title which in recent years I have always given him. Now, gentlemen, I bid you farewell, at the same time thanking you for your confidence and fellowship, and, for their valued confidence, I beg to thank all the members of the Corporation.

I am, Gentlemen,

Yours obediently,

HORACE SWORDER.

Vital Statistics of Luton Urban District during 1908 and previous years.

Year.	Population estimated to Middle of each Year.	Births.		Total Deaths Registered in the District.				Total Deaths in Public Institution 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.	
				Under 1 Year of Age.		At all Ages.						
		Number	Rate.*	Number	Rate per 1000 Births registered.	Number	Rate.*				Number	Rate.*
1	2	3	4	5	6	7	8	9	10	11	12	13
1898	34,800	1099	31·5	176	160·1	529	15·2	...	...	...	529	15.2
1899	35,400	1004	28·3	176	175·2	583	16·4	...	...	...	583	16.4
1900	36,000	1035	28·7	129	124·6	498	13·8	...	...	...	498	13.8
1901	36,600	971	26·5	130	133·8	469	12·8	61	12	4	461	12·5
1902	37,000	932	25·1	134	143·7	492	13·2	63	21	2	473	12·7
1903	37,500	979	26·1	125	127·6	520	13 8	90	22	...	498	13·2
1904	38,000	1035	27·1	130	125·6	496	13·0	73	20	1	477	12·5
1905	38.500	1045	27·1	126	120·6	526	13·6	84	13	...	513	13·3
1906	39,000	1098	28·1	158	143·8	620	15·8	93	21	3	602	15·4
1907	39,500	1093	27·6	114	104·3	592	14·9	90	20	...	572	14·4
Averages for years 1898-1907	37,230	1029	27·6	139	135·9	532	14·2	79	18	...	520	13·9
1908	40,000	1292	32·3	152	117·6	559	13.9	89	20	...	539	13·4

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

Total population at all ages, 36,404
Number of inhabited houses, 7,736
Average number of persons per house, 4.7
} at Census of 1901.

Area of District in Acres—3134 Acres.

Institutions receiving Sick and Infirm Persons.

Institutions within the District receiving sick and infirm persons from outside the District.	Institutions outside the District receiving sick and infirm persons from the District.
Bute Hospital. Workhouse (Union) Infirmary. Children's Sick and Convalescent Home. Children's Homes (Union).	Spittlesea Fever Hospital

Cases of Infectious Diseases notified during the Year 1908.

Notifiable Disease.	Cases Notified in whole District.							Cases removed to Hospital.
	At all Ages.	At Ages—Years						
		Under 1.	1 to 5.	5 to 15.	15 to 25.	25 to 65.	65 and upwds.	
Diphtheria (including Membranous Croup) ...	56	1	18	33	3	1	...	...
Erysipelas	20	1	...	...	...	16	3	...
Scarlet Fever	49	...	24	21	3	1	...	25
Enteric Fever	9	...	...	3	3	3	...	6
Puerperal Fever	4	...	...	...	1	3	...	...
Totals	138	2	42	57	10	24	3	31

Causes of, and Ages at, Death during the Year 1908.

Causes of Death.	Deaths at the subjoined Ages of "Residents" whether occurring in or beyond the District.							Total Deaths whether of "Residents" or "non-Residents in Public Institutions 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 upwards.	
Measles	3	...	2	1	...	...	...	...
Whooping Cough	5	2	3	...	...	...	...	...
Diphtheria (including Membranous Croup)	8	1	3	4	...	...	...	1
Epidemic Influenza	1	...	...	...	...	1	...	...
Diarrhœa	16	13	3	...	...	...	...	...
Enteritis	9	7	...	...	...	1	1	...
Puerperal Fever	1	...	...	...	...	1	...	...
Erysipelas	2	1	...	...	...	1	...	1
Phthisis (Pulmonary Tuberculosis)	43	...	...	5	18	20	...	2
Other Tubercular diseases	12	3	2	3	2	2	...	2
Cancer, malignant disease	45	...	...	...	...	22	23	6
Bronchitis	52	16	9	1	...	7	19	4
Pneumonia	11	...	1	1	...	7	2	2
Pleurisy	1	...	...	...	...	...	1	...
Other diseases of Respiratory Organs	3	...	1	...	...	1	1	...
Alcoholism / Cirrhosis of Liver	4	...	...	...	...	4	...	1
Venereal Diseases	1	1	...	...	...	...	...	...
Premature Birth	47	47	...	...	...	...	...	1
Heart Diseases	56	1	...	2	...	25	28	11
Accidents	9	1	...	...	1	3	4	5
Suicides	4	...	...	...	...	4	...	...
All other causes	226	59	9	5	12	43	98	53
All causes	559	152	33	22	33	142	177	89

Infantile Mortality during the Year 1908.

Causes 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.
All Causes	41	9	9	5	64	23	18	10	7	5	10	5	2	6	1	1	152
Common Infectious Diseases:																	
Diphtheria (including Membranous Croup)	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1
Whooping Cough	...	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...	2
Diarrhœal Diseases:																	
Diarrhœa, all forms	...	...	...	...	...	1	2	2	2	1	3	2	...	...	...	...	13
Enteritis, Muco-enteritis, Gastro-enteritis	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	1
Gastritis, Gastro-intestinal Catarrh	...	...	...	...	...	1	1	...	1	1	...	1	...	1	...	...	6
Wasting Diseases:																	
Premature Birth	33	3	5	1	42	2	1	1	1	...	...	...	...	...	...	...	47
Congenital Defects	3	...	...	...	3	2	2	1	...	...	1	...	...	...	...	...	9
Atrophy, Debility, Marasmus	3	4	1	...	8	3	4	2	...	...	1	1	...	...	...	...	19
Tuberculous Diseases:																	
Tuberculosis Peritonitis: Tabes Mesenterica	...	...	...	...	...	1	...	...	1	...	...	...	1	...	...	...	3
Other Causes:																	
Erysipelas	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	1
Syphilis	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1
Convulsions	...	1	...	...	1	5	2	1	1	1	1	...	1	...	...	...	13
Bronchitis	...	...	...	3	3	4	2	...	1	...	3	...	...	3	...	...	16
Suffocation, overlying	...	...	...	...	...	...	1	2	...	...	...	...	...	...	...	...	3
Other Causes	2	1	3	...	6	4	1	1	...	2	1	...	...	...	1	1	17
	41	9	9	5	64	23	18	10	7	5	10	5	2	6	1	1	152

Births in the year { legitimate, 1,239. / illegitimate, 53. } Deaths in Year { legitimate, 136. / illegitimate, 16. }

Estimated population to middle of 1908, 40,000. Deaths from all causes at all ages, 559.

Inspection of Factories, Workshops and Workplaces.

Premises.	Number of Inspections.	Number of Written Notices.
Factories (including Factory Laundries)	214	43
Workshops (including Workshop Laundries)...	685	128
Workplaces (other than Outworkers' premises)	33	4
Total	932	175

Defects found in Factories, Workshops and Workplaces.

Particulars.	Number of Defects Found.	Number of Defects Remedied
Nuisances under the Public Health Acts :—*		
Want of Cleanliness	127	126
Overcrowding	1	1
Sanitary Accommodation — Insufficient	1	1
Sanitary Accommodation — Unsuitable or defective	1	1
Sanitary Accommodation — Not separate for Sexes	2	2
Total	132	131

Home Work.

OUTWORKERS' LISTS (Section 107) :—	
Nature of Work—Wearing Apparel—Making, etc. :—	
Lists received from Employers sending twice in the year	62
Outworkers—Contractors	103
,, Workmen	484
Lists received from Employers sending once in the year	227
Outworkers—Contractors	198
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