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HEALTH DEPARTMENT.

REPORT

ON THE HEALTH OF THE

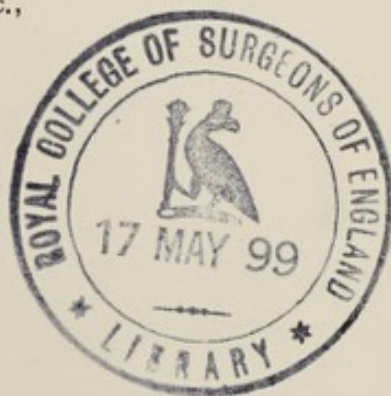
CITY OF LIVERPOOL

DURING

1898.

BY

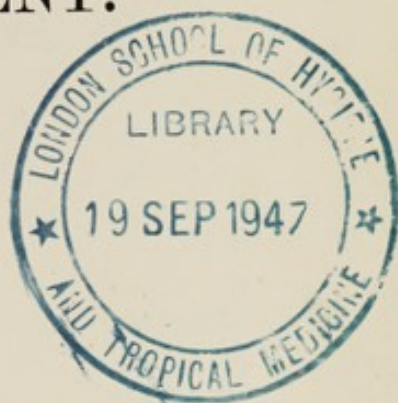
E. W. HOPE, M.D., D.Sc.,
Medical Officer of Health.




(Ordered by the Health Committee to be printed, 16th March, 1899.)

LIVERPOOL:

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1899.

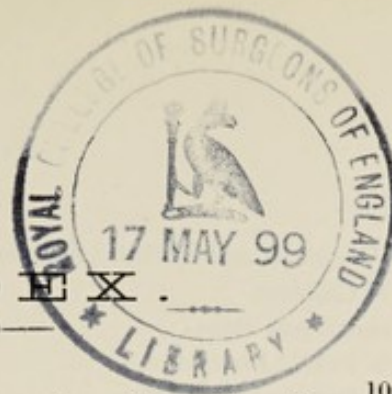




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INDEX.



| | PAGE |
|--|----------------------------------|
| Abattoirs | 105 and 106 |
| Age Period, influence of, on Mortality | 18 |
| Alcoholism | 54 |
| Ambulance Staff | 94 |
| Analysis, Samples of Food and Drugs taken for | 127 to 150 |
| ,, Bacteriological | 137 to 152 |
| Anthrax | 114 and 154 |
| Area of the City | 13 |
| Bacteriological Examinations and Analyses | 137 to 155 |
| ,, Diagnosis of Diphtheria and Typhoid Fever | 214 |
| Bakehouses | 80 and 81 |
| Baths and Washhouses | 161 |
| Births and Birth Rate | 13 to 16 |
| Birth Rate of the 36 Large Towns | 22 |
| Building Surveyor | 61 and 76 |
| Burial Grounds | 102 |
| Canal Boats | 77 |
| Cancer | 52 |
| Cattle, Licences to keep | 116 |
| ,, Inspection of, in Shippens | 118 |
| ,, Slaughtered in City, Returns of | 105 and 106 |
| ,, Smothered or Injured | 109 |
| Causes of Death | 24 |
| | and Tables "A" and "C" Appendix. |
| Cellar Dwellings | 74 |
| Cellars filled in | 76 |
| Cemeteries | 102 |
| Census | 3 to 10 |
| Churchyards | 102 |
| City Engineer, Returns furnished by | 76 and 167 to 178 |
| City Hospitals for Infectious Disease | 199 |
| ,, Returns showing results of treatment in | 206 to 213 |
| Cleansing of Infected Houses | 95 and 96 |
| Cleansing and Scavenging | 165 to 178 |
| Clothing, &c., Destroyed under Public Health Act | 95 and 100 |
| Common Lodging-Houses | 66 to 73 |
| Complaints by Inhabitants | 62 |
| Condensed Milk | 131 and 146 |
| Continued Fever | 35 |
| Court and Alley Examination | 65 |
| Cows, Licences to keep | 116 and 117 |
| Crematorium | 102 |
| Croup | 40 |

| | PAGE |
|--|--|
| Dairies, Cowsheds and Milkshops Order | 119 |
| Deaths of Children | 23 |
| ,, and Death Rate | 18 to 22 |
| ,, in Public Institutions | 20 |
| ,, in Districts of the City | 21 |
| Death Rate of the 36 large Towns | 22 |
| ,, at different Age Periods | 18 |
| ,, during last 15 years | 53 |
| Diagram, illustrating Death Rate since 1861 | See Appendix. |
| ,, spread of Typhus Fever | Facing 32 |
| Diarrhœa | 41 to 45, 123 and 166 |
| Diphtheria | 39 |
| Diseases of Animals Act | 103, 104 and 110 |
| Disinfecting Apparatus | 100 |
| Disinfection of Houses | 95 |
| Disposal of Refuse | 176 |
| Excessive Drinking, Deaths from | 54 |
| Factory and Workshops Act | 83 and 84 |
| Female Sanitary Staff | 91 to 93 |
| Fifteenth Presentment of Insanitary Property | 183 to 189 |
| Fines and Costs—Amount of, in various Sanitary Prosecutions | { 62, 64, 65, 68, 73, 74, 82, 84, 85, 96, 104, 109, 117, 118, 119 and 129 |
| Fish, unwholesome, seized and destroyed | 107 and 108 |
| Food and Drugs Act | 127 to 150 |
| Gas | 88 |
| Glanders and Farcy | 110 to 114 |
| Graves and Graveyards | 102 |
| Great Towns, Mortality of | 22 |
| Horse Boxes | 103 |
| Hospital Accommodation for Infectious Diseases, Extension of | 199 |
| Hospitals and Institutions, Deaths occurring in | 20 |
| ,, City | 199, 206 to 213 |
| Houses taken down | 76 |
| ,, erected | 76 |
| House-to-House Visitation | 64 |
| Ice Cream | 126 and 150 |
| Increase per cent. of Population of Large Towns | 17 |
| Infantile Mortality | 23 and 123 |
| Infected Houses, Cleansing of | 95 and 96 |
| Infectious Disease, Cases of | 203 to 205 |
| ,, reported and removed to Hospitals, 1889-1898 | 205 |
| ,, (Notification) Act | 204 |
| Inquests | 23, 24 and 54 |
| Insanitary Property | 181 to 195 |
| ,, Rate of Mortality in | 182 |
| ,, purchased and demolished in 1898 | 195 |
| Intemperance | 54 |
| Intra-mural Interments | 102 |
| Knacker's Yard Returns | 90 |

| | PAGE |
|---|---------------------------|
| Library Books | 97 |
| Localities of Fatal Prevalence of Diarrhœa | 44 and 45 |
| „ Typhus Fever | 33 |
| Lodging-houses | 66 |
| Manure Yards and Wharves | 90 |
| Map, showing Birth Rate in Districts of City | See Appendix |
| „ „ Death Rate in Districts of City | „ „ |
| „ „ Number of Deaths of Infants under One Year out of every 1,000 Born | „ „ |
| „ „ Density of Population in Districts of City | „ „ |
| „ indicating Districts referred to in Report | „ „ |
| Margarine Act | 127 and 130 |
| Marine Stores | 90 |
| Measles | 37 and 47 to 49 |
| Meat, imported | 105 and 106 |
| „ unwholesome, seized and destroyed | 107 to 109 |
| Meteorological Table | 164 |
| Milk | 119 to 125 and 130 to 141 |
| „ Analysis of | 127 and 139 |
| „ Supply of | 120 |
| „ Condensed | 131 and 146 |
| Milkshops | 118 and 119 |
| Model Lodging-houses | 67 |
| Mortality, see Death rates | 7, 18, 21, 22 and 53 |
| Mortuaries | 101 |
| Natural Increase of Population | 3 and 16 |
| Notification of Infectious Diseases | 204 |
| Nuisances prejudicial to Health | 62 |
| Offensive Trades | 89 |
| Overcrowding | 68 and 73 |
| Parks and Public Gardens | 163 |
| Patients removed to Hospital | 94 and 203 |
| Phthisis | 49, 50 and 124 |
| Photograph of one of the City Graveyards closed during the year .. | Facing 102 |
| Photographs of Insanitary Property | 196 and 197 |
| „ Cottages erected on sites cleared of Insanitary Property, 198 and 198A | 164 |
| Plummer, Mr. W. E. | 3 to 10, 15 and 17 |
| Population of the City | 22 |
| Population, Birth, and Death Rate of the 36 large Towns | 17 |
| „ Increase per cent. of Large Towns | 149 |
| Preserved Foods | 20 |
| Public Institutions, Deaths occurring in | 114 and 155 |
| Rabies | 166 |
| Rainfall and Zymotic Diarrhœa | 63 |
| References to and from other Municipal Departments | 4 to 8 and 215 |
| Registrar-General's Returns, Errors in | 122 |
| Reynolds, Mr. R. S., Veterinary Superintendent | 59 to 155 |
| Sanitary Administration | 60 and 62 |
| Sanitary Notices | 60 and 62 |

| | PAGE |
|---|----------------------------------|
| Scarlatina | 36, 47 to 49 and 206 to 213 |
| Scavenging and Cleansing | 165 to 178 |
| School Board, Notices relating to School Children | 63 and 97 to 99 |
| Schools, Infectious Diseases in | 97 |
| Seamen's Licensed Lodging-houses | 69 and 72 |
| Seasonal Mortality | 23 |
| Sewer Ventilation | 76 |
| Shell-fish | 142 to 145 |
| Shippon Inspection | 116 to 118, and 122 |
| Shop Hours Act | 82 |
| Slaughter-houses | 104 to 106 |
| Smallpox | 27 to 29 and 47 to 49 |
| Smoke Nuisances, Causes of | 85 to 87 |
| " " Fines for | 85 |
| Stables | 90 |
| Staff Employed | 59 and 178 |
| Sub-let Houses | 72 |
| Swine Fever | 115 |
| " Licences to keep | 126 |
| Tables, shewing Deaths and Death Rates from Zymotic Diseases during } each of the last three decennial periods | 47 to 49 |
| Tinned Meats | 148 |
| Transit of Animals Order | 103, 104 and 109 |
| Tubercular Diseases | 49 to 51 and 124 |
| " " Diminution in | 49 and 124 |
| Tuberculosis | 49 and 124 |
| " in Cattle | 109, 125 and 138 |
| Typhoid Fever | 34, 53, 203 to 212 |
| Typhus Fever | 30, 47 to 49, 53, and 203 to 210 |
| " " Diagram illustrating how it may spread | Facing 32 |
| Unoccupied Houses | 4 |
| Vaccination Act, Report of Royal Commissioners as to | 27 |
| Water Analyses | 150 to 153 |
| " Necessity for increased use of, for Sanitary purposes | 159 to 163 |
| " Gas | 88 |
| Whooping Cough | 38 and 47 to 49 |
| Women's Model Lodging-houses | 68 |
| Workhouses, Deaths occurring in | 20 |
| Workshops, Summary of Visits to | 83 |
| Zymotic Diseases | 25 to 49 |

APPENDIX.

A.—Table of General Mortality.

B.—Table of Population, Births and Infectious Sickness.

Diagram showing Birth Rate in Districts of City.

" " Death Rate

 " " Number of Deaths of Infants under one year out of every
 1000 born.

" " Density of Population in Districts of City.

" " illustrating Death Rate since 1861.

C.—Table of Deaths registered in the City.

Map indicating Districts referred to in Report.

PREFACE.

The increasing population, the more extensive sanitary operations carried on, and the growth of public interest in sanitary matters, combine to make the reports upon the health of the City of Liverpool, year by year more voluminous.

In the interests of the reader and the writer alike, increased length of official reports is to be regretted, since the many other claims upon the time of both increase the difficulties in the way of giving them the necessary time and attention.

The shortest way of directing attention to some of the salient points is by way of a preface.

The estimated population of the city is 668,645, and the total number of deaths at all ages and from all causes, during the year 1898, is 15,380, which represents an annual rate of mortality equal to 23.0 per 1,000.

The total deaths, however, are not all deaths of residents in the city. Liverpool is a large medical centre, and is well provided with hospitals, dispensaries, and other medical charities, which attract patients from a very wide surrounding area, and the death of every stranger to the city which occurs in any one of these institutions is included amongst the deaths of citizens, and increases the apparent rate of mortality in the city. When these have been verified and deducted, the annual rate of mortality is equal to 22.2 per 1,000.

This death-rate is the lowest, with one single exception (1896), which has ever been recorded in the City of Liverpool, and represents a reduction of one per thousand below the average of the four years since the extension of the city boundaries.

The reduction in the rate of mortality shows itself in each of the eleven districts of the city, excepting Walton, which was exceedingly low in 1897, and stands at precisely the same figure in 1898.

A study of the diagrammatic map in the Appendix will show that the death-rate varies very widely in the different districts, the lowest rates being in the incorporated districts of Toxteth and Walton, which are 9.9 and 12.9 respectively, and the highest being in Exchange and Scotland districts, where they are 36.9 and 36.4 respectively.

It will be seen that, while there is a reduction in the death-rate, it is only from certain causes that the number of deaths has undergone any conspicuous diminution, these causes being those to which the efforts of the Sanitary Authority have been most directed. Foremost amongst them is the group of zymotic diseases, in which the steady decline of previous years has been more than maintained. The most marked decline is, of course, in those forms of zymotic disease which it has been possible to treat and isolate in hospitals. Scarlet fever may be instanced as shewing how readily, and to what an increasing extent, the public have availed themselves of this accommodation.

Amongst the forms of zymotic disease for which no hospital accommodation is provided, and which are usually regarded as the less serious forms, the diminution is relatively inconsiderable. (See page 47.)

The remarkable diminution in deaths from various forms of tubercular disease is not less conspicuous than the foregoing. One of the most remarkable, as well as gratifying, features in regard to this disease is the great diminution in the rate of mortality in the very early years of life from the forms of tubercular disease peculiar to those ages. This diminution does not appear to have been shared in throughout the country generally.

Small-pox and typhus fever have become relatively rare.

Recent legislation affecting small-pox (page 27), will, in due season, afford ample opportunity for the study of small-pox throughout the length and breadth of the country. There is no reason to anticipate that the virulence of the disease in unvaccinated persons will be found to be modified in any way.

Two interesting series of cases of typhus fever are detailed on pages 31 and 32.

The control of alcoholism as a cause of death is not in the hands of the Sanitary Authority, and the increase in the deaths from excessive drinking, though strictly localised, can only be deplored.

Attention may be invited to a comparison between two districts of practically equal population, viz., the Exchange District and the incorporated West Derby District, the population of each of which is about 42,100.

In the Exchange District, 3.2 per cent. of the total deaths were certified by juries to be due to excessive drinking; that figure is five times the number of deaths so certified in the West Derby district.

Not altogether dissociated from this circumstance is the evidence of poverty in Exchange District, revealed by the fact that 40 per cent. of the total deaths amongst its inhabitants occurred in workhouses and hospitals, while only 15 per cent. of the deaths of residents of the West Derby District occurred in public institutions.

The proportion of deaths of infants under one year of age to each 1,000 births was 266 in Exchange, and 139 in West Derby. Tuberculosis caused 4.4 per cent. of the total deaths in Exchange, and 1.5 per cent. of the total deaths in West Derby.

The general death-rate in Exchange District was 36.9 per 1,000. The general death-rate in the West Derby District was 16.3 per 1,000, less than one-half.

In the section of the Report dealing with sanitary administration, it will be seen that various additions have been made to the Medical Officer of Health's staff. The rule which requires candidates to possess a certificate, or equivalent evidence that their previous occupation has fitted them for the duties which they will be called upon to discharge, has been strictly adhered to, and with much benefit. It is not only important that candidates should possess certificates, it is equally important that they should be properly taught, and it is this consideration which has led the City Council to give its support to the School of Hygiene, University College, where full and complete preliminary training can be obtained by those who desire to become inspectors in any branch of the Medical Officer's staff.

With regard to matters affecting house sanitation, the numbers of applications for assistance made by the public are increasing every year; they relate in the main to jerry-built property, or old and worn-out insanitary property.

Systematic house-to-house visitation is carried out by the district staff, both male and female, and special attention is given to the miserable class of property known as courts and alleys. (See page 65.)

Interchange of information between the Medical Department and the other departments has considerably increased, except in the case of the references to the School Board, which, owing to the diminution in infectious sickness, fell from 15,000 to 11,000.

Some details of the aim and object of these School Board references will be found on page 97.

With regard to the female sanitary staff, it is worth noting that there is a very large increase in the number of families visited, and a considerable diminution in the proportion reported as dirty. Ignorance of the language interposes a serious barrier to the efforts to improve the condition of the foreign Jews, chiefly Polish and Russian.

Important and responsible duties are carried out by the Ambulance and Disinfecting Staff; no less than 2,387 patients were removed to hospital, and the consequent disinfection of houses, bedding, clothing, etc., undertaken (page 100), with very satisfactory results. The cleansing of infected premises under £30 rental was also undertaken by men connected with that branch of the staff.

The details of the proceedings under the various Sanitary Acts of Parliament, for the suppression of nuisances, will be found upon reference to the index.

Under the Food and Drugs Act, a great variety of samples have been taken for chemical and bacteriological analysis. The various brands of what is known as condensed milk have been completely examined, and a considerable variety has been found in their composition.

The results of the bacteriological examinations will be seen on pages 138 to 155.

As in preceding years, considerable attention has been paid to the sources of the milk supply, and some detailed account of the proceedings is given on pages 116 to 125. In comparing the number of samples of town milk with the number of samples of country milk, found to be contaminated with tubercle, it must be remembered that the town samples are chiefly taken from suspected sources, whereas the country samples are taken as they come, without selection.

The demolition of insanitary property has proceeded gradually; the number of courts and alleys is at present 1,466, as against 1,660 in 1895. There is a very large amount of property which is so constructed as to be destructive to the health and life of those living in it, pent up, airless, and sunless, ruinously dilapidated, and saturated with filth. It is not surprising to find the general rate of mortality in it, from year's end to year's end, rising to 60 per thousand. The deaths, as may be supposed, are chiefly amongst the infants, but the general condition of the inhabitants is in every way deplorable. It is worth noting that the Parks and Gardens

Committee, stimulated by the laudable desire to brighten the homes of the poorest class, by gifts of window boxes containing growing plants, could not extend their operations to these sunless and unwholesome quarters, since the conditions, proved by long years of experience to be so destructive to human life, were equally so to flowers. The advent of cheapened and improved locomotion to the outskirts may, it is hoped, still further shorten their tenancy, but it must be abundantly plain that these centres of disease and degradation, becoming more and more dilapidated as years roll by, are becoming more and more insanitary.

Considerable benefit has attended the improvements in the system of cleansing and scavenging; the increased use of water for street washing has resulted in conspicuous good, and the inverse ratio between the autumnal diarrhoea and the rainfall, or water used in street washing, is very remarkable. It is a most unfortunate circumstance that the extremely narrow back passages in many of the densely-populated parts of the city necessitate, at present, the deposit of large heaps of decaying ashpit refuse at the street corners, pending the arrival of the bell-cart. The consequence is that dust and dirt of all kinds are blown about by the wind, or scattered by the traffic, while the heaps of refuse are made use of by the children to play with.

Fair progress has been made during the year towards the provision of adequate hospital accommodation for persons suffering from infectious sickness, and the consent of the Local Government Board is expected to the proposals which have been laid before it by the Hospitals Committee.

The rate of progress in the sanitation of a city is best gauged by comparing its condition during the year under review with its condition during preceding years. There are no means at present available to enable a comparison to be made between different cities, as their populations, the basis of all comparisons, are uncertain, and the age and the sex distribution unknown.

The table on page 18, which shows the different rates of mortality at the different ages, and the remarks following it, make this latter point clear.

Enough, perhaps, has been said upon the necessity of a quinquennial census, but it will not be out of place to express regret that the Registrar-General has not seen fit to do as his predecessors have done, and amend his estimates upon evidence which has been proffered to him.

Much confidence has been hitherto reposed by the public upon the returns issuing from the Registrar-General's Department, but there is no doubt whatever that sanitary operations are not likely to be advanced if fictitious returns from a Government Department show that they are not needed.

Similarly, sanitary progress will suffer if the results of sanitary works are misrepresented by fallacious returns; no useful purpose can be served by such returns. It might be supposed that the Registrar-General, having already made so gross an error as 100,000 in his estimate of the population of Liverpool, would at least be prepared to listen to the representations of the Health Committee upon the matter.

There does not, on the face of it, appear to be anything unreasonable in asking for the revision of estimates, when information is available upon which a revision can be based.

THE ESTIMATED POPULATION
OF THE CITY.

THE REVISED EDITION

OF THE OLD

POPULATION.

The statistical calculations in the following pages, except where otherwise stated, are based upon an estimated population of 668,645, a number which is derived partly from the census estimates and partly from information to be presently referred to, which enables corrections to be made, a very necessary proceeding at so long a period of time from the last census enumeration, namely, 1891. The figure, therefore, differs somewhat from that adopted by the Registrar-General, who makes no corrections, and assumes that in all communities alike, the population has increased in exactly the same ratio in which it increased during the inter-censal period between 1881 and 1891. Upon this hypothesis, the Registrar-General assumes that the total population of Greater Liverpool has only increased by 600 every year since 1891, the total increase during the eight years being 4,800, and the total population of the city 633,645.

The Registrar-General was so hopelessly inaccurate in his estimate of the population ten years ago, when he published an error of no less than 100,000 in the estimate of the population of this city, that a *prima facie* case was then and there made out, for regarding with doubt any future figures which he might publish, and which rested on a basis so conjectural.

The reasons for believing that the error in the present estimate of the Registrar-General is very considerable, and that the population is more than his published figures indicate, may be summarised in the following manner:—

- (a) What is called the natural increase, that is, the increase in the number of births over deaths since the census of 1891, exceeds 40,000 (nearly ten times the Registrar-General's estimate of total increase).
- (b) The increase in the number of registered voters since the last census exceeds 26,000 (see Table, page 9).
- (c) The increase in the number of houses built, over those which have been demolished, since the last census, is close upon 2,500.

- (d) The increase in the number of inhabited houses since the last census was found by special police inquiry, made early in the year, to be upwards of 14,400; making a liberal deduction of 5 per cent. for a possible margin of error, leaves an increase of 13,620 in the number of inhabited houses.

The matter is of sufficient importance to call for a few further observations.

Each of the foregoing facts suggests that the actual increase has been greater than the estimated increase; by the mere addition (a) of births over deaths the population is raised to upwards of 670,000. (b) The census average number of inhabitants to a voter is 6.9; but, to ensure that the approximation shall not err on the side of excess, if only 6.5 be taken, and the total increase of voters be multiplied by this figure, and added to the population of the old city at the census of 1891, the number arrived at is 689,326 (see page 9). With regard to (c), the number of inhabitants to a house upon the census estimate is 5.6, but if, with the object of studious moderation, only 5.4 be taken, and the total number of occupied houses, viz., 126,821, be multiplied by this figure, the resulting population is 684,833.

But if the incorporation of 1895 had not taken place, and the city and suburbs had been dealt with by the Registrar-General separately, as would have been the case except for the incorporation, the totals obtained under his own methods would have been greater by 23,000 than he assumes them to be now (see Table, page 10). One obvious fallacy of his method of estimation is shown by this circumstance.

It may be safely assumed that the under-estimate of the population of the city at the present time is about 50,000, an error which is not great enough to affect the statistics of the city when taken as a whole, except that it makes the birth-rate and death-rate about 1.5 per thousand too high, but the serious point is that the error is not equally distributed; in some districts it is small, while in others it is gross enough to throw doubt upon statistical returns relating to them.

Two such districts are selected for illustration. One of them, Scotland district, is shown on Table, page 7. Here the phenomenal increase in the birth-rate, from 37 per thousand ten years ago, up to close upon 50 per thousand at the present time, can only be explained by the obviously-increasing error in the estimate of population. The death-rate is, of course, correspondingly exaggerated.

In the smaller sub-districts affected, the consequences are still more pronounced. In one of them, viz., Vauxhall Ward, the error in the Registrar-General's estimate cannot be less than 30 per cent., the consequence being that all statistical returns must be vitiated to a considerable extent.

Fortunately, these returns are not now published separately, but in this district, perhaps more than in any other, the error results in delaying and discrediting sanitary operations. Vauxhall Ward, formerly, was a notoriously unwholesome district; pent-up alleys and courts, dwellings of the most grossly insanitary construction and condition, were the rule; but for some years past great efforts have been made to ameliorate the conditions of the district; large numbers of insanitary houses have been demolished, streets have been opened up, cottages and artisans' dwellings of the most approved style have been erected, and yet, year by year, thanks to the gross errors in the estimate of the population by the Registrar-General's method, the rate of mortality appears to be steadily going up.

Those who believe, or affect to believe, that the Registrar-General's estimate is a carefully-considered one, corrected year by year upon available evidence, are able, if they choose, to point to this rise in the death-rate, as evidence from a Government Department, that what is being done has resulted in no amelioration, that the money has been expended in vain, and the work has resulted in increasing disease and mortality. On the other hand, it must not be forgotten that an over-estimate of population is equally mischievous, since the fictitious returns based upon it obscure the necessity for sanitary measures.

But erroneous estimates are no new thing; at the close of the last intercensal period, the Registrar-General's estimate of the population of the City of Liverpool had gradually expanded into an error of 100,000; on Table, page 8, a few towns are selected to show that Liverpool was neither singular nor extreme in regard to these errors, either in 1891 or in 1881.

What error may exist in the estimate as applied to-day to other towns, can only be conjectured, but the Medical Officer has addressed letters on the subject to the Medical Officers of the great towns of England, and no

less than twenty-one of them are of opinion that the estimate is wholly incorrect and unreliable as applied to their own towns, sometimes over-estimating, sometimes under-estimating, their populations, whilst the Medical Officers of three other towns are very doubtful as to its accuracy. With regard to London, a quinquennial census is employed, and the evidence that a quinquennial census is necessary is abundantly proved by the errors of estimate which arise even in five years, amounting in 1891 to no less than 241,000.

What is wanted is a more frequent census for the whole country, certainly not less frequently than every five years. It is singular that the Registrar-General is satisfied, week after week, and year after year, to publish, under the imprimatur of his office, figures which everyone conversant with the subject must hesitate to accept as correct. No word of explanation, no word of warning, no comment is issued with these returns, cities and districts are strung together for comparison, with egregiously misleading results, and with consequences which tend to cripple and retard sanitation. No doubt a quinquennial census would go far to correct these mistakes, and tend not only to prevent the waste of time involved by the compilation and issue of fictitious returns, but also to put an end to the mischief which such returns give rise to.

The decennial census was inaugurated one hundred years ago, and the benefits afforded by the venerable system now require to be supplemented by a quinquennial one.

At the meeting of the Section of State Medicine of the British Medical Association in Edinburgh, on July 27th, 1898, a resolution was unanimously passed to the effect that it was absolutely essential that a quinquennial census of the whole country should be taken, in order to ensure accuracy in statistics relating to the public health. A similar resolution was passed at a Sessional meeting of the Sanitary Institute of Great Britain, held in London in December, 1898.

In Germany and some other countries a five-year census is taken, and in Japan the register of the population of each sub-district is corrected annually by the addition of infants born or of persons domiciled in the district, and by the removal of persons dying or leaving the district.

The following Table shows that the increase in the birth-rate of Scotland District, during the last ten years, has been phenomenal if the Registrar-General's estimate of the progressive decline of the population is correct.

SCOTLAND DISTRICT.

| <u>Year.</u> | <u>* Population.</u> | <u>No. of Births.</u> | <u>Birth Rate.</u> | <u>No. of Deaths.</u> | <u>Death Rate.</u> |
|--------------|----------------------|-----------------------|--------------------|-----------------------|--------------------|
| 1888 | ... 57,908 | ... 2,177 | ... 37·6 | ... 1,746 | ... 30·1 |
| 1889 | ... 56,346 | ... 2,174 | ... 38·5 | ... 1,914 | ... 33·9 |
| 1890 | ... 54,826 | ... 2,088 | ... 38·0 | ... 2,003 | ... 36·5 |
| 1891 | ... 53,347 | ... 1,984 | ... 37·2 | ... 1,993 | ... 37·0 |
| 1892 | ... 51,908 | ... 2,057 | ... 39·7 | ... 1,838 | ... 35·5 |
| 1893 | ... 50,508 | ... 2,027 | ... 40·1 | ... 1,834 | ... 36·3 |
| 1894 | ... 49,145 | ... 2,041 | ... 41·5 | ... 1,628 | ... 33·1 |
| 1895 | ... 47,820 | ... 2,144 | ... 44·8 | ... 1,836 | ... 38·4 |
| 1896 | ... 46,530 | ... 2,053 | ... 44·1 | ... 1,609 | ... 34·5 |
| 1897 | ... 45,275 | ... 2,122 | ... 46·9 | ... 1,711 | ... 37·7 |

The assumed increase in birth-rate in ten years is upwards of 24 per cent., and the assumed decline in the total population during the same period is about 21 per cent.

* Calculated by the Registrar General's method.

Towns selected to illustrate errors of similar kind in previous inter-censal period.

1881.

| TOWN. | Estimated Population. | Census Population. | Amount of Error. | Percentage of Error. |
|------------------|--------------------------|-----------------------|---------------------|-------------------------|
| Nottingham | 176,800 | 186,575 | 9,775 | 5 below Census |
| Manchester . . . | 364,037 | 393,585 | 29,548 | 7.5 „ „ |
| Salford | 191,739 | 176,235 | 15,504 | 8.8 above „ |
| Sheffield | 310,788 | 284,508 | 26,280 | 9 „ „ |
| Bradford | 202,809 | 183,032 | 19,777 | 10.8 „ „ |

1891.

| TOWN. | Estimated Population 1891. | Census Population, 1891. | Amount of Error. | Percentage of Error. |
|------------------|----------------------------------|--------------------------------|---------------------|-------------------------|
| Portsmouth | 144,226 | 159,251 | 15,025 | 9.4 below Census |
| Newcastle | 164,490 | 186,300 | 21,810 | 11.7 „ „ |
| Salford | 248,679 | 198,139 | 50,540 | 25.5 above „ |
| Liverpool | 618,639 | 517,980 | 100,659 | 19.4 „ „ |

LIVERPOOL CITIZENS' ROLL.

| Year. | No. of Voters on Citizens' Roll. | Increase. | No. of Inhabitants to a Voter. | |
|---------------------------------|--|-----------|--------------------------------------|--|
| 1891 | 75,283 | — | 6·9 | { Calculated on Census Population. |
| 1894-5 (before Extension) | 76,303 | 1,020 | — | |
| 1895-6 (after Extension) | 97,893 | 21,590 | — | |
| 1896-7 | 99,953 | 2,060 | — | |
| 1897-8 | *101,644 | 1,691 | *6·2 | { Calculated on Registrar General's Estimate of Population. |
| Increase since 1891 | — | *26,361 | — | |

* This does not include 2,105 Service Voters, the great majority of whom are heads of families.

This table requires a word of explanation. The Citizens' Roll up to the year 1894 was limited to the inhabitants of the then city. In 1895 the boundaries of the city were extended, consequently, all inhabitants of the extended area became citizens, and the number of them indicated in the table became voters. Since 1895 the total numbers of these voters, both in the old city and in the incorporated district, have increased.

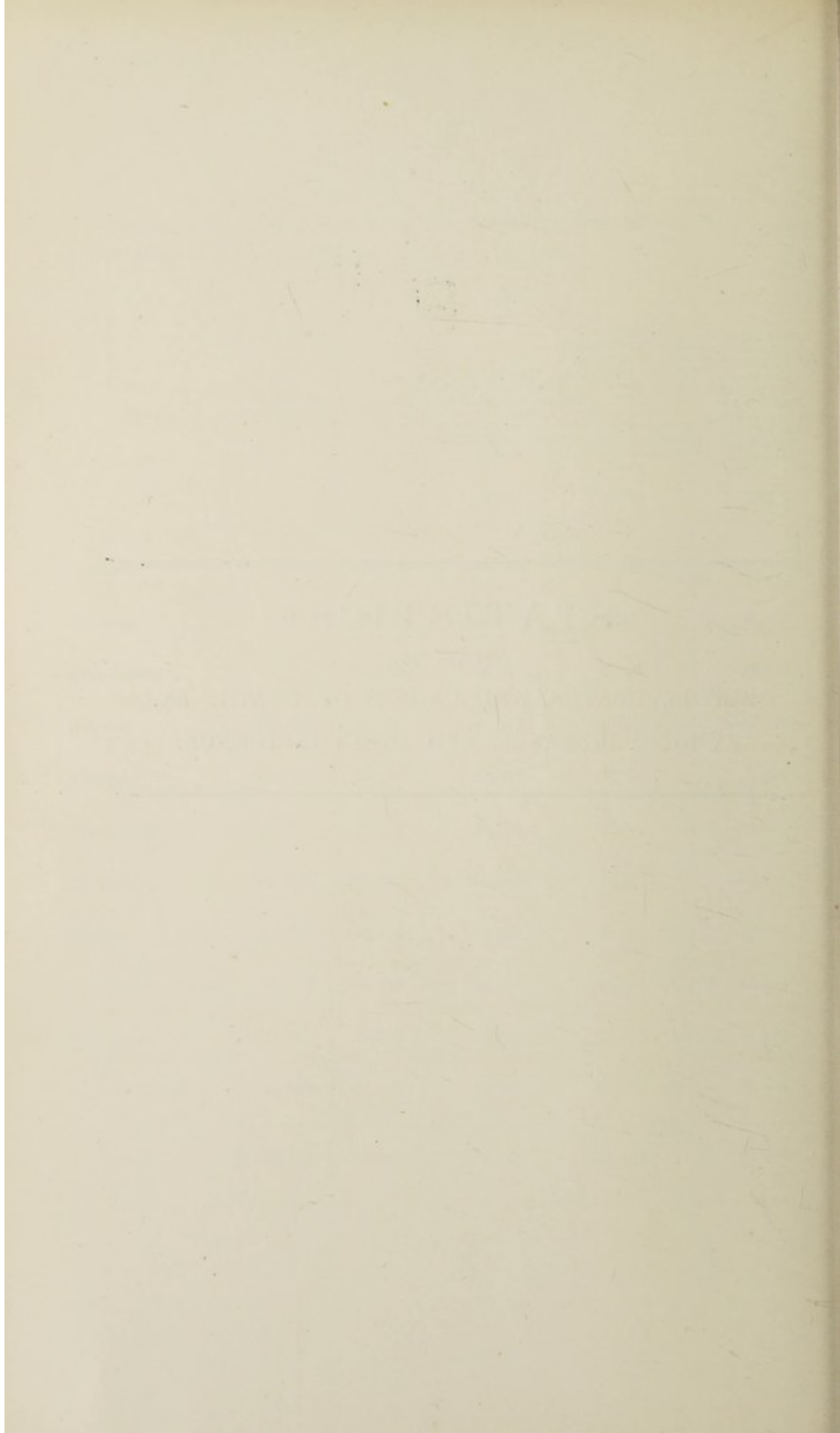
Showing the varying results of the Registrar General's method applied before and after incorporation of the several districts.

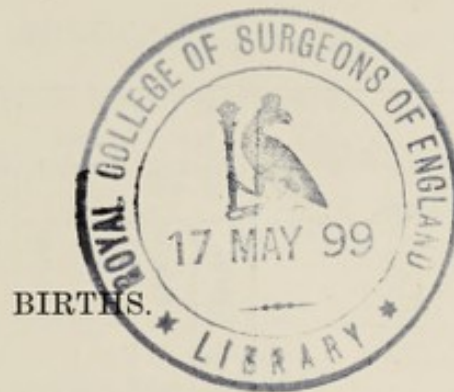
| District. | Population at Census 1881 | Population at Census 1891. | The Registrar General's Estimate after incorporation, the combined districts being dealt with as one whole. | The Registrar General's estimate applied to the for- mer City, and to each of the Incorporated Dis- tricts, separately, as would have been done if incorpora- tion had not taken place. | The Registrar General's Estimate applied as if City Districts and Out-Townships had not been incorporated, but had each been calculated separately. |
|---------------------|---------------------------------|----------------------------------|---|---|--|
| | | | 1898. | 1898. | 1898. |
| Scotland | 70,606 | 53,713 | 44,053 | 44,053 | 44,053 |
| Exchange | 72,007 | 47,738 | 36,137 | 36,137 | 36,137 |
| Abercromby | 67,551 | 55,530 | 48,642 | 48,642 | 48,642 |
| Everton | 109,812 | 110,556 | 110,677 | 110,715 (1) | 111,106 |
| Kirkdale | 58,145 | 66,131 | 67,993 | 68,404 | 72,598 |
| West Derby | 67,727 | 76,971 | 79,122 | 79,597 | 84,452 |
| Toxteth | 106,660 | 107,341 | 106,644 | 106,757 | 107,916 |
| Walton | 18,536 | 40,304 | 58,228 | 70,780 (2) | 70,780 |
| West Derby (Rural) | 31,673 | 36,349 | 38,564 | 40,141 (3) | 40,141 |
| Wavertree | 11,097 | 13,764 | 14,579 | 16,117 (4) | 16,117 |
| Toxteth (Rural) ... | 10,368 | 21,046 | 29,006 | 35,163 (5) | 35,163 |
| TOTAL | 624,182 | 629,443 | 633,645 | 656,506 | 667,105 |

STATISTICS

RELATING TO

BIRTHS, DEATHS, AND CAUSES OF DEATH, &c.,
ZYMOTIC DISEASES AND THEIR INCIDENCE.





The birth-rate in the City of Liverpool is exceptionally high. During the last ten years the mean has been 34.4, which is considerably in excess of most of the 35 great towns.

During the fifty-two weeks of the year 1898 (terminating on Saturday, December 31st, 1898), the Returns of the Local Registrars recorded 22,227 births within the city, making the total birth-rate of the city equal to 33.2 per 1,000 of the population. Of the total births 11,337 were males and 10,890 were females.

The distribution of the births in the different wards and districts of the city, which together comprise 13,236 acres ($20\frac{1}{2}$ square miles), is indicated upon the accompanying map (see Appendix), and has also been arranged in the following table:—

BIRTHS.

| DISTRICTS. | 1st Quarter. | | 2nd Quarter. | | 3rd Quarter. | | 4th Quarter. | | 1898. | | Average Rate per 1000 (on estimated population) during the 3 years 1895-1897. |
|-------------------------|--------------|---------|--------------|---------|--------------|---------|--------------|---------|--------|---------------|---|
| | Male. | Female. | Male. | Female. | Male. | Female. | Male. | Female. | Births | Rate per 1000 | |
| Scotland | 256 | 268 | 290 | 222 | 243 | 265 | 287 | 280 | 2111 | 42.1 | 45.2 |
| Exchange | 171 | 137 | 173 | 170 | 161 | 161 | 170 | 167 | 1310 | 31.0 | 35.4 |
| Abercromby..... | 226 | 204 | 214 | 196 | 218 | 187 | 200 | 188 | 1633 | 32.2 | 33.3 |
| Everton | 579 | 570 | 540 | 501 | 530 | 508 | 564 | 512 | 4304 | 38.7 | 39.3 |
| Kirkdale | 315 | 317 | 278 | 286 | 282 | 306 | 291 | 302 | 2377 | 32.7 | 35.2 |
| West Derby..... | 405 | 399 | 384 | 377 | 403 | 359 | 394 | 378 | 3099 | 36.6 | 37.2 |
| Toxteth | 455 | 456 | 457 | 428 | 426 | 428 | 436 | 407 | 3493 | 32.3 | 33.6 |
| Walton..... | 214 | 205 | 223 | 197 | 212 | 190 | 196 | 202 | 1639 | 28.8 | 27.3 |
| West Derby (Rural) | 149 | 137 | 108 | 121 | 129 | 122 | 136 | 122 | 1024 | 24.2 | 25.9 |
| Wavertree | 63 | 70 | 78 | 61 | 69 | 76 | 86 | 85 | 588 | 32.4 | 28.4 |
| Toxteth (Rural) | 78 | 91 | 82 | 89 | 78 | 68 | 88 | 75 | 649 | 19.8 | 20.3 |
| City | 2911 | 2854 | 2827 | 2648 | 2751 | 2670 | 2848 | 2718 | 22227 | 33.2 | 34.4 |

The birth-rate still appears higher in the old parts of the city than in the rapidly-extending areas in the suburbs. This is so opposed to what is found usually to obtain in cities, that whilst not losing sight of the high birth-rate amongst the poorer classes, resulting from very early marriage, there remains strong presumptive evidence that the population of the older parts of the city is considerably under-estimated.

The following Table shows the Population, Number of Births, and Birth-rate per 1,000 during the last twenty-five years.

| Year. | Population. | No of Births. | Rate per 1,000. |
|-------|-------------|---------------|-----------------|
| 1874 | 510,640 | 19,861 | 38·9 |
| 1875 | 516,063 | 19,869 | 38·5 |
| 1876 | 521,544 | 20,426 | 39·2 |
| 1877 | 527,083 | 20,333 | 38·6 |
| 1878 | 532,681 | 20,612 | 38·7 |
| 1879 | 538,338 | 20,844 | 38·7 |
| 1880 | 544,056 | 20,783 | 38·2 |
| 1881 | 551,617 | 20,762 | 37·6 |
| 1882 | 548,065 | 20,498 | 37·4 |
| 1883 | 544,547 | 19,907 | 36·6 |
| 1884 | 541,031 | 20,071 | 37·1 |
| 1885 | 537,548 | 19,464 | 36·2 |
| 1886 | 534,088 | 19,559 | 36·6 |
| 1887 | 530,649 | 18,414 | 34·7 |
| 1888 | 527,233 | 17,777 | 33·7 |
| 1889 | 523,838 | 17,676 | 33·7 |
| 1890 | 520,466 | 17,592 | 33·8 |
| 1891 | 517,145 | 17,832 | 34·5 |
| 1892 | 513,818 | 17,758 | 34·6 |
| 1893 | 510,514 | 18,328 | 35·9 |
| 1894 | 507,230 | 17,893 | 35·3 |
| *1895 | 638,291 | 22,006 | 34·5 |
| 1896 | 641,063 | 21,943 | 34·2 |
| 1897 | 644,129 | 22,280 | 34·6 |
| 1898 | 668,645 | 22,227 | 33·2 |

* City area extended.

The following table shows the *natural* increase or decrease of population, that is, the increase or decrease in the number of births over deaths during the year 1898, in the several districts of the city :—

| DISTRICTS. | | | | | | | Births. | Deaths. | Increase. | Decrease |
|---|----|----|----|----|----|----|---------|---------|-----------|----------|
| Scotland | .. | .. | .. | .. | .. | .. | 2111 | 1825 | 286 | .. |
| Exchange | .. | .. | .. | .. | .. | .. | 1310 | 1557 | .. | 247 |
| Abercromby | .. | .. | .. | .. | .. | .. | 1633 | 1242 | 391 | .. |
| Everton | .. | .. | .. | .. | .. | .. | 4304 | 2729 | 1575 | .. |
| Kirkdale | .. | .. | .. | .. | .. | .. | 2377 | 1368 | 1009 | .. |
| West Derby | .. | .. | .. | .. | .. | .. | 3099 | 1783 | 1316 | .. |
| Toxteth | .. | .. | .. | .. | .. | .. | 3493 | 2308 | 1185 | .. |
| Walton | .. | .. | .. | .. | .. | .. | 1639 | 736 | 903 | .. |
| West Derby (Rural) | .. | .. | .. | .. | .. | .. | 1024 | 684 | 340 | .. |
| Wavertree | .. | .. | .. | .. | .. | .. | 588 | 297 | 291 | .. |
| Toxteth (Rural) | .. | .. | .. | .. | .. | .. | 649 | 324 | 325 | .. |
| City | | | | | | | 22227 | 14853 | 7374 | .. |
| Hospitals (Residences outside City) | | | | | | | .. | 527 | .. | .. |
| Total.. .. . | | | | | | | 22227 | 15380 | 6847 | .. |

In only one district, viz.:—Exchange, is any decrease shown, the nett result in the city showing an increase of births over deaths of 6,847.

The following table is prepared from the Census Returns, from Reports of the Registrar General, and from other sources, and indicates the estimated rate of increase per cent. of the population of thirty-four large towns since the last Census.

| TOWNS. | Population Census, 1891. | Estimated Population, 1898. | Estimated Increase. | Rate of Estimated Increase per cent. of Population since 1891. |
|--------------------------|--------------------------------|-----------------------------------|------------------------|---|
| London | 4,232,118 | 4,504,766 | 272,648 | 6·4 |
| West Ham | 204,903 | 286,654 | 81,751 | 39·8 |
| Croydon | 102,695 | 124,421 | 21,726 | 21·1 |
| Brighton | 115,873 | 122,310 | 6,437 | 5·5 |
| Portsmouth | 159,251 | 186,618 | 27,367 | 17·1 |
| Plymouth | 84,248 | 99,136 | 14,888 | 17·6 |
| Bristol | 289,280 | 316,900 | 27,620 | 9·5 |
| Cardiff | 128,915 | 177,770 | 48,855 | 37·8 |
| Swansea | 90,349 | 102,001 | 11,652 | 12·8 |
| Wolverhampton | 82,662 | 88,051 | 5,389 | 6·5 |
| Birmingham | 478,113 | 510,343 | 32,230 | 6·7 |
| Norwich | 100,970 | 111,699 | 10,729 | 10·6 |
| Leicester | 174,624 | 208,662 | 34,038 | 19·4 |
| Nottingham | 213,877 | 236,137 | 22,260 | 10·4 |
| Derby | 94,146 | 104,834 | 10,688 | 11·3 |
| Birkenhead | 99,857 | 113,189 | 13,332 | 13·3 |
| Bolton... .. | 115,002 | 122,495 | 7,493 | 6·5 |
| Manchester | 505,368 | 539,079 | 33,711 | 6·6 |
| Salford | 198,139 | 215,702 | 17,563 | 8·8 |
| Oldham | 131,463 | 148,288 | 16,825 | 12·7 |
| Burnley | 87,016 | 109,546 | 22,530 | 25·8 |
| Blackburn | 120,064 | 133,228 | 13,164 | 10·9 |
| Preston | 107,573 | 116,356 | 8,783 | 8·1 |
| Huddersfield | 95,420 | 102,454 | 7,034 | 7·3 |
| Halifax | 89,832 | 96,729 | 6,897 | 7·6 |
| Bradford | 216,361 | 233,737 | 17,376 | 8·0 |
| Leeds | 367,505 | 416,618 | 49,113 | 13·3 |
| Sheffield | 324,243 | 356,478 | 32,235 | 9·9 |
| Hull | 200,044 | 229,887 | 29,843 | 14·9 |
| Sunderland | 131,015 | 143,849 | 12,834 | 9·7 |
| Gateshead | 85,692 | 103,775 | 18,083 | 21·1 |
| Newcastle-on-Tyne | 186,300 | 223,021 | 36,721 | 19·7 |
| Glasgow | 658,708 | 724,349 | 65,641 | 9·9 |
| LIVERPOOL | 629,443 | 668,645 | 39,202 | 6·1 |

DEATHS.

The most interesting, as well as the most important statistics are those dealing with mortality and its causes. These are set forth in the ensuing pages, and it is gratifying to record that the total death rate of the city during the year was 22·2 per 1,000, a reduction upon the preceding year, and upon the average rate during the four years (1895-8) since the extension of the city boundaries, which was 23·2, and a reduction of 1·2 per 1,000 on the rate of last year.

Quite apart from conditions of sanitation, mortality varies widely at different age-periods; consequently the death-rate of a community is largely influenced by the proportions living at each age period; the effect of a high birth-rate is considerable, in raising the crude death-rate.

The following table shows the actual number who died during last year in Liverpool out of every thousand living at each of the twelve age-periods indicated, and the differences which the figures show are very striking:—

| 1898. | Under 1 year. | 1 to 2 | 2 to 5 | 5 to 10 | 10 to 20 | 20 to 30 | 30 to 40 | 40 to 50 | 50 to 60 | 60 to 70 | 70 to 80 | 80 and upwards. | Total at all Ages. |
|--|---------------------|--------------|--------------|---------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-----------------------|-----------------------|
| Rate of Mortality per 1,000 living at ages indi- cated. | 222·6 | 86·4 | 19·8 | 5·3 | 3·1 | 5·5 | 12·0 | 19·9 | 32·8 | 57·4 | 102·6 | 190·5 | 22·2 |
| Total Number of Deaths at each Age Period .. | 4,086 | 1,382 | 967 | 414 | 447 | 653 | 1,140 | 1,421 | 1,511 | 1,465 | 1,028 | 339 | 14,853 |

If, for example, we could conceive that the whole population of Liverpool consisted of persons between the ages of 20 and 30, the death-rate last year would have been 5·5 per 1,000 per thousand; if, on the other hand, we could conceive that it consisted entirely of people under 1 year of age, the death-rate would be about 222·6 per 1,000, and if above 60 years, 75·9 per 1,000, and this with absolutely no change whatever in the condition of municipal sanitation.

The variations in the proportions at different ages take place with extreme slowness, and have but a trifling effect in modifying aggregate results.

The deaths in public institutions of 527 non-residents, equal to a fraction of 0·8 per 1,000, have been eliminated from the table.

The following table gives the total number of deaths allocated to each district :—

| DISTRICTS. | 1st Quarter. | | 2nd Quarter. | | 3rd Quarter. | | 4th Quarter. | | Annual. |
|--|--------------|---------|--------------|---------|--------------|---------|--------------|---------|---------|
| | Male. | Female. | Male. | Female. | Male. | Female. | Male. | Female. | Deaths. |
| Scotland | 202 | 214 | 198 | 200 | 272 | 278 | 253 | 208 | 1825 |
| Exchange | 186 | 173 | 190 | 178 | 225 | 208 | 213 | 184 | 1557 |
| Abercromby | 163 | 151 | 170 | 157 | 168 | 153 | 145 | 135 | 1242 |
| Everton | 357 | 347 | 326 | 314 | 402 | 358 | 321 | 304 | 2729 |
| Kirkdale | 179 | 140 | 182 | 138 | 205 | 192 | 183 | 149 | 1368 |
| West Derby | 194 | 248 | 223 | 218 | 286 | 231 | 194 | 189 | 1783 |
| Toxteth | 289 | 283 | 271 | 280 | 282 | 305 | 291 | 307 | 2308 |
| Walton | 77 | 90 | 86 | 99 | 89 | 99 | 89 | 107 | 736 |
| West Derby (Rural) | 101 | 86 | 92 | 74 | 84 | 83 | 70 | 94 | 684 |
| Wavertree | 37 | 33 | 31 | 40 | 51 | 36 | 37 | 32 | 297 |
| Toxteth (Rural) | 45 | 51 | 48 | 37 | 39 | 34 | 30 | 40 | 324 |
| Deaths of Non-Residents of the City in Work- houses and Hospitals. | 74 | 57 | 93 | 60 | 72 | 48 | 78 | 45 | 527 |
| City | 1904 | 1873 | 1910 | 1795 | 2175 | 2025 | 1904 | 1794 | 15380 |

Deaths in Public Institutions are referred to the Wards from whence the patients came, but the following table shows that the deaths of 3,812 persons occurred in the undermentioned Institutions for the treatment of the sick :—

| | | | | | |
|---------------------------|-----|-----|-----|-----|-------|
| Parish Workhouse | ... | ... | ... | ... | 1,243 |
| Royal Infirmary | ... | ... | ... | ... | 294 |
| Children's Infirmary | ... | ... | ... | ... | 106 |
| Lying-in Hospital | ... | ... | ... | ... | 20 |
| Consumption Hospital | ... | ... | ... | ... | 12 |
| Hahnemann Hospital | ... | ... | ... | ... | 13 |
| Northern Hospital | ... | ... | ... | ... | 159 |
| Stanley Hospital | ... | ... | ... | ... | 107 |
| Royal Southern Hospital | ... | ... | ... | ... | 197 |
| Mill Road Infirmary | ... | ... | ... | ... | 474 |
| Hospital for Women | ... | ... | ... | ... | 8 |
| City Hospital North | ... | ... | ... | ... | 82 |
| Do. South | ... | ... | ... | ... | 73 |
| Do. Parkhill | ... | ... | ... | ... | 51 |
| Do. East, Mill Lane | ... | ... | ... | ... | 19 |
| Do. Priory Road | ... | ... | ... | ... | 16 |
| Walton Workhouse | ... | ... | ... | ... | 546 |
| Belmont Road Workhouse | ... | ... | ... | ... | 32 |
| St. Joseph's Home | ... | ... | ... | ... | 38 |
| Toxteth Workhouse | ... | ... | ... | ... | 246 |
| Home for Incurables | ... | ... | ... | ... | 12 |
| Turner Memorial Home | ... | ... | ... | ... | 7 |
| St. Augustine's Home | ... | ... | ... | ... | 12 |
| Kirkdale Home | ... | ... | ... | ... | 10 |
| Walton Gaol | ... | ... | ... | ... | 10 |
| Other Public Institutions | ... | ... | ... | ... | 25 |

From the returns made as to the residences of these persons 3,285 of the deaths in these establishments are classified in the Districts from whence the patients were removed, viz. :—490 under Scotland District, 615 under Exchange District, 379 under Abercromby District, 544 under Everton, 255 under Kirkdale, 311 under West Derby, 432 under Toxteth, 104 under Walton, 102 under West Derby (rural), 31 under Wavertree, and 22 under Toxteth (rural); 384 were non-residents who had sought relief in Liverpool Institutions, and the remainder, 143, were waifs, strangers to the city, whose previous residences were unknown. In the absence of information, these latter have been recorded as deaths of non-residents.

The results of this allocation of deaths in public institutions to the districts from whence the patients had been removed, are shown in the following table, from which a calculated rate of mortality per 1,000 per annum of the inhabitants has been made. The rates are calculated upon a population increasing or decreasing in the same ratio as between 1881 and 1891, but with the proportionate corrections consequent upon the revised estimate previously explained.

| DISTRICTS. | 1898. | | Average Rate per 1000 (on estimated population) during the three years 1895-1897. |
|----------------------------|---------|---------------|--|
| | Deaths. | Rate per 1000 | |
| Scotland | 1825 | 36.4 | 36.9 |
| Exchange | 1557 | 36.9 | 39.4 |
| Abercromby | 1242 | 24.5 | 24.7 |
| Everton | 2729 | 24.5 | 25.8 |
| Kirkdale | 1368 | 18.8 | 22.0 |
| West Derby | 1783 | 21.1 | 22.8 |
| Toxteth | 2308 | 21.3 | 23.0 |
| Walton | 736 | 12.9 | 13.8 |
| West Derby (Rural) | 684 | 16.3 | 17.4 |
| Wavertree | 297 | 16.3 | 15.7 |
| Toxteth (Rural) | 324 | 9.9 | 10.1 |
| City | 14853 | 22.2 | 23.6 |

The District Registrars' Returns show that there were 26 deaths (18 of women and 8 of men) at the age of 90 and upwards, viz., 2 males and 6 females at 90, 1 male and 3 females at 91, 5 females at 92, 1 male and 1 female at 93, 2 males and 1 female at 94, 2 females at 95, 1 male at 97, and 1 male at 100.

The death-rate per 1,000 for 1898 in each of the districts of the city is indicated upon the appended map. Scotland and Exchange Districts contain a great number of common lodging-houses, some of which are resorted to by a non-resident and very migratory population. This class tends to swell the mortality of these two districts.

The following table gives the estimated population, recorded birth and death rates, and population per acre of thirty-six of the large towns of the United Kingdom.

| TOWNS. | Estimated Popula- tion in the middle of the year 1898. | Annual Rate to 1,000 of Population. | | Population per Acre |
|---------------------------|---|--|-------------|---------------------------|
| | | Births. | Deaths. | |
| London | 4504766 | 29·5 | 18·7 | 60·3 |
| West Ham | 286654 | 30·6 | 15·4 | 60·9 |
| Croydon | 124421 | 25·4 | 13·9 | 13·8 |
| Brighton | 122310 | 24·8 | 16·9 | 48·4 |
| Portsmouth | 186618 | 26·7 | 16·3 | 40·0 |
| Plymouth | 99136 | 29·7 | 19·5 | 43·3 |
| Bristol | 316900 | 28·6 | 17·2 | 27·1 |
| Cardiff | 177770 | 31·1 | 14·8 | 29·3 |
| Swansea | 102001 | 28·9 | 18·6 | 20·1 |
| Wolverhampton | 88051 | 35·8 | 21·3 | 25·0 |
| Birmingham | 510343 | 34·0 | 20·0 | 40·2 |
| Norwich | 111699 | 29·9 | 19·0 | 14·8 |
| Leicester | 208662 | 29·6 | 16·9 | 24·3 |
| Nottingham | 236137 | 28·9 | 17·7 | 21·5 |
| Derby | 104834 | 27·4 | 16·8 | 30·4 |
| Birkenhead | 113189 | 30·4 | 17·4 | 32·4 |
| Bolton | 122495 | 30·9 | 19·4 | 52·0 |
| Manchester | 539079 | 32·7 | 21·9 | 41·8 |
| Salford | 215702 | 34·7 | 22·7 | 41·7 |
| Oldham | 148288 | 25·3 | 17·6 | 31·4 |
| Burnley | 109546 | 27·1 | 16·3 | 27·9 |
| Blackburn | 133228 | 27·1 | 18·4 | 19·1 |
| Preston | 116356 | 31·0 | 19·3 | 28·5 |
| Huddersfield | 102454 | 22·5 | 15·9 | 8·6 |
| Halifax | 96729 | 22·9 | 17·9 | 11·3 |
| Bradford | 233737 | 24·0 | 17·6 | 21·7 |
| Leeds | 416618 | 31·2 | 19·2 | 19·3 |
| Sheffield | 356478 | 33·9 | 20·2 | 18·1 |
| Hull | 229887 | 33·4 | 18·4 | 25·6 |
| Sunderland | 143849 | 35·4 | 22·6 | 43·7 |
| Gateshead | 103775 | 35·5 | 20·6 | 33·1 |
| Newcastle-on-Tyne | 223021 | 31·7 | 21·4 | 41·5 |
| Edinburgh | 295628 | 27·5 | 19·7 | 47·3 |
| Glasgow | 724349 | 33·6 | 21·2 | 61·1 |
| Dublin | 349594 | 31·2 | 26·8 | 14·1 |
| LIVERPOOL | 668645 | 33·2 | 22·2 | 50·5 |

The next table indicates the seasonal mortality, and the incidence, in the various wards of the city, of infantile mortality, and the proportion of deaths under five years to the total deaths :—

| DISTRICTS. | Quarters. | | | | Total Deaths. | Deaths under 5 years of age. | Per Cent- age of Deaths under 5 years to Total Deaths. | Per Cent- age of Deaths under 1 year to Total Births. |
|---|-----------|-------|-------|------|---------------|------------------------------|--|---|
| | March. | June. | Sept. | Dec. | | | | |
| Scotland | 184 | 169 | 335 | 232 | 1825 | 920 | 50·4 | 23·8 |
| Exchange | 110 | 120 | 203 | 157 | 1557 | 590 | 37·8 | 26·6 |
| Abercromby | 103 | 101 | 137 | 75 | 1242 | 416 | 33·4 | 16·1 |
| Everton | 277 | 261 | 452 | 289 | 2729 | 1279 | 46·8 | 19·4 |
| Kirkdale | 144 | 118 | 210 | 163 | 1368 | 635 | 46·4 | 17·5 |
| West Derby | 185 | 172 | 303 | 152 | 1783 | 812 | 45·5 | 17·7 |
| Toxteth | 224 | 215 | 315 | 250 | 2308 | 1004 | 43·5 | 18·3 |
| Walton | 60 | 75 | 93 | 83 | 736 | 311 | 42·2 | 12·5 |
| West Derby (Rural) | 37 | 44 | 74 | 55 | 684 | 210 | 30·7 | 13·9 |
| Wavertree | 28 | 27 | 53 | 30 | 297 | 138 | 46·4 | 16·8 |
| Toxteth (Rural) .. | 30 | 29 | 44 | 17 | 324 | 120 | 37·0 | 12·2 |
| Workhouses & Hos- pitals (Residences outside City) .. | 17 | 11 | 7 | 19 | 527 | 54 | 10·2 | .. |
| City | 1399 | 1342 | 2226 | 1522 | 15380 | 6489 | 42·1 | 18·4 |

Inquests were held on the bodies of 134 infants, under 12 months of age, who had been suffocated.

Deaths in Public Institutions are transferred to the Districts from whence the patients came.

CAUSES OF DEATH.

The following table gives a classification of the actual causes of death during the four quarters of the year, grouped under 15 classes.

Full details as to the causes of death are set forth in tables (A and C) in the Appendix; in these tables the age at death and the district in which it occurred will also be found.

| CLASSES. | QUARTERS. | | | | YEAR 1898. |
|---|-----------|-------|-------|------|---------------|
| | March. | June. | Sept. | Dec. | |
| 1. Zymotic and Septic Diseases | 394 | 470 | 1062 | 490 | 2416 |
| 2. Diseases of Uncertain or Variable Seat .. | 133 | 145 | 133 | 145 | 556 |
| 3. Constitutional Diseases | 476 | 468 | 423 | 454 | 1821 |
| 4. Diseases of the Nervous System | 423 | 379 | 417 | 390 | 1609 |
| 5. ,, ,, Circulatory ,, | 277 | 285 | 213 | 258 | 1033 |
| 6. ,, ,, Respiratory ,, | 1024 | 914 | 609 | 917 | 3464 |
| 7. ,, ,, Digestive ,, | 240 | 230 | 538 | 265 | 1273 |
| 8. ,, ,, Lymphatic ,, | 6 | 3 | 5 | 4 | 18 |
| 9. ,, ,, Urinary ,, | 110 | 116 | 98 | 81 | 405 |
| 10. ,, ,, Re-productive ,, | 32 | 22 | 21 | 20 | 95 |
| 11. ,, ,, Joints, &c. | 7 | 9 | 12 | 9 | 37 |
| 12. ,, ,, Integumentary System .. | 13 | 11 | 4 | 7 | 35 |
| 13. Dietetic Diseases | 4 | 2 | 5 | 3 | 14 |
| 14. Developmental Diseases | 392 | 410 | 416 | 403 | 1621 |
| 15. Causes investigated at Coroner's Inquests .. | 244 | 241 | 232 | 243 | 960 |
| Causes not specified | 2 | .. | 12 | 9 | 23 |
| All Causes | 3777 | 3705 | 4200 | 3698 | 15380 |

ZYMOTICS.

The following table shows the localities and the periods of the fatal prevalence of Zymotic diseases during 1898 :—

| DISTRICTS. | Deaths from all causes. | ZYMOTICS. | | | | |
|--|-------------------------|-----------|-------|-------|------|--|
| | | Quarters. | | | | Per Centage of Zymotic Deaths to Deaths from all causes. |
| | | March. | June. | Sept. | Dec. | |
| Scotland | 1825 | 31 | 53 | 201 | 80 | 20·0 |
| Exchange | 1557 | 34 | 42 | 84 | 46 | 13·2 |
| Abercromby | 1242 | 38 | 46 | 47 | 31 | 13·0 |
| Everton | 2729 | 80 | 89 | 208 | 78 | 16·6 |
| Kirkdale | 1368 | 35 | 42 | 122 | 47 | 17·9 |
| West Derby | 1783 | 53 | 62 | 114 | 32 | 14·6 |
| Toxteth | 2308 | 60 | 54 | 162 | 105 | 16·5 |
| Walton | 736 | 13 | 36 | 52 | 31 | 17·9 |
| West Derby (Rural) | 684 | 22 | 18 | 32 | 20 | 13·4 |
| Wavertree | 297 | 7 | 9 | 20 | 9 | 15·1 |
| Toxteth (Rural) | 324 | 13 | 11 | 12 | 2 | 11·7 |
| Workhouses and Hospitals (Residences outside City) | 527 | 8 | 8 | 8 | 9 | 6·2 |
| City | 15380 | 394 | 470 | 1062 | 490 | 15·7 |

Deaths in Public Institutions are transferred to the Districts from whence the patients came.

This class of diseases occasioned 2,416 deaths during the year 1898, and accounted for 15·7 per cent. of the total mortality within the city during this period. The death rate from zymotic diseases per 1,000 was 3·6. The deaths were as follows :—

| | | | | | | QUARTERS. | | | | YEAR |
|------------------|--------------------|----|----|----|----|-----------|-------|-------|------|-------|
| | | | | | | March. | June. | Sept. | Dec. | 1898. |
| Total Zymoties | .. | .. | .. | .. | .. | 394 | 470 | 1062 | 490 | 2416 |
| Smallpox | .. | .. | . | .. | .. | .. | .. | 1 | 1 | 2 |
| Measles.. | .. | .. | .. | .. | .. | 38 | 79 | 64 | 102 | 283 |
| Scarlatina | .. | .. | .. | .. | .. | 46 | 31 | 24 | 44 | 145 |
| Diphtheria | .. | .. | | .. | .. | 25 | 23 | 30 | 45 | 123 |
| Membranous Croup | .. | .. | .. | .. | .. | 8 | 6 | 2 | 9 | 25 |
| Whooping Cough | .. | .. | .. | .. | | 105 | 122 | 59 | 47 | 333 |
| Diarrhœa | .. | .. | .. | .. | .. | 39 | 40 | 753 | 124 | 956 |
| Fever | Typhus | | .. | .. | .. | 1 | 8 | 5 | 5 | 19 |
| | Typhoid | | | .. | .. | 25 | 33 | 39 | 51 | 148 |
| | Simple Continued.. | | .. | . | | 1 | 1 | 1 | 2 | 5 |
| Other Zymotics | .. | .. | .. | .. | .. | 106 | 127 | 84 | 60 | 377 |

SMALL-POX AND VACCINATION.

Small-pox was introduced into the city on eight occasions, the total cases numbering seventeen. In four cases the patients were removed direct from ships, the other patients were removed from their homes. In all the cases every possible precaution was taken to prevent any extension of the disease, and fortunately these precautions were successful each time. (See page 94.)

There were two deaths during the year.

The only effective measure of protection against Small-pox has received a severe check during the year by the passing of an Act called "An Act to amend the Law with respect to Vaccination."

The result of the Act is practically to make vaccination optional, and not only that, but, by abolishing the vaccination stations, serious obstacles are placed in the way of efficiently vaccinating the children of the poorer classes, notwithstanding that their parents are anxious that the children should receive that protection from small-pox which vaccination alone can afford.

The passing of this extraordinary measure, in the absence of any evidence which can justify it, can but create astonishment, which is increased by the study of the report of the Royal Commission on Vaccination, which for seven years laboriously considered, in every conceivable detail, the effects of vaccination upon small-pox.

Overwhelming evidence is furnished by every small-pox hospital throughout the country, confirmatory of the very definite conclusions which the Royal Commission have arrived at. They say :—

"It does appear to us impossible to resist the conclusion that vaccination has a protective effect in relation to small-pox."

"The beneficial effects of vaccination are most experienced by those in whose case it has been most thorough. We think it may fairly be concluded that where the vaccine matter is inserted in three or four places it is more effectual than when introduced into one or two places only."

"We can see nothing to warrant the conclusion that in this country vaccination might safely be abandoned and replaced by a system of isolation."

"We are of opinion that the State ought to continue to promote the vaccination of the people. We are not prepared to recommend that the State should cease to require vaccination and trust entirely to a voluntary adoption of the practice."

In Section 524 they say, "After careful consideration and much study of the subject we have arrived at the conclusion that it would conduce to increased vaccination if a scheme could be devised which would preclude the attempt (so often a vain one) to compel those who are honestly opposed to the practice to submit their children to vaccination, and at the same time leave the law to operate, as at present, to prevent children remaining unvaccinated owing to the neglect or indifference of the parent." In reference to this matter, the Commission further say that "every effort should be made to remove the causes which now render vaccination burdensome and tend to its discouragement."

It may be assumed that the legislator is convinced,

- (1) that small-pox is a disease which ought to be prevented;
- (2) that it can safely be prevented by vaccination and re-vaccination;
- (3) that it cannot be prevented by any other known means.

If these assumptions are warranted, the action of the legislature is unaccountable.

SMALL-POX DURING THE LAST THIRTY-SIX YEARS.

| Years of Increase. | No. of Cases. | Deaths. | Years of Subsidence. | No. of Cases. | Deaths. |
|--------------------|---------------|---------|----------------------|---------------|---------|
| 1863 | Unrecorded | 100 | | | |
| 1864 | " | 482 | | | |
| 1865 | " | 459 | | | |
| 1866 | " | 102 | | | |
| | | | 1867 | Unrecorded | 22 |
| | | | 1868 | " | 18 |
| | | | 1869 | " | 20 |
| 1870 | " | 174 | | | |
| 1871 | " | 1,919 | | | |
| 1872 | " | 50 | | | |
| | | | 1873 | " | 10 |
| | | | 1874 | " | 30 |
| | | | 1875 | " | 29 |
| 1876 | " | 386 | | | |
| 1877 | 1,660 | 299 | | | |
| | | | 1878 | 35 | 3 |
| | | | 1879 | 12 | ... |
| | | | 1880 | 14 | 2 |
| | | | 1881 | 262 | 34 |
| | | | 1882 | 67 | 6 |
| | | | 1883 | 126 | 26 |
| 1884 | 832 | 106 | | | |
| | | | 1885 | 375 | 46 |
| | | | 1886 | 234 | 29 |
| | | | 1887 | 23 | 1 |
| | | | 1888 | 27 | 1 |
| | | | 1889 | 9 | 1 |
| | | | 1890 | 2 | ... |
| | | | 1891 | 21 | 2 |
| | | | 1892 | 177 | 13 |
| | | | 1893 | 75 | 9 |
| | | | 1894 | 229 | 20 |
| | | | 1895 | 130 | 12 |
| | | | 1896 | 8 | ... |
| | | | 1897 | 6 | ... |
| | | | 1898 | 17 | 2 |

TYPHUS FEVER.

This disease, always associated with filth, squalor, and drunkenness, has never been absent for any lengthened period from Liverpool, but the cases of typhus have gradually diminished as sanitary administration has become more precise.

The disease is particularly liable to spread amongst dirty, ill-fed, and intemperate persons, and incessant watchfulness is necessary in order to hold it in check.

It is gratifying to report that the number of cases and the number of deaths from Typhus Fever during the year 1898 have been lower than they ever were before, with one exception, viz., in 1892.

There were 92 cases found, 19 of which, as the table shows, resulted fatally.

| AGES AT DEATH. | | | | | | | | | | | |
|------------------|----|----|----|-----|-----|-----|-----|-----|-----|--------------------|--------------|
| Under 1 year. | 1— | 2— | 5— | 10— | 15— | 20— | 30— | 40— | 50— | 60 & up- wards. | All Ages. |
| — | — | 1 | — | — | 2 | 2 | 7 | 6 | 1 | — | 19 |

The following cases illustrate the importance of the daily visits which are made to houses which have been infected with typhus, as well as the importance of keeping under supervision every person who is known to have been in contact with the patient. (See page 94.)

On October 7th, a suspected case of typhus was reported at No. 57, Beresford Street. The house was visited the same day, but the patient, a woman named Alice Jackson, was dead; the body was removed to the mortuary for interment, and the premises were thoroughly disinfected.

At the time of visit a woman named Elizabeth Cox, and a woman named Eliza Critchley, of no fixed abode, were in the house. The husband of deceased, James Jackson, a labourer, and also her father, John Jones, a carter, both casual workers only, also lived in the house.

The house was visited every day for a fortnight, when, on October 21st, the inmates removed to 26, India Street, and on one occasion a woman, who refused her name and address, was found drinking with the woman Cox in the yard. Nothing unusual occurred during the first two or three days after Jackson moved from No. 57, Beresford Street to No. 26, India Street. On Friday, October 28th, Cox was not seen by the Inspector, who was told by her daughter Alice that she was out washing. On Saturday, the 29th, a case of typhus was reported to the Medical Officer of Health from Brownlow Hill Workhouse; the patient turned out to be Cox. Meantime, on Friday, the 28th, the girl Critchley had also disappeared from the house. Alice Cox told the Inspector that she did not know where she had gone. After much difficulty she was traced to 42, Devon Street, which address she had left for Brownlow Hill Hospital on November 2nd, suffering, it was said, from a cold. The authorities at Brownlow Hill Hospital were at once telephoned to, and the woman Critchley was isolated, and in due course developed typhus.

The man Jackson was also missed from 26, India Street by the Inspector, and was eventually found on Friday, the 4th November, in Mill Road Infirmary, suffering from typhus.

Another interesting series is shown on the accompanying diagram. The figures indicate the sequence in regard to dates, the lines indicating the connection between the infected people.

The points of interest in this series are that a considerable number of the cases were not diagnosed, consequently no report whatever concerning them reached the Health Office, and no information was obtained until independent inquiries were made by the medical staff.

Case 1 was certified to have died from heart disease, and the body was removed to 61, Hunter Street, where a wake was held.

No. 2 was certified to have died from congestion of the brain.

No. 3 was certified to have died from syncope.

No. 6 was certified to have died from bronchitis and coma.

Nos. 9 and 11 were both originally notified as typhoid, and were subsequently proved to have typhus.

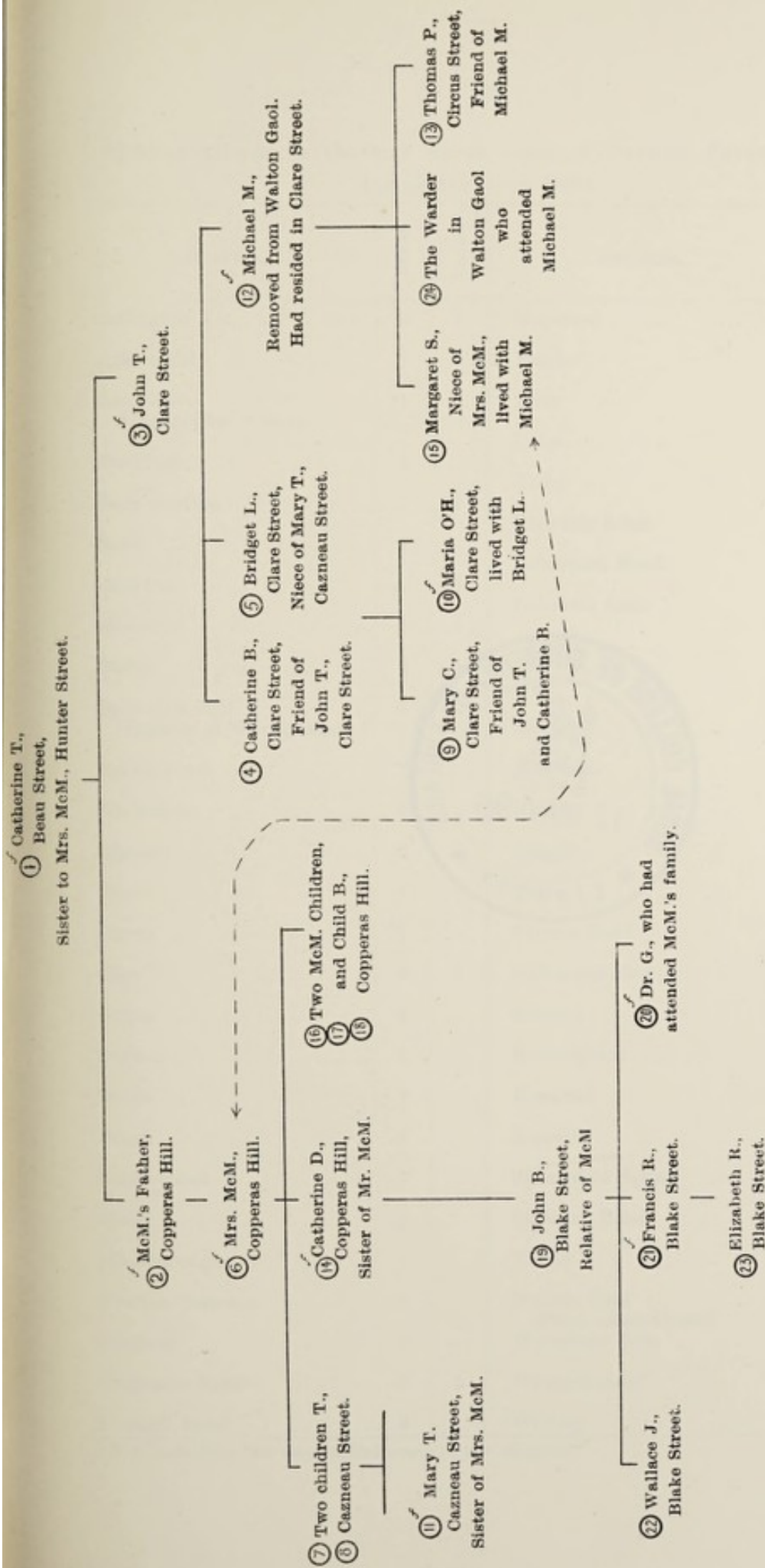
No. 14.—The cause of death was alleged to be influenza.

Nos. 16, 17 and 18 were notified originally as typhoid.

No. 20 was originally notified as scarlet fever.

No doubt typhus fever is so rare a disease that few medical men have an opportunity to see it, and mistakes are consequently not uncommon.

But it will be seen from these cases that it has lost none of its virulency, and none of its infectivity. No less than 10 out of the 20 cases, those marked (*f*), died, the fatality, as usual, being entirely among the adults, children getting well.



The above Diagram shows (a) the connection between what appeared to be isolated cases of Typhus Fever; (b) the manner in which Typhus Fever may spread among personal acquaintances and from street to street; (c) the readiness with which a single infected centre multiplies into many foci of infection, forming the basis of a general outbreak; (d) the necessity for the close watch kept on all persons known to have been exposed to infection.



*List of streets in the city where cases of TYPHUS FEVER occurred during the year 1898.

| STREETS. | Cases. | Deaths. | STREETS. | Cases. | Deaths. |
|--------------------------|--------|---------|----------------------------|--------|---------|
| Adlington | 5 | 1 | Hopwood | 2 | .. |
| Arkwright | 1 | 1 | Hunter | 1 | .. |
| Ash Grove | 1 | .. | Idris | 5 | .. |
| (Christopher Street) | | | India | 1 | .. |
| Bankhall | 1 | .. | Kirby | 3 | 1 |
| Back Grafton | 1 | 1 | Kirkdale Road | 1 | .. |
| Beau | 1 | .. | Laburnum Road | 1 | 1 |
| Beaufort | 1 | 1 | Limekiln Lane | 1 | .. |
| Beresford | 1 | 1 | Luton | 1 | .. |
| Blake | 3 | 1 | Marr | 1 | 1 |
| Brownlow Hill | 3 | .. | Morley | 1 | .. |
| (Inmates of Workhouse) | | | Newsham | 2 | .. |
| Buckingham | 2 | .. | Norris | 1 | .. |
| Burlington | 4 | .. | Othello | 2 | 1 |
| Cazneau | 3 | 1 | Paton | 2 | 2 |
| Ceres | 1 | .. | Princes Road | 1 | .. |
| Circus | 1 | .. | Richmond Row | 1 | .. |
| Clare | 3 | 1 | Robsart | 1 | .. |
| Comus | 4 | .. | Rockingham | 1 | 1 |
| Darwen | 1 | .. | Rosalind | 1 | .. |
| Devon | 1 | .. | Russell | 1 | 1 |
| Douro | 2 | .. | Springfield Square | 1 | .. |
| Easby Road | 1 | .. | Stalmine Road | 1 | .. |
| Eldon | 2 | .. | Thetis | 1 | .. |
| Ellenborough | 1 | .. | Walton Gaol | 1 | 1 |
| Everton Crescent | 1 | .. | (From Clare Street) | | |
| Flinders | 1 | .. | Wavertree Vale | 1 | .. |
| Fountains Road | 1 | 1 | Westmoreland | 3 | .. |
| Fonthill Road | 5 | 1 | Whitley | 1 | .. |

*Not including the un-notified cases in the diagram.

TYPHOID FEVER.

The cases of Typhoid Fever were fewer than in the preceding year, but the deaths were three more than in 1897; that number is very considerably below the average of the preceding five years.

There is growing evidence to show the dangers of the communicability of typhoid fever by direct infection, or by means of food. In regard to this latter, raw shell-fish have been proved to be the means of communicating the disease. Oysters, mussels, cockles, etc., fed upon sewage of towns, should be avoided. (See page 142.)

Upwards of 67 per cent. of the total number of cases notified during the year were removed to hospital. (See page 203.)

The following gives the ages at death of the fatal cases:—

| AGES AT DEATH. | | | | | | | | | | | |
|------------------|----|----|----|-----|-----|-----|-----|-----|-----|--------------------|--------------|
| Under 1 year. | 1— | 2— | 5— | 10— | 15— | 20— | 30— | 40— | 50— | 60 & up- wards. | All Ages. |
| — | 2 | 7 | 13 | 16 | 20 | 41 | 25 | 15 | 6 | 3 | 148 |

Table showing the locality and season of deaths from the various forms of Continued Fever during the year 1898.

| DISTRICTS. | 1st Quarter. | | | 2nd Quarter. | | | 3rd Quarter. | | | 4th Quarter. | | | YEAR. | | | |
|------------------------------------|--------------|----------|-------------------|--------------|---------|----------|-------------------|--------|---------|--------------|-------------------|--------|---------|----------|-------------------|--------|
| | Typhus. | Typhoid. | Simple Continued. | Total. | Typhus. | Typhoid. | Simple Continued. | Total. | Typhus. | Typhoid. | Simple Continued. | Total. | Typhus. | Typhoid. | Simple Continued. | TOTAL. |
| Scotland | ... | 1 | ... | 1 | 1 | 3 | ... | 4 | ... | 5 | ... | 5 | 1 | 12 | ... | 13 |
| Exchange | ... | 2 | 1 | 3 | 3 | 3 | 1 | 7 | ... | 4 | ... | 4 | 3 | 11 | 2 | 16 |
| Abercromby | ... | 1 | ... | 1 | 2 | 3 | ... | 5 | ... | 2 | ... | 2 | 2 | 12 | ... | 14 |
| Everton ... | 1 | 4 | ... | 5 | ... | 7 | ... | 7 | 2 | 7 | ... | 9 | 4 | 27 | ... | 31 |
| Kirkdale | ... | 3 | ... | 3 | 2 | 7 | ... | 9 | 3 | 3 | ... | 6 | ... | 17 | ... | 22 |
| West Derby | ... | 4 | ... | 4 | ... | 6 | ... | 6 | ... | 6 | ... | 6 | ... | 19 | 1 | 20 |
| Toxteth | ... | 6 | ... | 6 | ... | ... | ... | ... | 4 | 4 | 1 | 5 | 3 | 27 | 2 | 32 |
| Walton ... | ... | 1 | ... | 1 | ... | 1 | ... | 1 | ... | 4 | ... | 4 | ... | 8 | ... | 8 |
| West Derby (Rural) | ... | ... | ... | ... | 2 | 2 | ... | 2 | 1 | 1 | ... | 1 | 1 | 6 | ... | 7 |
| Wavertree | ... | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 3 | ... | 3 |
| Toxteth (Rural) | ... | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 |
| Hospitals (Residences out of City) | ... | 1 | ... | 1 | ... | 1 | ... | 1 | ... | 3 | ... | 3 | ... | 5 | ... | 5 |
| Hospitals (Residences unknown) | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| TOTAL FOR WHOLE CITY | 1 | 25 | 1 | 27 | 8 | 33 | 1 | 42 | 5 | 39 | 1 | 45 | 5 | 51 | 2 | 58 |
| | | | | | | | | | | | | | 19 | 148 | 5 | 172 |

In arranging this table, all deaths occurring in hospitals have been transferred to the districts from whence the patients came.

SCARLATINA.

There was some falling off in the prevalence of this disease during the past year, but the demands for the isolation in hospital of patients suffering from Scarlatina exceeded the accommodation in the city hospitals. Yet of a total of 2,424 cases reported, no less than 1,467 were removed to hospital. The percentage of the total number of patients removed to hospital during each of the last five years have been steadily increasing as follows:— 35·7, 38·3, 44·3, 54·6, and 60·5. This public appreciation of the value of isolation is noteworthy.

DEATHS FROM SCARLATINA.

| DISTRICTS. | | | | | | QUARTERS. | | | | | | | | YEAR. | | |
|---|----|----|----|----|----|-----------|----|-------|----|-------|----|------|----|-------|----|--------|
| | | | | | | March. | | June. | | Sept. | | Dec. | | | | |
| | | | | | | M. | F. | M. | F. | M. | F. | M. | F. | M. | F. | Total. |
| Scotland | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | 4 | 2 | 2 | 2 | 7 | 9 |
| Exchange | .. | .. | .. | .. | .. | 1 | 1 | 2 | 1 | .. | .. | 1 | 2 | 4 | 4 | 8 |
| Abercromby | .. | .. | .. | .. | .. | 3 | 2 | 2 | 2 | 2 | .. | .. | .. | 7 | 4 | 11 |
| Everton | .. | .. | .. | .. | .. | 5 | 3 | 2 | 6 | 3 | .. | 4 | 4 | 14 | 13 | 27 |
| Kirkdale | .. | .. | .. | .. | .. | .. | 1 | 2 | .. | 2 | 1 | 5 | 1 | 9 | 3 | 12 |
| West Derby | .. | .. | .. | .. | .. | 4 | 4 | 3 | 1 | 3 | 1 | 1 | 2 | 11 | 8 | 19 |
| Toxteth | .. | .. | .. | .. | .. | 5 | 11 | 2 | 3 | .. | 4 | 6 | 2 | 13 | 20 | 33 |
| Walton | .. | .. | .. | .. | .. | .. | 1 | 1 | 2 | .. | 1 | .. | 4 | 1 | 8 | 9 |
| West Derby (Rural) | .. | .. | .. | .. | .. | 2 | .. | 1 | .. | .. | .. | 1 | 4 | 4 | 4 | 8 |
| Wavertree | .. | .. | .. | .. | .. | 2 | .. | .. | .. | 1 | 1 | 1 | .. | 4 | 1 | 5 |
| Toxteth (Rural) | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | .. | .. | .. | 1 | 1 | 2 |
| Hospitals (Residences outside the City) | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 2 | .. | 2 | .. | 2 |
| City | .. | .. | .. | .. | .. | 22 | 24 | 15 | 16 | 12 | 12 | 23 | 21 | 72 | 73 | 145 |

AGES AT DEATH.

| Under 1 year. | 1— | 2— | 3— | 4— | 5— | 10— | 15— | 20— | 30— | 40— | 50— | All Ages. |
|---------------|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----------|
| 7 | 29 | 25 | 25 | 21 | 31 | 3 | 2 | 1 | 1 | .. | .. | 145 |

Deaths in Public Institutions are transferred to the Districts from whence the patients came.

MEASLES.

The following table shows the periods of the year and the localities in which deaths from Measles occurred, and also the ages at death.

| DISTRICTS. | | | | | | QUARTERS. | | | | | | | | YEAR. | | |
|---|-----|----|----|----|----|-----------|-----|-------|-----|-------|-----|-----------|----|-------|-----|--------|
| | | | | | | March. | | June. | | Sept. | | Dec. | | M. | F. | Total. |
| | | | | | | M. | F. | M. | F. | M. | F. | M. | F. | | | |
| Scotland | .. | .. | . | .. | .. | .. | .. | 10 | 7 | 4 | 16 | 11 | 13 | 25 | 36 | 61 |
| Exchange | .. | .. | .. | .. | .. | .. | 2 | 3 | .. | 5 | 6 | 8 | 4 | 16 | 12 | 28 |
| Abercromby | .. | .. | .. | .. | .. | 2 | 2 | 3 | 1 | .. | 3 | 6 | 4 | 11 | 10 | 21 |
| Everton | .. | .. | .. | .. | . | 6 | 1 | 10 | 6 | 5 | 6 | 4 | 2 | 25 | 15 | 40 |
| Kirkdale | .. | .. | .. | .. | .. | 1 | 3 | 2 | 1 | 2 | 2 | .. | 3 | 5 | 9 | 14 |
| West Derby | .. | .. | .. | .. | .. | 5 | 4 | 4 | 9 | 2 | .. | .. | .. | 11 | 13 | 24 |
| Toxteth.. | .. | .. | .. | .. | .. | 3 | 5 | 1 | .. | 5 | 4 | 18 | 20 | 27 | 29 | 56 |
| Walton .. | .. | .. | .. | .. | .. | .. | .. | 8 | 7 | 1 | .. | 2 | .. | 11 | 7 | 18 |
| West Derby (Rural) | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | 1 | 1 | .. | .. | 2 | 2 | 4 |
| Wavertree | .. | .. | .. | .. | .. | .. | .. | 2 | 2 | .. | 1 | .. | 1 | 2 | 4 | 6 |
| Toxteth (Rural) | .. | .. | .. | .. | .. | .. | 4 | 1 | .. | .. | .. | .. | .. | 1 | 4 | 5 |
| Hospitals (Residences outside the City) | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 2 | 4 | 2 | 4 | 6 |
| City | .. | .. | .. | .. | .. | 17 | 21 | 45 | 34 | 25 | 39 | 51 | 51 | 138 | 145 | 283 |
| AGES AT DEATH. | | | | | | | | | | | | | | | | |
| Under 1 year. | 1— | 2— | 3— | 4— | 5— | 10— | 15— | 20— | 30— | 40— | 50— | All Ages. | | | | |
| 61 | 115 | 49 | 28 | 8 | 18 | — | 3 | — | 1 | — | — | 283 | | | | |

Deaths in Public Institutions are transferred to the Districts from whence the patients came.

WHOOPING COUGH.

The following table shows the periods of the year and the localities in which deaths from Whooping Cough occurred, and also the ages at death.

| DISTRICTS. | | | | | | QUARTERS. | | | | | | | | YEAR. | | |
|---|--|--|--|--|--|-----------|----|------|----|-------|----|------|----|-------|-----|--------|
| | | | | | | March. | | June | | Sept. | | Dec. | | | | |
| | | | | | | M. | F. | M. | F. | M. | F. | M. | F. | M. | F. | Total. |
| Scotland | | | | | | 5 | 10 | 5 | 14 | 5 | 6 | 3 | 4 | 18 | 34 | 52 |
| Exchange | | | | | | 7 | 10 | 4 | 10 | 3 | 3 | 4 | 1 | 18 | 24 | 42 |
| Abercromby | | | | | | 6 | 3 | 8 | 8 | 1 | 1 | 1 | 1 | 16 | 13 | 29 |
| Everton | | | | | | 8 | 16 | 10 | 11 | 5 | 3 | 3 | 5 | 26 | 35 | 61 |
| Kirkdale | | | | | | 10 | 4 | 4 | 4 | 1 | 5 | 5 | 7 | 20 | 20 | 40 |
| West Derby | | | | | | 7 | 7 | 3 | 14 | 6 | 6 | 2 | 1 | 18 | 28 | 46 |
| Toxteth | | | | | | 1 | 3 | 5 | 8 | 4 | 6 | 3 | 4 | 13 | 21 | 34 |
| Walton | | | | | | 2 | 2 | 3 | .. | .. | .. | 1 | 2 | 6 | 4 | 10 |
| West Derby (Rural) | | | | | | 1 | .. | .. | 2 | 2 | 1 | .. | .. | 3 | 3 | 6 |
| Wavertree | | | | | | .. | .. | 2 | .. | .. | 1 | .. | .. | 2 | 1 | 3 |
| Toxteth (Rural) | | | | | | .. | 2 | 2 | 4 | .. | .. | .. | .. | 2 | 6 | 8 |
| Hospitals (Residences outside the City) | | | | | | .. | 1 | .. | 1 | .. | .. | .. | .. | .. | 2 | 2 |
| City | | | | | | 47 | 58 | 46 | 76 | 27 | 32 | 22 | 25 | 142 | 191 | 333 |

AGES AT DEATH.

| Under 1 year. | 1— | 2— | 3— | 4— | 5— | 10— | 15— | 20— | 30— | 40— | 50— | All Ages. |
|---------------|-----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----------|
| 122 | 115 | 42 | 30 | 14 | 10 | .. | .. | .. | .. | .. | .. | 333 |

Deaths in Public Institutions are transferred to the Districts from whence the patients came.

DIPHTHERIA.

The following table shows the periods of the year and the localities in which deaths from Diphtheria occurred, and also the ages at death.

| DISTRICTS. | QUARTERS. | | | | | | | | YEAR. | | |
|--|-----------|----|------|----|-------|----|------|----|-------|----|--------|
| | March. | | June | | Sept. | | Dec. | | | | |
| | M. | F. | M. | F. | M. | F. | M. | F. | M. | F. | Total. |
| Scotland | .. | .. | .. | 1 | 1 | 1 | 3 | 1 | 4 | 3 | 7 |
| Exchange | .. | 1 | .. | 1 | .. | 1 | 1 | 1 | 1 | 4 | 5 |
| Abercromby | 2 | 2 | 2 | 1 | 2 | .. | 2 | 1 | 8 | 4 | 12 |
| Everton | 3 | 1 | 2 | 2 | 4 | 2 | 1 | 2 | 10 | 7 | 17 |
| Kirkdale | .. | 2 | 1 | 1 | .. | .. | 1 | .. | 2 | 3 | 5 |
| West Derby | .. | 3 | 3 | .. | .. | 1 | 3 | 2 | 6 | 6 | 12 |
| Toxteth | 1 | 4 | 2 | 3 | 7 | 5 | 6 | 8 | 16 | 20 | 36 |
| Walton | .. | 1 | 1 | 2 | .. | 1 | 4 | 5 | 5 | 9 | 14 |
| West Derby (Rural) | 1 | .. | 1 | .. | .. | 3 | 2 | 1 | 4 | 4 | 8 |
| Wavertree | 1 | .. | .. | .. | .. | .. | .. | .. | 1 | .. | 1 |
| Toxteth (Rural) | .. | 1 | .. | .. | 2 | .. | 1 | .. | 3 | 1 | 4 |
| Hospitals (Residences outside the City) .. | 1 | 1 | .. | .. | .. | .. | .. | .. | 1 | 1 | 2 |
| City | 9 | 16 | 12 | 11 | 16 | 14 | 24 | 21 | 61 | 62 | 123 |

| AGES AT DEATH. | | | | | | | | | | | | | |
|----------------|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----------|
| Under 1 year. | 1— | 2— | 3— | 4— | 5— | 10— | 15— | 20— | 30— | 40— | 50— | 60— | All Ages. |
| 8 | 21 | 20 | 18 | 20 | 27 | 2 | 2 | 4 | .. | .. | .. | 1 | 123 |

Deaths in Public Institutions are transferred to the Districts from whence the patients came.

CROUP.

The following table shows the periods of the year and the localities in which deaths, attributed by the Medical Attendant to Croup, occurred, and also the ages at death. Twenty-five of the deaths were attributed to Membranous Croup, and sixteen to Croup.

| DISTRICTS. | | | | | | QUARTERS. | | | | | | | | YEAR. | | |
|---|----|----|----|----|----|-----------|-----|-------|-----|-------|-----|-----------|----|-------|----|-------|
| | | | | | | March | | June. | | Sept. | | Dec. | | M. | F. | Total |
| | | | | | | M. | F. | M. | F. | M. | F. | M. | F. | | | |
| Scotland | | | | | | 1 | .. | 1 | .. | 2 | .. | 1 | 1 | 5 | 1 | 6 |
| Exchange | | | | | | .. | .. | .. | .. | .. | .. | 1 | .. | 1 | .. | 1 |
| Abercromby | | | | | | 1 | 1 | .. | 1 | .. | 1 | 1 | .. | 2 | 3 | 5 |
| Everton | | | | | | 2 | 4 | .. | .. | 1 | .. | 1 | 1 | 4 | 5 | 9 |
| Kirkdale | | | | | | .. | .. | .. | 1 | .. | .. | 2 | 2 | 2 | 3 | 5 |
| West Derby | | | | | | .. | .. | .. | .. | .. | .. | 1 | .. | 1 | .. | 1 |
| Toxteth | | | | | | 7 | 1 | 1 | 1 | .. | .. | .. | 1 | 8 | 3 | 11 |
| Walton | | | | | | .. | .. | .. | 1 | .. | .. | .. | .. | .. | 1 | 1 |
| West Derby (Rural) | | | | | | 1 | 1 | .. | .. | .. | .. | .. | .. | 1 | 1 | 2 |
| Wavertree | | | | | | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Toxteth (Rural) | | | | | | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Hospitals (Residences outside the City) . | | | | | | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| City | | | | | | 12 | 7 | 2 | 4 | 3 | 1 | 7 | 5 | 24 | 17 | 41 |
| AGES AT DEATH. | | | | | | | | | | | | | | | | |
| Under 1 year. | 1— | 2— | 3— | 4— | 5— | 10— | 15— | 20— | 30— | 40— | 50— | All Ages. | | | | |
| 2 | 17 | 9 | 2 | 5 | 6 | .. | .. | .. | .. | .. | .. | 41 | | | | |

Deaths in Public Institutions are transferred to the Districts from whence the patients came.

ZYMOTIC DIARRHŒA.

One of the most important causes of mortality during the year was again zymotic diarrhœa, or acute gastro-enteritis. The mortality, which chiefly affected infants, did not commence to rise until the end of July, and continued until October. No less than 790 deaths were registered from it during this brief period, and to these must be added deaths from the closely-allied or identical disease, English cholera.

Infantile mortality from this cause has been very carefully investigated in this city, and the fact is established beyond any dispute that errors in feeding, which under ordinary circumstances may be unattended with serious consequences, give rise in hot and dry weather to a high mortality. The reason of this is that artificial foods, cows' milk, etc., during hot and dry weather are liable to rapid putrefaction, owing to contamination by decomposing dirt and dust of various kinds (see page 120). Domestic inattention to the flushing of closets and house drains, dust and dirt from the streets, emanations from sewers and domestic offices, result in the development of organisms of a virulently poisonous kind, which may find access to food and drink.

The deaths amongst children under three months of age, either wholly or partially fed on artificial foods, are fifteen times as great as they are amongst an equal number of infants fed upon breast milk; e.g., investigation has tended to prove that, out of every 1,000 infants under three months of age, naturally fed upon breast milk alone, 20 die of autumnal choleraic disease; but if the same number of infants, at the same age, are artificially fed, then, instead of 20 dying, as many as 300 will die from this cause.

The method of feeding plays a most important part in the causation of diarrhœa; when artificial feeding becomes necessary, the most scrupulous attention should be paid to feeding bottles, etc.

During a wet and cool summer and autumn, mortality from zymotic diarrhoea is comparatively small, but a high death-rate from this cause is an invariable accompaniment of a warm, dry season.

The manner in which the rain falls is of importance. A drizzling fall, extending over several days, and equivalent to, say, half an inch, is of far less value than the same amount falling in heavy showers.

For several years past the Medical Officer has, with the sanction of the Health Committee, caused a memorandum of simple instructions to be widely distributed amongst the poorer classes at the commencement of summer. These instructions, whilst indicating the method by which infants should be fed, point out also the importance of cleanliness of person, clothing, and surroundings, and include the following paragraph:—"The "water-closet should be repeatedly and thoroughly flushed, and sinks and "drains kept clean by frequent flushing each day. A free and unstinted "use of water is far better than any disinfectant."

The dust, or particles, of fœcal filth are the most potent in causing those changes in food which give rise to fatal inflammatory diseases of the stomach and bowels. There is no question about this; it is established beyond doubt that the poison consists of a living organism which grows and multiplies especially in fœcal filth, and it is this kind of filth which of all others should be speedily and effectually washed away from the dwelling.

When a number of causes combine to affect prejudicially the public health, it becomes a matter of difficulty to separate one from another, and allocate to each its precise share as a direct and immediate cause of death. It is owing to this difficulty that general principles are accepted, and conditions which are known to be prejudicial are regarded with suspicion even in their minor stages; having regard to the considerations at stake, it is a wiser course that this view should be accepted and acted upon rather than that positive and convincing evidence that the condition in question has killed somebody should be waited for.

DEATHS FROM DIARRHŒA.

| DISTRICTS. | | | | | | QUARTERS. | | | | | | | | YEAR. | | |
|---|--|--|--|--|--|-----------|----|-------|----|-------|-----|------|----|-------|-----|--------|
| | | | | | | March. | | June. | | Sept. | | Dec. | | | | |
| | | | | | | M. | F. | M. | F. | M. | F. | M. | F. | M. | F. | Total. |
| Scotland | | | | | | 4 | 4 | 3 | 4 | 77 | 75 | 17 | 13 | 101 | 96 | 197 |
| Exchange | | | | | | 2 | 2 | 1 | 2 | 22 | 36 | 9 | 8 | 34 | 48 | 82 |
| Abercromby | | | | | | 3 | 1 | .. | 2 | 14 | 15 | 2 | 2 | 19 | 20 | 39 |
| Everton | | | | | | 4 | 4 | 4 | 1 | 78 | 78 | 18 | 11 | 104 | 94 | 198 |
| Kirkdale | | | | | | 2 | 2 | 4 | 1 | 56 | 35 | 9 | 5 | 71 | 43 | 114 |
| West Derby | | | | | | 2 | 4 | 1 | 3 | 41 | 32 | 4 | 3 | 48 | 42 | 90 |
| Toxteth | | | | | | 1 | 2 | 3 | 5 | 61 | 50 | 4 | 4 | 69 | 61 | 130 |
| Walton | | | | | | 1 | 1 | 1 | 2 | 22 | 19 | 4 | 3 | 28 | 25 | 53 |
| West Derby (Rural) | | | | | | .. | .. | 1 | .. | 9 | 9 | 2 | 3 | 12 | 12 | 24 |
| Wavertree | | | | | | .. | .. | 1 | .. | 8 | 4 | 1 | 2 | 10 | 6 | 16 |
| Toxteth (Rural) | | | | | | .. | .. | .. | .. | 6 | 3 | .. | .. | 6 | 3 | 9 |
| Hospitals (Residences outside the City) | | | | | | .. | .. | .. | 1 | 1 | 2 | .. | .. | 1 | 3 | 4 |
| City | | | | | | 19 | 20 | 19 | 21 | 395 | 358 | 70 | 54 | 503 | 453 | 956 |

| AGES AT DEATH. | | | | | | | | | | | | | |
|----------------|-----|----|----|----|----|-----|-----|-----|-----|-----|-----|---------------|-----------|
| Under 1 year. | 1— | 2— | 3— | 4— | 5— | 10— | 15— | 20— | 30— | 40— | 50— | 60 & upwards. | All Ages. |
| 654 | 201 | 32 | 9 | 2 | 1 | 4 | 1 | 2 | 4 | 8 | 9 | 29 | 956 |

Deaths in Public Institutions are transferred to the districts from whence the patients came. See also pages 53 and 166.

List of Streets in the City wherein Three or more Deaths from
Diarrhœa occurred during the year 1898.

| STREETS. | No. of Deaths. | STREETS. | No. of Deaths. |
|------------------------|----------------|--------------------------|----------------|
| Arkwright | 3 | Elias | 7 |
| Arlington | 7 | Field | 4 |
| Ascot | 3 | Fonthill Road | 3 |
| Ashfield | 8 | Gascoyne | 3 |
| Athol | 8 | Gildarts Gardens | 3 |
| Beatrice | 5 | Gordon | 5 |
| Beaufort | 3 | Grafton | 5 |
| Benledi | 4 | Great Homer | 3 |
| Bevington Hill | 3 | Great Howard | 3 |
| Blucher | 4 | Great Newton | 3 |
| Bond | 4 | Herbert (Walton) | 3 |
| Bostock | 4 | Hey Green Road | 3 |
| Boundary | 9 | Highfield Road | 3 |
| Brisbane | 4 | Holborn | 3 |
| Buckingham | 5 | Hopwood | 7 |
| Burlington | 9 | Hornby | 11 |
| China | 3 | Kew | 3 |
| Claudia | 3 | Lancaster | 3 |
| Comus | 3 | Lissant | 3 |
| Cranmer | 4 | Luther | 4 |
| Doncaster | 3 | Mann | 7 |
| Eldon | 8 | Menai | 3 |

In arranging the foregoing list of streets, all deaths occurring in hospitals have been transferred to the streets from whence the patients were removed.

List of Streets in the City wherein Three or more Deaths from
Diarrhœa occurred during the year 1898.—*Continued.*

| STREETS. | No. of Deaths. | STREETS. | No. of Deaths. |
|---------------------------|----------------|--------------------------|----------------|
| Mill | 3 | Rose Vale | 3 |
| Mozart | 3 | Salisbury | 3 |
| Naylor | 3 | Saltney | 4 |
| Netherfield Road North .. | 3 | Sand | 3 |
| Newsham | 3 | Silvester | 3 |
| New Road | 3 | Smithfield | 3 |
| Orwell Road | 4 | South Chester | 4 |
| Phythian | 3 | Tatlock | 3 |
| Portland | 4 | Tillard | 3 |
| Potter | 3 | Upper Dalton | 3 |
| Poyntz | 3 | Upper Frederick | 5 |
| Priory | 3 | Upper Hill | 3 |
| Priory Grove | 3 | Upper Parliament | 3 |
| Prince Edwin | 3 | Warren | 4 |
| Prince Edwin Lane | 3 | Waterhouse | 3 |
| Raymond | 4 | Wolfe | 3 |
| Reading | 9 | Woodhouse | 3 |
| Rishton | 4 | | |
| Romley | 5 | | |
| Rose Place | 4 | | |

In arranging the foregoing list of streets, all deaths occurring in hospitals have been transferred to the streets from whence the patients were removed.

OTHER ZYMOTICS.

The following table indicates the localities in which deaths from other forms of Zymotic disease occurred during the year :—

| DISTRICTS. | Influenza. | | Erysipelas. | | Syphilis. | | Rheumatic Fever. | | Puerperal Fever. | | Other Zymotics. | | YEAR. |
|---|------------|----|-------------|----|-----------|----|------------------|----|------------------|----|-----------------|----|--------|
| | M. | F. | M. | F. | M. | F. | M. | F. | M. | F. | M. | F. | Total. |
| Scotland | 3 | 1 | 1 | 1 | 7 | 3 | .. | .. | .. | 1 | 3 | .. | 20 |
| Exchange | 3 | 1 | .. | .. | 5 | 5 | 2 | 2 | .. | 4 | 2 | 2 | 26 |
| Abercromby | 6 | 8 | 2 | 2 | 3 | 4 | 3 | 1 | .. | 2 | 1 | .. | 32 |
| Everton | 13 | 17 | 2 | 2 | 9 | 9 | 5 | 2 | .. | 4 | 4 | 7 | 74 |
| Kirkdale | 5 | 4 | 2 | 1 | 2 | 2 | 4 | 2 | .. | 5 | 6 | 1 | 34 |
| West Derby | 10 | 7 | .. | 1 | 6 | 3 | 2 | 3 | .. | 2 | 7 | 8 | 49 |
| Toxteth | 13 | 16 | 2 | 3 | 6 | 4 | 3 | 1 | .. | .. | 7 | 1 | 56 |
| Walton | 4 | 7 | 2 | .. | 1 | 1 | .. | .. | .. | 1 | 2 | 1 | 19 |
| West Derby (Rural) | 14 | 9 | .. | 2 | .. | .. | 3 | 2 | .. | 2 | 1 | 2 | 35 |
| Wavertree | .. | 3 | .. | .. | .. | .. | 2 | 1 | .. | 2 | 2 | 1 | 11 |
| Toxteth (Rural) | 2 | 6 | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | 9 |
| Hospitals (Residences outside the City) | .. | 3 | 1 | 1 | 1 | 1 | .. | .. | .. | .. | 5 | .. | 12 |
| City | 73 | 82 | 12 | 13 | 40 | 32 | 24 | 14 | .. | 23 | 41 | 23 | 377 |

Deaths in Public Institutions are transferred to the Districts from whence the patients came.

ANNUAL AVERAGE NUMBER OF DEATHS FROM SIX OF THE PRINCIPAL ZYMOTIC DISEASES
DURING EACH OF THE LAST THREE DECENNIAL PERIODS.

| Years. | Small Pox. | Typhus. | Scarlet Fever. | Measles. | Whooping Cough. | Diarrhoea. |
|--------------|------------|---------|-------------------|----------|--------------------|------------|
| 1866 to 1875 | 237·4 | 652·8 | 789·4 | 425·7 | 496·8 | 995·3 |
| 1876 to 1885 | 90·8 | 238·0 | 421·2 | 517·8 | 472·3 | 658·4 |
| 1886 to 1895 | 8·8 | 37·1 | 257·5 | 399·5 | 322·4 | 600·6 |
| 1896 to 1898 | ·6 | 26·0 | 190·3 | 313·0 | 329·0 | 991·0 |

ANNUAL AVERAGE NUMBER OF DEATHS FROM SIX OF THE PRINCIPAL ZYMOTIC DISEASES
DURING EACH OF THE LAST THREE DECENNIAL PERIODS, DISTINGUISHING THOSE
OF PERSONS ABOVE AND BELOW FIVE YEARS OF AGE.

| YEARS. | SMALLPOX. | | TYPHUS. | | SCARLET FEVER. | | MEASLES. | | WHOPPING COUGH. | | DIARRHŒA. | |
|---------------------|-----------|----------|----------|----------|----------------|----------|----------|----------|-----------------|----------|-----------|----------|
| | Above 5. | Below 5. | Above 5. | Below 5. | Above 5. | Below 5. | Above 5. | Below 5. | Above 5. | Below 5. | Above 5. | Below 5. |
| 1866 to } 1875 } | 141.7 | 95.7 | * ... | * ... | 187.7 | 601.7 | 14.4 | 411.3 | 9.9 | 486.9 | 105.7 | 889.6 |
| 1876 to } 1885 } | 62.5 | 28.3 | * .. | * .. | 137.0 | 284.2 | 35.4 | 482.4 | 18.6 | 453.7 | 61.9 | 596.5 |
| 1886 to } 1895 } | 6.2 | 2.6 | † 33.2 | † .7 | 87.6 | 169.9 | 28.3 | 371.2 | 15.1 | 307.3 | 60.2 | 540.4 |
| 1896 to } 1898 } | .6 | ... | 25.3 | .6 | 52.3 | 138.0 | 17.7 | 295.3 | 10.7 | 318.3 | 63.0 | 928.0 |

* During these years the ages at death from Typhus were not differentiated.

† During the eight years, 1888-95.

The following table shows the annual average death rate, per 100,000 of the population, during each of the last three decennial periods, and during the three years 1896-8, from the undermentioned Zymotic Diseases :—

| DISEASES. | 1866 to 1875. | 1876 to 1885. | 1886 to 1895. | 1896 to 1898. |
|----------------------|---------------------|---------------------|---------------------|---------------------|
| Typhus | 132·1 | 43·0 | 7·1 | 4·0 |
| Small Pox | 48·0 | 16·3 | 1·5 | ... |
| Scarlet Fever | 159·9 | 76·2 | 49·6 | 29·1 |
| Measles | 86·1 | 93·6 | 77·0 | 48·0 |
| Whooping Cough ... | 100·5 | 85·4 | 62·1 | 50·5 |

TUBERCULAR DISEASES.

These diseases are associated with insanitary surroundings, and with conditions of life which tend to lower the general health. Improved sanitation is accompanied by a diminished mortality from these forms of disease, as the accompanying table, which relates to the last three decades, indicates :—

| | 1866 to 1875. | 1876 to 1885. | 1886 to 1895. | 1896 to 1898. |
|---|---------------------|---------------------|---------------------|---------------------|
| Annual Average Death-rate per 100,000 of the population, at all ages, from all forms of Tuberculosis | 430·8 | 349·8 | 309·8 | 256·1 |
| Annual Average Death-rate per 100,000 of the population above 5 years of age from Phthisis | 362·8 | 278·6 | 244·4 | 207·1 |
| Annual Average Death-rate per 100,000 of the population below 5 years of age from :— | | | | |
| Tabes Mesenterica | 637·1 | 597·3 | 539·1 | 383·3 |
| Hydrocephalus | | | | |
| Scrofula | | | | |

The group of Tubercular Diseases includes Phthisis, Scrofula, Tabes Mesenterica, and Hydrocephalus. They occasioned 1,685 deaths in the City of Liverpool during the year 1898.

DEATHS FROM PHTHISIS.

| DISTRICTS. | QUARTERS. | | | | | | | | YEAR. | | |
|--|-----------|-----|-------|-----|-------|-----|------|-----|-------|----------------|-----------|
| | March. | | June. | | Sept. | | Dec. | | | | |
| | M. | F. | M. | F. | M. | F. | M. | F. | M. | F. | TOTAL |
| Scotland | 22 | 17 | 12 | 15 | 12 | 20 | 23 | 7 | 69 | 59 | 128 |
| Exchange | 24 | 16 | 27 | 19 | 13 | 18 | 19 | 13 | 83 | 66 | 149 |
| Abercromby | 18 | 10 | 18 | 13 | 10 | 7 | 16 | 9 | 62 | 39 | 101 |
| Everton | 44 | 25 | 33 | 24 | 20 | 22 | 36 | 19 | 133 | 90 | 223 |
| Kirkdale | 14 | 9 | 13 | 9 | 20 | 10 | 14 | 7 | 61 | 35 | 96 |
| West Derby | 20 | 27 | 30 | 15 | 20 | 14 | 20 | 21 | 90 | 77 | 167 |
| Toxteth | 25 | 15 | 21 | 10 | 19 | 18 | 18 | 26 | 83 | 69 | 152 |
| Walton | 5 | 7 | 13 | 6 | 3 | 4 | 7 | 9 | 28 | 26 | 54 |
| West Derby (Rural) | 8 | 9 | 8 | 3 | 6 | 2 | 6 | 6 | 28 | 20 | 48 |
| Wavertree | 1 | 4 | .. | 2 | 4 | 2 | 2 | 1 | 7 | 9 | 16 |
| Toxteth (Rural) | 6 | 1 | 4 | 2 | 1 | 4 | 3 | 3 | 14 | 10 | 24 |
| Hospitals (Residences outside the City) .. | 10 | 4 | 11 | 6 | 7 | 1 | 9 | 3 | 37 | 14 | 51 |
| City | 197 | 144 | 190 | 124 | 135 | 122 | 173 | 124 | 695 | 514 | 1209 |
| AGES AT DEATH. | | | | | | | | | | | |
| Under 1 year. | 1— | 2— | 5— | 10— | 15— | 20— | 30— | 40— | 50— | 60 and upw'ds. | All Ages. |
| 3 | 11 | 13 | 17 | 20 | 69 | 230 | 374 | 290 | 133 | 49 | 1209 |

Deaths in Public Institutions are transferred to the Districts from whence the patients came.

DEATHS FROM OTHER TUBERCULAR DISEASES.

| DISTRICTS. | Scrofula. | | Tuberc. Mesenterica. | | Hydrocephalus. | | YEAR. | | |
|--|-----------|----|-------------------------|----|----------------|----|-------|-----|--------|
| | M. | F. | M. | F. | M. | F. | M. | F. | Total. |
| Scotland | 7 | 10 | 12 | 7 | 9 | 3 | 28 | 20 | 48 |
| Exchange | 10 | 6 | 3 | 6 | 6 | 5 | 19 | 17 | 36 |
| Abercromby | 9 | 3 | 4 | 5 | 2 | 9 | 15 | 17 | 32 |
| Everton | 18 | 12 | 21 | 17 | 11 | 16 | 50 | 45 | 95 |
| Kirkdale | 14 | 9 | 7 | 2 | 5 | 6 | 26 | 17 | 43 |
| West Derby | 22 | 15 | 18 | 17 | 7 | 7 | 47 | 39 | 86 |
| Toxteth | 23 | 9 | 8 | 3 | 6 | 9 | 37 | 21 | 58 |
| Walton | 1 | 2 | 2 | 7 | 4 | 6 | 7 | 15 | 22 |
| West Derby (Rural) | 1 | 4 | 1 | 6 | 4 | 1 | 6 | 11 | 17 |
| Wavertree | 6 | 2 | 2 | .. | 2 | .. | 10 | 2 | 12 |
| Toxteth (Rural) | 4 | 1 | 2 | .. | 3 | 6 | 9 | 7 | 16 |
| Hospitals (Residences outside the City) .. | 7 | 2 | 1 | .. | 1 | .. | 9 | 2 | 11 |
| City | 122 | 75 | 81 | 70 | 60 | 68 | 263 | 213 | 476 |

Deaths in Public Institutions are transferred to the Districts from whence the patients came.

The following table indicates the number of deaths from Cancer during the last six years, and the part of the body affected by the disease :—

| DISEASE. | 1893. | | | 1894. | | | 1895. | | | 1896. | | | 1897. | | | 1898. | | |
|---|--------|----------|--------|--------|----------|--------|--------|----------|--------|--------|----------|--------|--------|----------|--------|--------|----------|--------|
| | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. |
| Cancer of Stomach and Bowels | 43 | 52 | 95 | 52 | 44 | 96 | 85 | 73 | 158 | 81 | 56 | 137 | 86 | 126 | 212 | 92 | 89 | 181 |
| „ Liver | 16 | 24 | 40 | 12 | 30 | 42 | 36 | 24 | 60 | 33 | 41 | 74 | 24 | 31 | 55 | 23 | 42 | 65 |
| „ Urinary and Generative Organs | 8 | 73 | 81 | 9 | 70 | 79 | 12 | 112 | 124 | 7 | 103 | 110 | 10 | 94 | 104 | 12 | 73 | 85 |
| „ Breast | .. | 39 | 39 | .. | 34 | 34 | .. | 46 | 46 | 2 | 54 | 56 | .. | 45 | 45 | .. | 47 | 47 |
| „ Head and Face | 13 | 6 | 19 | 13 | 5 | 18 | 19 | 4 | 23 | 15 | 3 | 18 | 12 | 6 | 18 | 11 | 7 | 18 |
| „ Tongue, Neck, and Throat | 20 | 5 | 25 | 35 | 3 | 38 | 35 | 9 | 44 | 47 | 11 | 58 | 39 | 9 | 48 | 47 | 10 | 57 |
| „ Other parts of the Body | 12 | 8 | 20 | 9 | 9 | 18 | 13 | 9 | 22 | 6 | 11 | 17 | 8 | 5 | 13 | 8 | 5 | 13 |
| „ Parts not specified .. | 12 | 10 | 22 | 6 | 14 | 20 | 15 | 10 | 25 | 12 | 13 | 25 | 11 | 8 | 19 | 17 | 12 | 29 |
| Total | 124 | 217 | 341 | 136 | 209 | 345 | 215 | 287 | 502 | 203 | 292 | 495 | 190 | 324 | 514 | 210 | 285 | 495 |

The following table shows the death rate per 1,000 of the population, and the number of deaths from Fever and Diarrhœa during the last fifteen years :—

| Year. | Death Rate per 1,000 of Population from all causes. | Deaths from Diarrhœa. | Deaths from Fever. | | |
|-------|---|--------------------------|--------------------|----------|------------|
| | | | Typhus. | Typhoid. | Continued. |
| 1884 | *26·6 | 841 | 77 | 112 | 16 |
| 1885 | *25·6 | 422 | 71 | 95 | 16 |
| 1886 | *26·1 | 781 | 47 | 140 | 11 |
| 1887 | *26·4 | 619 | 52 | 130 | 12 |
| 1888 | *23·1 | 431 | 32 | 125 | 4 |
| 1889 | *24·9 | 575 | 45 | 167 | ... |
| 1890 | *27·5 | 468 | 23 | 99 | 1 |
| 1891 | 26·9 | 330 | 37 | 92 | 2 |
| 1892 | 24·7 | 415 | 18 | 111 | 2 |
| 1893 | 27·3 | 866 | 44 | 221 | 5 |
| 1894 | 23·8 | 503 | 50 | 248 | 7 |
| †1895 | 25·4 | 1,108 | 24 | 197 | 4 |
| 1896 | 21·9 | 851 | 36 | 166 | 2 |
| 1897 | 23·4 | 1,182 | 23 | 145 | 5 |
| 1898 | 22·2 | 956 | 19 | 148 | 5 |

* Calculated on corrected population as per Census Returns of 1891.

† City Boundaries extended.

ALCOHOLISM.

There appears to be no reason to doubt that the total amount of drunkenness in the City is diminishing, and there is evidently a gain to propriety in the decrease in the amount of drunkenness in the open streets; but there is room for doubt whether there is any diminution in the gross abuse of alcohol within-doors in the more squalid parts of the city.

Ten years ago, namely, in 1889, police cases of drunkenness numbered 16,000; by rapid annual decreases the number last year had diminished to 4,000. But if the deaths from excessive drinking in the two years be compared, there is found only a slight diminution in the deaths amongst males from that cause, while the deaths of females from that cause have actually increased.

At the present day no one is unaware of the influence of intemperance as a cause of poverty, disease and death; and although the control of alcoholism is not in the hands of the Sanitary Authority, yet the paralysing influence which drunkenness asserts over every sanitary measure is obvious.

Inquests were held during the year on the bodies of 204 persons, viz., 43 men and 42 women whose deaths were caused by excessive drinking; 56 men and 33 women whose deaths were accelerated by excessive drinking; 13 men and 17 women who were fatally injured by accident or suicide whilst under the influence of drink. There were two deaths from violence caused by persons under the influence of drink, the persons who were killed being also intoxicated at the time.

There are many cases of fatal injury in which the verdict of "accidental death" omits any reference to the fact that the injured person was intoxicated at the time.

"Alcoholism" is given as the cause of death of 8 men and 6 women.

Deaths from excessive drinking are localised, and it is in the district where they are most numerous that the general death-rate is highest, and the proportion of deaths in workhouses is greatest; what these facts imply is obvious enough. Two districts of equal population may be contrasted thus:

| | Population. | General Death-rate per 1,000. | Proportion of Deaths in Workhouses and Hospitals. | Proportion of Deaths due to Excessive Drinking. |
|------------------------------|-------------|-------------------------------------|--|--|
| Exchange | 42,137 | 36·9 | 40 per cent. | 3·2 per cent |
| West Derby (Incorporated) | 42,141 | 16·3 | 15 „ | 0·7 „ |

The first of these is the fact that the total number of persons who were employed in the various industries of the country in 1900 was 1,000,000. This number was 10 per cent greater than in 1890, and 20 per cent greater than in 1880.

The second of these is the fact that the total number of persons who were employed in the various industries of the country in 1900 was 1,000,000. This number was 10 per cent greater than in 1890, and 20 per cent greater than in 1880.

| Industry | 1880 | 1890 | 1900 |
|----------------|---------|---------|---------|
| Manufacturing | 400,000 | 500,000 | 600,000 |
| Commerce | 100,000 | 150,000 | 200,000 |
| Transportation | 100,000 | 150,000 | 200,000 |
| Services | 100,000 | 150,000 | 200,000 |
| Agriculture | 100,000 | 150,000 | 200,000 |
| Government | 100,000 | 150,000 | 200,000 |
| Education | 100,000 | 150,000 | 200,000 |
| Health | 100,000 | 150,000 | 200,000 |
| Recreation | 100,000 | 150,000 | 200,000 |
| Other | 100,000 | 150,000 | 200,000 |

SANITARY ADMINISTRATION.

SAINTARY ADMINISTRATION

SANITARY ADMINISTRATION.

For the purpose of carrying out the requirements of the various Sanitary Acts of Parliament and the Orders, Bye-laws, and Regulations made thereunder, the following staff of the Medical Officer of Health's Department has been employed during the year :—

| | | | | | |
|--|-----|-----|-----|-----|----|
| *Chief Sanitary Inspector | ... | ... | ... | ... | 1 |
| *Deputy Chief Sanitary Inspector | ... | ... | ... | ... | 1 |
| *Prosecuting Sanitary Inspectors | ... | ... | ... | ... | 7 |
| *Inspectors for General Sanitary Purposes | ... | ... | ... | ... | 28 |
| *Female Inspectors for General Sanitary Purposes..... | | | | | 8 |
| §Inspectors of Meat and Animals | ... | ... | ... | ... | 5 |
| „ under the Diseases of Animals Act | ... | ... | ... | ... | 2 |
| ** „ of Fish and Fruit | ... | ... | ... | ... | 3 |
| „ under the Sale of Food and Drugs Act | ... | ... | ... | ... | 2 |
| * „ „ Workshop and Shop Hours Act... | | | | | 3 |
| † „ , Smoke | ... | ... | ... | ... | 3 |
| ‡ „ , Ambulance... | ... | ... | ... | ... | 4 |
| „ , Disinfecting | ... | ... | ... | ... | 8 |
| Superintendents of Disinfecting Apparatus | ... | ... | ... | ... | 2 |
| *Chief Inspector for Common Lodging and Sub-let Houses | ... | ... | ... | ... | 1 |
| Inspectors for Common Lodging and Sub-let Houses... | | | | | 12 |
| Inspector for Canal Boats | ... | ... | ... | ... | 1 |
| * „ „ Bakehouses | ... | ... | ... | ... | 1 |
| *Inspectors for Cowsheds and Milkshops | ... | ... | ... | ... | 2 |
| Notice Servers | ... | ... | ... | ... | 3 |
| Permanent Clerical Staff | ... | ... | ... | ... | 21 |
| Temporary Assistant | ... | ... | ... | ... | 1 |

In every case Officers are selected for these positions, whose previous training and occupation have been such as to fit them for the special duties they are called upon to discharge. Those marked * are required to hold the Certificate of the Sanitary Institute or a Certificate equivalent thereto; those marked † have Marine Engineers' First Class Certificates, and the ‡ Superintendent Ambulance Inspector holds Sanitary Certificate, and also the Certificate of St. John's Ambulance Association. ** Fishmongers by trade. § Butchers by trade; Candidates are submitted to practical examination upon the lines which have been subsequently indicated in the Report of the Royal Commission upon Tuberculosis.

There is a still further increase in the number of occasions upon which the advice and assistance of the Health Department have been sought during the year. The applications made by residents in the City in 1896 were 7,993, in 1897 they were 8,852, and in the year 1898 they had increased to 9,362. In many instances complaint was made to the Health Department only after repeated requests addressed to the persons causing or allowing the nuisance, or to agents or owners of property, had been ignored. Generally speaking, these complaints arise in connection with jerry-built property. A great deal of the time of the Inspectors was taken up by these special examinations.

Requests to examine large and important public buildings and offices have been fewer than in the last few years, but applications to examine highly-rented dwelling-houses have been very numerous, and the application of the smoke test has in many cases brought to light gross defects in the drainage system. Requests for the application of the smoke test are becoming more numerous.

A very large number of sanitary notices are served upon owners in respect to what is well known as "insanitary property." (See page 181.) This property is, as a class, defective in structure, and allowed by the owners to fall into a condition of ruinous dilapidation. As a consequence, the owners are reluctant to meet sanitary necessities or to abate common nuisances in regard to it. Thus, in connection with the 365 houses last reported to the Grand Jury by the Medical Officer, no less than 333 notices requiring the abatement of nuisances more or less flagrant were served during last year, and the Medical Officer estimates that something like 8,000 notices were served during the year upon owners of property of this character.

Owners would do well to demolish property such as this, and erect suitable habitations upon the site. By thus co-operating with the

Insanitary Property Committee they would rid themselves of the annoyance of receiving notices, and remove centres of disease and degradation from the City.

The class of property in question is well illustrated by the photographs on page (196.)

The observations of the Building Surveyor upon the practices of jerry-building, and of allowing property to fall into disrepair, have a very definite bearing upon this question. "Whether from the poverty of the owners or for other reasons (some of them connected with the system of leaseholds), there is a large amount of property in buildings which is allowed greatly to deteriorate by neglect and decay. Many owners will on no account carry out even the smallest repairs necessary to preserve their buildings in a safe and secure condition, until compelled to do so by impending or actual proceedings in the Police Courts."

"The most notable case" of breach of Building Regulations "during the past year was one in which the builders had erected a row of ten houses, with such disregard, not only of the Building Regulations of the City, but of all ordinary rules and practice, that it was necessary to insist on the entire demolition of the houses. And this course was finally carried out, after regular proceedings in the Police Court," at which the defendants were represented by solicitors.

"There is no general or arbitrary right on the part of the Corporation to interfere with building work, unless it is in some particular contrary to the requirements of an Act of Parliament or Bye-Law. There are many disadvantages of cheap houses which are quite beyond the control of any public authority."

The following table shews the number of complaints and the character of the proceedings taken to abate nuisances :—

| | | | <u>1897.</u> | <u>1898.</u> |
|---|-----|--|--------------|--------------|
| Number of Complaints made by Inhabitants | ... | ... | 8,852 | 9,362 |
| „ Nuisances discovered on above complaints | ... | ... | 17,131 | 16,647 |
| „ „ „ house to house inspection | ... | ... | 67,809 | 70,227 |
| „ Notices issued | ... | { Owners ... 44,182 } { Occupiers ... 1,439 } | 44,936 | 45,621 |
| „ Notes to complainants | ... | ... | 4,053 | 4,030 |
| „ „ sent to comply with notices | ... | ... | 6,886 | 6,099 |
| „ Nuisances re-inspected | ... | ... | 119,405 | 122,533 |
| „ „ abated on re-inspection | ... | ... | 64,799 | 67,709 |
| „ Drains repaired | ... | ... | 30,156 | 30,230 |
| „ Ashpits „ | ... | ... | 1,632 | 2,002 |
| „ Closets „ | ... | ... | 25,946 | 29,454 |
| „ Water Closet Conversions | ... | ... | 74 | 17 |
| „ Spouts fixed and repaired | ... | ... | 1,189 | 781 |
| „ Places from which animals have been removed | ... | ... | 267 | 300 |
| „ Offensive Matter removed from premises | ... | ... | 142 | 144 |
| „ Stagnant Water | ... | ... | 405 | 507 |
| „ Dilapidated Houses | ... | ... | 227 | 225 |
| „ Premises supplied with water | ... | ... | 4,700 | 4,009 |
| „ Chimneys repaired to abate smoke nuisances | ... | ... | 55 | 39 |
| „ Cellar Rails repaired | ... | ... | 6 | 1 |
| „ Premises under observation | ... | ... | 1,193 | 1,691 |
| „ Informations laid | ... | ... | 1,151 | 1,054 |
| „ Fined | ... | ... | 286 | 245 |
| „ of Magistrates' Orders | ... | ... | 534 | 423 |
| „ Acquitted or Withdrawn | ... | ... | 331 | 386 |
| Amount of Fines and Costs | | | £296 2 7 | £249 11 10 |

REFERENCES TO OTHER DEPARTMENTS.

| | | | <u>1897.</u> | <u>1898.</u> |
|------------------------------|-----|-----|--------------|--------------|
| Referred to City Engineer... | ... | ... | 2,352 | 4,036 |
| „ Building Surveyor | ... | ... | 1,399 | 1,460 |
| „ Water Engineer | ... | ... | 5,912 | 6,781 |
| „ Veterinary Superintendent | ... | ... | 2,428 | 2,205 |
| „ School Board | ... | ... | 14,975 | 10,902 |

The references to the Water Engineer comprise, mainly, defective fittings, resulting in waste of water ; also cases in which the supply was insufficient, owing to various accidental causes.

The references to the School Board chiefly relate to children from infected houses who are attending school.

REFERENCES FROM OTHER DEPARTMENTS.

| | | | <u>1897.</u> | <u>1898.</u> |
|---------------------------------|-----|-----|--------------|--------------|
| Received from the City Engineer | ... | ... | 13,887 | 13,199 |
| „ Veterinary Superintendent | | | 5,870 | 2,436 |
| „ Water Engineer | ... | ... | 3,816 | 1,683 |
| „ Lodging-house Inspectors. | | | 9,022 | 7,979 |

The references from other Departments mainly comprise insanitary conditions discovered by officers belonging to those departments, but with which it is not within their province to deal. The City Engineer's Department continues to report defects in private drains brought to light by flushing.

HOUSE TO HOUSE VISITATION.

The following table indicates the results of the systematic house-to-house visitation by the District Male Staff :—

| | <u>1897.</u> | <u>1898.</u> |
|--|--------------|--------------|
| Number of Inspections of Street Houses | 13,637 | 15,586 |
| „ Street Houses found Clean | 11,172 | 12,594 |
| „ „ „ „ Dirty | 2,465 | 2,992 |
| „ Apartments in Street Houses Examined ... | 63,010 | 72,289 |
| „ Inspections of Court Houses | 2,628 | 2,489 |
| „ Court Houses found Clean | 1,666 | 1,572 |
| „ „ „ „ Dirty | 962 | 917 |
| „ Apartments in Court Houses Examined ... | 7,705 | 6,408 |
| Total Number of Houses Examined and Re-inspected ... | 23,916 | 23,550 |

DIRTY HOUSES.

| | <u>1897.</u> | <u>1898.</u> |
|--|-----------------------|--------------|
| Number of Dirty Street Houses Inspected | 2,465 | 2,992 |
| „ „ Court „ | 962 | 917 |
| „ „ Cellars Inspected | 554 | 1,078 |
| „ „ Houses and Cellars Re-inspected ... | 3,930 | 5,231 |
| „ Notices to Owners to Cleanse Dirty Houses... | 3,565 | 4,023 |
| „ „ Occupiers to Whitewash Dirty Houses | 316 | 577 |
| „ „ Owners to Whitewash Exteriors of Courts | 1,268 | 1,396 |
| „ Informations | 43 | 43 |
| „ Fined | 21 | 20 |
| „ Acquitted or Withdrawn... .. | 22 | 23 |
| Amount of Fines and Costs ... | £13 9s. £11 8s. 6d. | |

COURT AND ALLEY EXAMINATIONS.

| | 1897. | 1898. |
|--|--------|--------|
| Number of Visits to Courts and Alleys | 73,026 | 74,241 |
| „ Closets found Dirty, but Cleansed by Officer's Instruction | 73,008 | 68,408 |
| „ Informations. | 18 | 48 |
| „ Fined | 17 | 41 |
| Amount of Fines and Costs | £2 7 6 | £4 2 0 |

Special and systematic visits to courts and alleys are made with the object of ensuring the cleanliness of the domestic offices and the surface of the courts. The aim is to keep the courts and alleys uniformly clean throughout the week, and with this view the district inspectors are instructed that every tenant in each court is in turn to be held responsible for the cleanliness of the court for a period of one week; the inspector records in his visiting book whose turn it is, and duly informs that tenant. Failing compliance with his requirements, an information is laid under a bye-law of the Local Sanitary Act.

The stipendiary magistrate has rendered great help to the department by imposing a small fine in those cases in which a prosecution became necessary. Improvement results up to a point, but the constant attention of the officer is very necessary, since the filthy habits of the people soon lead to a recurrence of the dirty conditions when the visits are lessened.

The courts and alleys continue to decrease in number, owing to the demolition of low-class property for the extension of business premises, or to the removal of insanitary property by the Insanitary Property and Artizans' Dwellings Committee. The number of courts and alleys scheduled for inspection in 1890 was 2,165, in 1893 the number was 1,842, in 1895 it had fallen to 1,660, in 1897 it had further fallen to 1,593, and in 1898 the number was 1,466, showing a diminution in eight years of 699.

During the year all courts and alleys having covered entrances were specially washed and hosed down by the scavengers.

COMMON LODGING-HOUSES.

The Common Lodging Houses Act provides that any person opening any premises as a Common Lodging-House, or receiving lodgers therein, without making application to the Medical Officer of Health to have such premises registered, is liable to a penalty of 40s. for every such offence.

When premises have been approved and registered in accordance with the requirements of the Common Lodging-houses Act, the following Rules and Instructions, together with suitable and permanent cards indicating the various requirements, are handed to the Keeper, to place in a prominent position in each room.

In addition to the requirements mentioned in the following instructions, the cleanliness and suitability of the beds and bedding engage the attention of the Inspector:—

RULES AND INSTRUCTIONS.

1.—No greater number than Lodgers are to be received or accommodated in this house at any one time.

2.—The windows of every sleeping-room in this house are to be opened, and kept open to their full width, from nine to ten o'clock every morning, and from two to three o'clock every afternoon (weather permitting), unless in case of sickness in any room requiring the windows to be closed.

3.—The floors of every room in this house shall be well swept every morning before the hour of ten, and shall be well washed during the morning of every Friday.

4.—This house shall be thoroughly cleansed, and the walls and ceiling of every room in this house shall be well and sufficiently lime-washed, and the blankets, rugs, and bed-clothes, and covers used in this house, shall be thoroughly cleansed and scoured in the first week of each of the months of April, August, and December.

5.—Upon any person in this house, whether a Lodger or one of the family, being affected with fever or any contagious or infectious disorder, the Keeper shall forthwith give notice thereof to the Medical Officer of Health, at his Office, Municipal Offices, Dale Street, and the Medical Officer will visit the house, and take such proceedings as he shall think proper in compliance with the Act.

6.—If any person in this house shall be affected with fever or any infectious or contagious disorder, the blankets and bed-clothes used by such person shall be thoroughly cleansed and scoured, and the bedding fumigated, immediately after the removal of such person, and where the bedding used consists of shavings or straw, the same shall be burned immediately after such removal.

7.—The Keeper of this house shall provide sufficient accommodation for washing, together with a sufficient supply of water for the use of the Lodgers herein.

8.—The Keeper of this house shall reduce the number of Lodgers, or shall cease to receive and accommodate Lodgers altogether, immediately upon receiving notice to that effect from the Medical Officer of Health.

9.—This ticket shall be placed and kept in such situation in this house as the Medical Officer of Health shall from time to time direct, and shall be produced and delivered to such Officer on demand.

N.B.—The Keeper of any Lodging-house defacing or removing this ticket or disobeying the above Rules and Instructions, will be liable to the several penalties in that behalf provided by the Bye-laws for regulating Lodging-houses, a copy whereof may be obtained on application at the Office of the Town Clerk, at the Municipal Offices, Dale Street.

By order of the Health Committee.

At the end of 1897 there were on the register a total of 607 lodging-houses, and at the end of 1898 the total number was 654, which furnished accommodation for 14,028 lodgers, besides 2,043 members of the keepers' families.

The difference in the number of lodging-houses was occasioned by the removal of 152 old licenses and the addition of 199 new ones.

Four applications were refused by the Health Committee, on the ground that the houses were not suitable for the purpose.

In some of the better-class houses for men, separate cubicles are provided for each lodger, the price paid for them varying from 6d. to 1s. 6d. per night. These cubicles are much more appreciated than the ordinary accommodation provided.

The number of what are known as "model lodging-houses," for men only, upon the register is 144, and these are registered to accommodate 6,446 lodgers, as well as 299 members of the keepers' families.

There are also 22 registered model lodging-houses for the accommodation of women only. These have room for 591 lodgers, in addition to 27 members of the keepers' families.

The visits to lodging-houses are both by day and by night. The night visits are almost restricted to the lower districts and commoner class of house. The lodging and emigration houses of the better class, especially those provided only with single beds for each person, and with no more beds than are equivalent to the number of lodgers allowed, are only occasionally visited at night, unless special circumstances necessitate a closer supervision.

Houses which are not licensed either as lodging or sub-let houses are frequently visited by day when such a course is deemed expedient, in order to ascertain whether any grounds exist for putting these houses on the register.

There were 856 visits paid during the year to such houses, and in six of the cases, where suspicion was confirmed, night visits were also paid, and the tenants summoned for taking lodgers without having the premises registered, five being fined, and in one instance the information was withdrawn, the tenant having applied to be registered.

Persons harbouring lodgers in unlicensed premises receive a notice to apply to have the rooms measured and licensed. There were 139 such notices issued during the year, but in only 5 cases was it necessary to institute prosecutions.

The number of day visits paid during the year was 29,293, and the night visits, 1,757.

One hundred and eighty-two informations were laid against keepers of common lodging-houses during the year for the following offences:—

| | | | | | |
|---------------------------------------|-----|-----|-----|-----|-----|
| Not sweeping floors | ... | ... | ... | ... | 52 |
| Not washing floors | ... | ... | ... | ... | 39 |
| Overcrowding | ... | ... | ... | ... | 47 |
| Receiving lodgers in unlicensed rooms | ... | ... | ... | ... | 24 |
| Not applying to register | ... | ... | ... | ... | 6 |
| Mixing sexes | ... | ... | ... | ... | 7 |
| Not limewashing | ... | ... | ... | ... | 7 |
| Total | | | | | 182 |

Convictions followed in 175 cases, the total amount of fines amounting to £55 9s. 0d., and ranging from 1s. and 1s. costs to 40s. and costs.

Six cases were withdrawn, and one acquitted.

The number of lodging-houses found dirty was 147; notices were served to limewash and cleanse.

The Bye-law requires that every case of infectious sickness in a lodging-house should be at once reported to the Medical Officer of Health. Sixteen cases of infectious sickness occurred in lodging-houses; 15 of the patients were at once sent to hospital, the remaining patient was a member of the keeper's family, and was not removed. Three cases of smallpox occurred in lodging-houses, and were removed to hospital. In all cases the bedding was removed to the disinfecting apparatus, and the rooms purified and cleansed. There were 52 deaths from non-contagious diseases in lodging-houses, 29 of the deceased persons belonged to the keepers' families, and 23 were lodgers.

SEAMEN'S LICENSED LODGING-HOUSES.

The Corporation have made bye-laws, with the sanction of the President of the Board of Trade, for the licensing of Seamen's Lodging-houses, under the Merchant Shipping (Fishing Boats) Act, 1883, Section 48.

These Bye-laws are as follows:—

1.—That from and after the 1st day of October, 1887, the Bye-laws as to Seamen's Licensed Lodging-houses, made by the Council of the City of Liverpool on the 6th day of December, 1882, shall be repealed.

2.—In these bye-laws the expression "Registered Common Lodging House" means a common lodging house registered as such pursuant to the enactments and bye-laws or regulations in force in that behalf in the City of Liverpool; and the expression "Registered Lodging House" means a lodging house registered as let in lodgings or occupied by members of more than one family, pursuant to the enactments and bye-laws or regulations in force in that behalf in the said City.

3.—On the written application of the keeper of any registered common lodging house or registered lodging made in such form and stating such particulars as the Council require, the Council will (subject as hereinafter mentioned), if they see fit, grant to such keeper a license authorising him to designate his registered house a Seamen's Licensed Lodging House.

A license may contain such conditions not being inconsistent with the laws, bye-laws, and regulations for the time being in force in the City, and being specified in the license as the Council see fit.

4.—Such license shall not be granted in respect of any house not being a registered common lodging house or registered lodging house: nor in respect of any house where intoxicating liquor is sold, nor in respect of any house occupied or used for the purpose of the business of a clothier, or outfitter, or slop dealer.

Such license shall not be granted to a person who holds a license for the sale of intoxicating liquor, or who is engaged or interested in the business of a clothier, outfitter, or slop dealer.

Provided always that each licensee may sell and supply to bona fide seamen boarders in his house, and to no other person or persons, clothes and slops upon the following conditions, viz.:—

(1) That the licensee submit to the Local Marine Board, annually, or oftener if required, a scale of charges for board, lodging, clothing, and portorage, to be made in or in connection with his house for the approval of the said Board.

(2) That the licensee shall at all times keep hung up in the dining or common room of his house, in a conspicuous position, where it may be seen by all the boarders, a certified copy of the scale of charges approved by the Board.

(3) That the licensee deposit a like certified copy of the scale of charges with the Superintendent of the Mercantile Marine Office of the Local Marine Board.

(4) The licensee shall not make a higher charge than is provided for by the scale, or any charge not provided by the scale on any pretence whatever.

(5) Any dispute respecting any item of account shall be referred to the Superintendent of the Mercantile Marine Office, whose decision shall be final.

5.—The Council shall cause to be kept a Register of all licenses granted under these bye-laws, and the suspension or revocation of any license shall be noted in that register.

6.—A license granted to any person under these bye-laws is not transferable to any other person, and any holder of a license who transfers or lends the same to any other person is deemed guilty of a breach of these bye-laws.

7.—A license granted under these bye-laws continues in force (subject to suspension or revocation, as in these bye-laws provided) for one year from the date of the grant thereof, but the Council may at their discretion refuse to renew any license.

8.—A license granted under these bye-laws may be suspended or revoked by the Council on breach of any of its conditions, or on the conviction of the holder of any felony, misdemeanour, or offence against any law, bye-law, or regulation for the time being in force in the City, or on the Council being satisfied that the holder has been guilty of a breach of the Merchant Shipping Act, 1854, or the Acts amending the same, or has kept a house in which drunkenness, gambling, or immoral or fraudulent practices prevail, or has been a party to such proceedings, or neglects to remove from the lodging-house any persons of known immoral character who may have entered therein.

Within seven days after suspension or revocation of a license the holder shall deliver his license to the Town Clerk; but at the expiration of a period of suspension the license shall be returned to the holder.

9.—Every keeper of a Seamen's Licensed Lodging House, and every other person having or acting in the care or management thereof, shall at all times when required by the Medical Officer of Health, or Lodging House Inspector, or Inspector of Nuisances of the District, the Chief Constable or any Inspector of the City Police Force, or any Detective officer specially authorised by the Chief Constable for the purpose, or any officer of the Board of Trade or Local Marine Board, give them, or any of them, free access to such house.

10.—Any person who, not being the holder of a license under these bye-laws, and any holder of a license who, during a period of suspension, uses or publishes any sign, notice, inscription, ticket, placard, advertisement, circular, letter, or other document stating or implying that his house is a Seamen's Licensed Lodging House, is deemed guilty of a breach of these bye-laws. Every person guilty of a breach of these bye-laws shall be liable to a penalty not exceeding five pounds.

11.—Nothing in these bye-laws shall in any way prejudice or affect the operation of the enactments, bye-laws, or regulations applicable to any registered common lodging house or registered lodging house as such, or to any keeper of any such house.

The foregoing bye-laws must necessarily exercise a beneficial effect upon those houses which are licensed as Seamen's Licensed Lodging-houses, but the great bulk of common lodging-houses, to which seamen commonly resort, are dealt with by regulations under the Common Lodging-houses Act of 1851.

Applications from the keepers of Registered Common Lodging-houses for licenses authorising the designation of such Registered Common Lodging-houses as Seamen's Licensed Lodging-houses, are infrequent, only fifteen such Licensed Lodging-houses now being on the register; these provide accommodation for 252 seamen.

The number of licenses granted since the adoption of the Seamen's Licensed Lodging-house Bye-laws is 27. Twelve have been given up, none withdrawn, and there are 15 at present on the register.

It has not been found necessary to institute proceedings under the bye-laws in question.

Some years ago the holders of licenses to keep Seamen's Lodging-houses were authorised by the Board of Trade to board vessels and seek for lodgers, and while this privilege was granted there was an advantage in holding such a license, but that privilege being now withdrawn, it does not appear that there is any advantage to the keeper of a common lodging-house to have his premises registered as a Seamen's Lodging-house, and hence probably the small number upon the register.

SUB-LET HOUSES.

These are houses, one or more rooms of which are let off by the chief tenant of the house to members of one or more other families. The Bye-laws provide for their registration and inspection, in order to prevent overcrowding, and to ensure attention to cleanliness and sanitary requirements.

The number registered during 1898 was 581, making the total on the register on the 31st December, 17,263. The reason there were fewer houses on the register in 1898, compared with 1897, is that many of the houses had ceased to be sub-let, and were removed from the register; a number of others were demolished by the Insanitary Property Committee, being unfit

for human habitation. The number of visits paid to sub-let houses during the night was 15,182, and during the day 68,698, with the result of finding 1,034 rooms overcrowded. In addition to overcrowding, the cases of permitting males and females not married to occupy the same room comes under the notice of, and are entered in the books of the Inspectors. There were 605 rooms thus indecently occupied. The character of the indecent occupation may be judged of from the following facts:—In 304 instances one man and two women were found in the same bedroom; in 226 instances two men and one woman; in 25 instances two men and two women; in 24 instances one man and three women; in 15 instances three men and one woman; in 6 instances three men and two women; in 2 instances two men and three women; in 2 instances one man and four women; and in 1 instance four men and one woman. These cases are commonest amongst the poorest and most ignorant inhabitants of the squalid districts. They appear to be the outcome of ignorance and indifference, and not of immoral intent.

Informations were laid against 1,337 chief tenants, "room-keepers," for breaches of the bye-laws, viz.:—

| | | | | | |
|----------------------|-----|-----|-----|-----|-------|
| Overcrowding | ... | ... | ... | ... | 739 |
| Floors not washed... | ... | ... | ... | ... | 173 |
| Floors not swept | ... | ... | ... | ... | 424 |
| Refusing admission | ... | ... | ... | ... | 1 |
| Total | | | | | 1,337 |

As the result of proceedings before the Stipendiary Magistrate, fines were inflicted as follows:—1,165 fined 1s. and 1s. costs; 114 fined 1s. 6d. and 1s. 6d. costs; 26 fined 2s. and 2s. costs; 11 fined 2s. 6d. and 2s. 6d. costs; 11 fined 5s. and 4s. 6d. costs; 3 fined 10s. and 4s. 6d. costs; and 2 fined 20s. and 4s. 6d. costs; making a total of fines levied during the year of £151 8s. 0d. Four informations were withdrawn, the tenants having complied with the bye-laws, and one defendant was acquitted.

EXAMINATION OF CELLAR DWELLINGS.

| | 1897. | 1898. |
|--|---------|--------|
| Number of Street Cellars inspected | 6,139 | 5,813 |
| " " " found empty | 99 | 107 |
| " " " used for Lumber, &c. | 1,750 | 1,923 |
| " " " found illegally occupied | 126 | 154 |
| " " " " legally " | 4,164 | 3,629 |
| Notices issued to Owners | 250 | 276 |
| " " Occupiers | 133 | 170 |
| Informations against Street Cellar Owners | 3 | 10 |
| Fined | 1 | 3 |
| of Informations against Street Cellar Occupiers | 1 | 7 |
| Fined | — | 3 |
| of Court Cellars inspected | 412 | 419 |
| " " " found empty | 64 | 35 |
| " " " used for Lumber, &c. | 216 | 266 |
| " " " illegally occupied | 16 | 11 |
| " " " legally " | 116 | 107 |
| " " and Street Cellars found dirty | 505 | 1,078 |
| Informations against Court Cellar Owners | 6 | 6 |
| Fined | 5 | — |
| of Informations against Court Cellar Occupiers | 4 | 8 |
| Fined | 3 | 5 |
| Amount of Fines and Costs | £4 15 6 | £5 6 6 |

The total number of cellars let as separate dwellings at present upon the register is 3,288, besides which there are 6,532 cellars used in conjunction with the dwelling-house above, but not let as separate dwellings.

The number of cellars filled in by the Health Committee, free of charge to the owners, during the year was 54, and the total filled in during the last ten years was 916.

About 12,000 people are at present housed in cellars.

Cellars occupied as dwellings must comply with certain requirements under the Liverpool Improvement Act of 1871, and the Public Health Act of 1875. The requirements of the Act specially relating to Liverpool may be summarised as follows, and any person who lets or suffers to be occupied any cellar, in contravention of these requirements, is liable to a penalty not exceeding ten pounds:—

"For the purpose of this enactment, every room, the surface of the floor of which is more than four feet below the level of the nearest street, shall, if intended to be used as a separate dwelling, be deemed a cellar dwelling, and every cellar which any person shall at any time apparently inhabit or in which any person shall be found between the hours of eleven o'clock in the evening and five o'clock in the morning, shall be held and taken to be occupied as a separate dwelling."

"Every cellar dwelling shall have a height from the floor to the ceiling in every part of such dwelling of not less than seven feet; no cellar dwelling shall have any part of its floor more than four feet below the surface of the footway of the adjoining street; every cellar dwelling shall have, both at the front and rear thereof, and for the full extent thereof, respectively, an area not less than two feet six inches wide in every part thereof, from six inches below the floor of the cellar to the surface of the ground adjoining the front and rear thereof respectively; if the cellar dwelling consists of two cellars back to back, it shall suffice if there be one area in front and one behind such two cellars; every area shall be protected by railings or gratings to the satisfaction of the Corporation; the steps for access to the cellar dwelling may be in the area, but shall not be opposite to the window of the cellar; the steps or access to the house above the cellar door may be across or over but not in such area, and shall not be over or opposite the window of the cellar; save as aforesaid the areas in the front and rear, respectively, shall be open and free from obstruction; every cellar or room in any cellar dwelling shall have an open fire-place, with a proper flue therefrom; every cellar dwelling shall have a water-closet, or other like convenience, and (if required by the Corporation) an ash pit or dust bin, to be built or placed in such situation as the Corporation think fit, and to their satisfaction; every cellar dwelling shall have at least one window in an outer wall, and not less than three feet square or nine square feet clear of the sash frame, and if such cellar dwelling consists of two or more cellars, each of such cellars shall have one such window; every such window shall either be a casement window, opening on hinges or pivots, or a sash window with double sashes opening at the top and bottom."

The Building Surveyor has kindly supplied the following table :—

NUMBER OF HOUSES ERECTED AND TAKEN DOWN DURING YEAR ENDING
31ST DECEMBER, 1898.

| DISTRICTS. | Number erected. | Number taken down. |
|---------------------------|--------------------|-----------------------|
| Scotland | ... | 133 |
| Exchange | 78 | 366 |
| Abercromby | 4 | 26 |
| Everton | 42 | ... |
| Kirkdale | 58 | ... |
| West Derby | 289 | 25 |
| Toxteth | 4 | 241 |
| Walton | 445 | 19 |
| West Derby (Rural) | 216 | ... |
| Wavertree | 538 | ... |
| Toxteth (Rural)... .. | 303 | ... |
| Total | 1,977 | 810 |

The City Engineer has kindly supplied the following :—

| | |
|---|-----|
| Number of cellars filled in during 1898 | 54 |
| “ “ “ the last 10 years | 916 |

SEWER VENTILATION TO END OF 1898.

| | |
|---|-------|
| Number of 9-inch by 6-inch, 9-inch, 6-inch, 6-inch by 4-inch, 4-inch by 4-inch, 4-inch, and 3-inch Iron Pipe Ventilating Shafts | 1,051 |
| Number of Street Ventilating Manhole Covers and Gratings | 6,774 |

CANAL BOATS.

The Leeds and Liverpool Canal Company are the proprietors of the only canal having direct communication with Liverpool, and the length of the waterway within the city, exclusive of the locks which lead to the docks, is about three miles.

The number of inspections of canal boats during the year was 5,168, and the condition of the boats and their occupants, as regards matters dealt with in the Acts and Regulations, is indicated by the following information :

Sixty-one boats, not registered by their present owners, were found to be used as dwellings. In 15 of these cases written notices were sent to the owners, and in 46 verbal notices were given to masters. The notices were complied with in 48 cases, in 3 the registration was not completed on December 31st, 4 have not been seen in the district since, and in regard to the remaining 6, application to register was made by the owners, but before registration was completed the applications were withdrawn, in consequence of the boats having either been sold or ceased to be used as dwellings.

Twenty-seven boats were found without certificates on board. Notices were sent to the owners in each case; 23 were found abated, and 4 have not been seen in the district since.

Thirty-nine boats were found without the registered number painted on both sides of the boat. Notices were sent to the owners in each case, and the omission rectified in 34 cases. Three have not been seen in the district since, one boat has been sold, and one broken up.

In 13 cases defective second bulkheads were reported. Notices were sent in each case. Twelve notices were complied with, and one has not been seen since.

In 14 boats the cabins required painting, Notices were sent to the owners in each case. Thirteen of them were attended to, and one of the boats has not been seen again by the inspector.

Dirty cabins were reported in 11 cases. In 2 cases verbal notices were given to the masters, and in the others, written notices were sent to the owners. In 4 cases the notices were complied with, and 2 not being complied with, informations were laid against the masters, and small fines inflicted. Five of the boats have not been seen since.

Besides the foregoing, there were 98 instances of infringements of the Acts and Regulations, caused by—leaky decks (54), general leaky condition of boats (14), defective bulkhead next to cabin (1), no doors to lockers (3), broken scuttle covers (1), defective ventilation (8), broken floors (6), no water casks on board (10), and defective pump (1). In each case notices were sent to the owners. Eighty of the notices were complied with, and 17 have not been re-inspected. One notice not being complied with, an information was laid and a fine inflicted.

Informations were laid in 13 cases, viz.:—Non-separation of sexes, 3; boats not properly marked and lettered, 2; dirty cabins, 2; broken floor of cabin, 1; defective second bulkhead, 1; carrying offensive cargo without second bulkhead, 1; using unregistered boats as dwellings, 3. In 10 of these cases fines were inflicted, varying from 1s. and 1s. costs to 20s. and 4s. 6d. costs, and amounting to a total of £5 15s. 0d. Three of the informations were withdrawn.

No infectious sickness occurred on any of the boats during the year. One boat was detained, however, and the cabin and bedding disinfected, as the inspector was informed that a case of diphtheria had occurred on board the boat while she was in another district, and that no disinfection had taken place.

The entire number of infringements of the Acts and Regulations referred to in the report occurred on 191 boats, in several instances the offence being repeated on the same boat.

Twenty-nine notices were sent to the School Board of children living on canal boats and not attending any school.

The number of boats on the register is 599. Eighty-four boats have been removed from the register, as it was ascertained that 36 of them had been broken up, that 24 had been sold, and were no longer used as dwellings, and 24 were removed from the register at the request of the owners, being disused. It is probable that other boats have been broken up or have left the district, but in the absence of definite evidence of this, the boats remain on the register.

During the year 31 new boats were registered, 23 re-registered on account of changes of owners, and 5 re-registered on account of structural alterations. All boats re-registered in consequence of a change of owners, or the name of the boat being changed, or on account of structural alterations, retain their original numbers.

Copies of the registration certificate were issued to the owners of 4 boats, owing to the original ones being worn out.

There were 65 changes of masters reported, and the fact duly recorded on the register.

A difficulty arose in regard to certain boats plying upon the canal which were not registered under the Canal Boats Act, but which had been registered by the Board of Trade under the Merchant Shipping Act. The Medical Officer was in frequent communication with the representative of the Board of Trade upon the subject, and the simplest way out of the difficulty was found to be the appointment of the Canal Boat Inspectors as Port Sanitary Inspectors, an appointment which authorised them to inspect all classes of boats. So far the arrangement has been a satisfactory one.

BAKEHOUSES.

The sanitary control of Bakehouses is dealt with under the Factory and Workshop Acts and Public Health Acts, which prescribe the following regulations:—

Every Bakehouse must have the whole of the interior walls and ceilings, and all passages and staircases of the Bakehouse, painted, varnished, or lime-washed; if painted or varnished they must be washed with hot water and soap at least once in every six months, and the paint or varnish renewed once at least in every seven years; if the walls, &c., are lime-washed, the lime-washing must be renewed once at least in every six months.

No sleeping-place shall be permitted on the same level as a Bakehouse, and forming part of the same building, unless it is effectually separated from the bakehouse by a partition extending from floor to ceiling, and unless ventilated by an external glazed window of at least nine superficial feet in area, of which area at least one-half may be fully opened for ventilation.

No water-closet or ashpit shall be within or communicate directly with the bakehouse. The cistern for supplying water to the bakehouse shall be separate and distinct from any cistern for supplying water to a water-closet. No drain shall have an opening within the bakehouse.

No place underground may be used as a bakehouse, unless it was so used at the commencement of the Factory and Workshop Act, 1895.

All bakehouses must be kept in a cleanly state, free from effluvia arising from any drain, water-closet, or other nuisance; they must be properly ventilated, and possess at least 250 cubic feet of space for each person during ordinary working hours, and 400 cubic feet during overtime. A reasonable temperature must be maintained, and suitable sanitary conveniences provided for those employed in the bakehouse.

By Section 3 of the Workshop Act, 1891, if any child, young person, or woman is employed in a bakehouse, the Medical Officer shall, on becoming aware thereof, give a written notice to Her Majesty's Inspector of Factories.

Where any room or place used as a bakehouse is in such a state as to be, on sanitary grounds, unfit for use as a bakehouse, the occupier is liable on summary conviction to a fine not exceeding forty shillings.

Fifty-six Bakehouses were added to the Register during 1898; one-third of these are bread-bakers and confectioners, the remaining two-thirds are small pie and cake shops, which require supervision.

During the year six cellar bakehouses have ceased to be used for baking purposes. In one case, a confectioner's shop, a new bakehouse was erected on the ground floor, and the cellar bakehouse done away with; and in one case, that of a bread-baker, the ovens have been demolished, and the baking done elsewhere. In the remaining four cases, baking has been discontinued, and the premises are now used for other purposes.

| | | | |
|---|-----|-----|-------|
| Number of Bakehouses on Register, 31st December, 1898 | ... | ... | 1,002 |
| „ Bakehouses added to Register during 1898 | ... | ... | 56 |
| „ Bakehouses struck off Register during 1898 | ... | ... | 37 |
| „ Visits paid to bakehouses | ... | ... | 4,321 |
| „ Bakehouses found dirty (walls and ceilings) | ... | ... | 412 |
| „ Notices issued for limewashing | ... | ... | 248 |
| „ Bakehouses limewashed without notice | ... | ... | 164 |
| „ Notices issued for defective ventilation | ... | ... | 25 |
| „ „ to cleanse store cisterns and provide water from main | ... | ... | 1 |
| „ „ to repair defective drains and waste pipes | ... | ... | 8 |
| „ „ to discontinue using bedrooms opening directly into bakehouse | ... | ... | 2 |
| „ „ to take drains out of bakehouses... | ... | ... | *6 |
| „ „ to repair defective floors and walls | ... | ... | 15 |
| „ „ to repair defective ceilings | ... | ... | 18 |
| „ „ to provide suitable water-closet accommodation | ... | ... | 1 |
| „ „ to remove and cease to keep animals in bakehouse | ... | ... | 2 |
| „ „ to cease to use bakehouse for the purpose of domestic washing | ... | ... | 1 |
| „ „ to cleanse floors, windows, areas, tables and troughs | ... | ... | 102 |
| „ „ to cease to use as bakehouses places underground not in conformity with Act, 1895 | ... | ... | 5 |
| „ „ to remove accumulations of foul water | ... | ... | 1 |
| „ „ „ trade refuse... | ... | ... | 29 |
| „ „ to repair defective roofs | ... | ... | 1 |
| Number of References to Government Factory Inspector | ... | ... | 24 |

All the above Notices were complied with.

* Drains within Bakehouses are prohibited by the Factory and Workshop Act, 1895, one of the requirements of this Act being "no opening to a drain to be within the bakehouse." All the bakehouses in use, in consequence, have had the drains removed.

SHOP HOURS ACT, 1892—5.

The object of the Act is to prevent the employment of young persons for such an excessive number of hours as will prejudice the health of these employes.

During 1898, under the above Act, there have been 4,973 visits paid to shops during the day, and 2,599 visits made after six o'clock; in 6,894 instances the shops were found to be correct, and 678 incorrect.

The persons concerned have generally evinced readiness to comply with the requirements of the Act, and have thus lessened the difficulties in its administration. A marked diminution will be noticed in the number of occasions in which it was necessary to take police proceedings.

| | | | <u>1897.</u> | <u>1898.</u> |
|---|-----|-----|--------------------|-------------------|
| Number of Shops visited (day) | ... | ... | 5,048 | 4,973 |
| „ „ found incorrect | ... | ... | 610 | 442 |
| „ „ visited after 6 p.m. | ... | ... | 2,583 | 2,599 |
| „ „ „ found incorrect... | | | 286 | 236 |
| „ copies of Act distributed by the Inspectors | | | 309 | 246 |
| „ Informations for excessive hours | ... | ... | 4 | — |
| „ Convictions „ „ | ... | ... | 4 | — |
| „ Informations for not exhibiting Notice of Act and Requirements as to hours of work being 3 Bakers, 1 Butcher, 1 Greengrocer and 2 Grocers. | | | 18 | 7 |
| „ Convictions | ... | ... | 17 | 4 |
| Total number of Informations | ... | ... | 22 | 7 |
| „ „ Convictions | ... | ... | 21 | 4 |
| Total Amount of Fines and Costs | .. | | <u>£19 6s. 6d.</u> | <u>£3 0s. 0d.</u> |

FACTORY AND WORKSHOPS ACT, 1878—95.

The Inspectors appointed under the above Acts have visited a large number of Workshops, the summary of which is appended :—

SUMMARY OF VISITS PAID TO WORKSHOPS.

| | | | |
|------------------------------------|-----|--|-------|
| Bacon Curers | 8 | Marine Stores... .. | 444 |
| Basket Makers | 11 | Mattress and Bed Makers | 32 |
| Boot Makers | 171 | Milliners | 154 |
| Bottlers | 32 | Mineral Water Manufacturers | 27 |
| Brassfinishers | 9 | Packers | 10 |
| Brush Makers... .. | 18 | Paint and Varnish Manufacturers | 22 |
| Cabinet Makers and Joiners | 358 | Paper Cutters, &c. | 14 |
| Canned Goods... .. | 7 | Paper Sorters | 6 |
| Cap Makers | 17 | Photographers | 19 |
| Carvers and Gilders | 49 | Pickle and Sauce Manufacturers | 56 |
| Chain Makers | 5 | Picture Framers | 15 |
| Chair Makers | 12 | Pipe Mounters... .. | 9 |
| Chemists' Sundries | 7 | Plumbers | 49 |
| Coach Builders | 46 | Rope Makers | 5 |
| Cloth Sorters | 6 | Rubber Goods Manufacturers | 12 |
| Confectioners | 85 | Sack and Bag Makers | 124 |
| Coopers... .. | 71 | Saddlers | 55 |
| Cork Cutters | 13 | Sailmakers | 33 |
| Cotton Sorters | 57 | Sausage Makers | 9 |
| Cycle and Bassinette Makers | 55 | Slipper Makers | 12 |
| Dressmakers | 728 | Smiths | 185 |
| Drysalters | 11 | Soap Boilers | 14 |
| Electricians | 8 | Stay and Corset Makers | 30 |
| Enamellers | 16 | Tailors | 1,493 |
| Engravers | 23 | Tarpaulin Makers | 18 |
| Firewood Manufacturers | 13 | Ticket Writers | 11 |
| Fish Curers | 8 | Toy Makers | 5 |
| Flag Makers | 5 | Trunk and Portmanteau Makers | 16 |
| French Polishers | 32 | Umbrella Makers | 24 |
| Furriers | 10 | Underclothing Makers | 198 |
| Galvanisers | 29 | Upholsterers | 73 |
| Ink Makers | 23 | Venetian Blind Makers | 9 |
| Knitters | 20 | Watchmakers and Jewellers | 27 |
| Laundries | 476 | Wheelwrights... .. | 47 |
| Lead Light Makers, &c. | 16 | Wig Makers | 11 |
| Leather Goods Manufacturers | 12 | Various... .. | 114 |
| Lithographers | 5 | | |
| Marble Masons | 25 | Total | 5,879 |

A certain number of Sanitary defects were found, the character of which is indicated in the following table :—

| | 1897. | | 1898. |
|--|-------|--------|-------|
| Number of Workrooms, dirty walls | 746 | .. | 637 |
| „ „ „ ceilings | 658 | ... | 648 |
| „ „ „ floors | 14 | ... | 18 |
| „ „ „ urinals | 3 | ... | 6 |
| „ „ „ water-closets | 42 | ... | 45 |
| „ „ „ lavatories | 2 | ... | 27 |
| „ „ insufficiently ventilated, arising from structural defects or from want of attention | 147 | ... | 106 |
| „ „ found overcrowded | 17 | ... | 20 |
| „ Defective Drains and Water-closets ; also insufficient water-closet accommo- dation, and other nuisances... .. | 494 | ... | 459 |
| „ Notices issued { upon Owners | 174 | ... | 224 |
| „ { upon Occupiers | 528 | ... | 407 |
| „ „ not complied with (These are known to be in progress.) | 4 | ... | 5 |
| „ Informations | 13 | ... | 6 |
| „ Fined | 9 | ... | 1 |
| „ of References to Government Factory Inspector... .. | 74 | ... | 79 |
| „ Workshops inspected, protected | 259 | ... | 255 |
| „ „ „ non-protected | 36 | 295 | 49 |
| „ Workrooms measured... .. | 249 | ... | 209 |
| „ Workrooms closed owing to insanitary conditions being (2 Bootmakers and 1 Tailor) | 5 | ... | 3 |
| Visits to Workshops | 5,902 | ... | 5,879 |
| Workshops found incorrect | 2,029 | ... | 1,994 |
| Amount of Fines and Costs ...£13 1 0 | | £1 4 6 | |

Out of 305 cases of excessive smoke from Steamers in the river which were observed, 26 vessels were bound to foreign ports, the owners of 7 steamers could not be traced, and in 4 cases the Steamers were towing other vessels in emergency, and consequently no proceedings were taken.

| | 1897. | 1898. |
|---|-------|-------|
| Complaints received of smoke from defective house flues, and from low chimneys | 167 | 181 |
| Visits relating thereto | 708 | 854 |
| Chimneys raised in consequence of complaints | 38 | 47 |
| Flues altered and repaired | 54 | 54 |
| Attention promised | 48 | 54 |
| Referred to other departments | 13 | 8 |
| Frivolous complaints | 14 | 18 |
| Total complaints dealt with | 167 | 181 |

The large and increasing amount paid in fines for smoke nuisances indicates the necessity for care in preventing them.

From careful observations during the course of inspections, it has been found that the nuisance caused by the emission of excessive smoke from chimneys is due to the following causes :—

1. Improper construction of the furnaces, and the want of sufficient boiler room.
2. Inferior quality of the fuel used.
3. Improper firing and want of attention on the part of the stokers.

These causes are usually associated ; even an improperly constructed furnace, if fed with a good quality of fuel and attended to by a careful and skilful man, can be so used as to avoid making unnecessary smoke, and, at the same time, the utmost amount of work of which it is capable can be obtained from it. A furnace of the best construction and fitted with the most approved appliances for preventing smoke, may, on the other hand, give rise to the greatest nuisance owing to improper attention and the use of poor fuel.

A number of manufacturers have had the furnaces in their works fitted with self-feeding or automatic stokers, which may be classified as "cokers" and "sprinklers"; the former are by far the best, the principle being the coking of the coal at the front of the furnace, while the volatile gases have to travel over the full length of the incandescent fuel on the fire bars.

Bad fuel, careless stoking, and attempts to obtain more work from the furnaces of this description than they were originally intended for cause emission of unnecessary smoke from chimneys attached to furnaces, fitted with automatic stokers, which require skilled and careful attention.

The points to be attended to by the stoker are—Frequent and regular firing, the best results being obtained by firing every 3 minutes, making, for 2 cwts. of coal used per hour, charges of 12 lbs. each, and the admission of a sufficient supply of air over the top of the fuel to cause the combustion of the gases given off by the coal, as well as a sufficient supply to the solid portion of the fuel itself.

WATER GAS.

Much anxiety was occasioned by the poisoning of four Swedish emigrants by gas, which escaped into their bedroom at night, owing to one of their number having blown out the gas, instead of turning it off.

Three of the emigrants fortunately recovered, but the result was fatal in one case.

It was found that the gas supplied to the house was water gas, which contains a very large proportion of the excessively poisonous gas, carbonic oxide.

The anxiety connected with the matter was accentuated by the refusal of the Gas Company to inform the Committee of the locality to which this excessively poisonous gas was being sent, nor did the Company themselves take steps to warn the public of its dangerous nature.

The Health Committee, therefore, caused an investigation to be made into the matter, and extensive analyses were made into the quality of gas supplied to various parts of the City, and it was found that a large area of the City was supplied with a considerable proportion of water gas.

The publicity given incidentally to the matter has, in a measure, warned the public of the great danger which is incurred even from a small escape of this noxious gas.

A Departmental Committee was appointed by the Home Secretary in February to report upon the dangers of water gas, and the means by which such dangers may be diminished.

OFFENSIVE TRADES.

Applications for permission to carry on the following offensive trades were made during the year, and a report by the Medical Officer of Health on each application, was submitted to the Health Committee.

| Premises. | Business. | Granted. | Refused. | Date 1898. |
|--|--------------------------------------|------------------|----------|---------------|
| Pumpfields | Fat Melting | 1 | — | 20th Jan. |
| 28 to 32, Mile End... | „ | — | 1 | 31st March |
| 33 and 35, Collingwood Street | Soft Soap Manufacture | 1 | — | 28th April |
| 79 and 81, Naylor Street | Fat Melting | 1 | — | 2nd June |
| 141, Vauxhall Road... | „ | 1 | — | 9th June |
| Gascoyne Street ... | Tripe Dressing, Bone Boiling, &c. | 1 | — | 16th June |
| Brick Street... .. | Oil Refining | 1 | — | 7th July |
| Naylor Street ... | Tripe Dressing and Bone Boiling | 1 | — | 28th July |
| Fletcher's Yard off } Vauxhall Road } | Oil Refining | 1 | — | 13th Oct. |
| Eaton Street ... | „ | 1 (temporary) | — | „ |

In the cases in which permission was granted, conditions were imposed requiring that the premises be put in proper order to the satisfaction of the City Engineer and the Medical Officer of Health, that no public nor private nuisance be caused, and that the business be discontinued whenever the Council shall so require.

The number of inspections of premises where offensive trades are carried on was 636, as against 748 in 1897.

| | | | | | | |
|-------------------------------------|-----|-----|-----|-----|-----|-----|
| Total No. of Visits to Bone Boilers | ... | ... | ... | ... | ... | 65 |
| „ Fell Mongers | ... | ... | ... | ... | ... | 20 |
| „ Soap Boilers | ... | .. | ... | ... | ... | 124 |
| „ Fat and Tallow Melters | | | ... | ... | ... | 181 |
| „ Tripe Boilers | . | ... | ... | ... | ... | 96 |
| „ Gut Scrapers | ... | ... | ... | ... | ... | 64 |
| „ Fish Skin Dressers | ... | | ... | ... | ... | 4 |
| „ Tanneries | ... | ... | ... | ... | ... | 33 |
| „ Knackers' Yards | ... | | ... | ... | ... | 5 |
| „ Paint and Resin Works | | | ... | ... | ... | 16 |
| „ Rubber Works | ... | ... | ... | ... | ... | 28 |

KNACKERS' YARD RETURNS.

| | Horses Destroyed. | Horses taken in Dead. | Asses Destroyed. | Cows Destroyed. | Other Beasts. |
|---------------------|----------------------|--------------------------|---------------------|--------------------|------------------|
| Holme Street | 1,131 | 1,324 | 26 | 58 | — |

MARINE STORES.

| | | | | | | <u>1897.</u> | <u>1898.</u> |
|------------------|-----|-----|-----|-----|-----|--------------|--------------|
| Number of Visits | ... | ... | ... | ... | ... | 97 | 811 |

MANURE YARDS AND WHARVES.

| | | | | | | <u>1897.</u> | <u>1898.</u> |
|------------------|-----|-----|-----|-----|-----|--------------|--------------|
| Number of Visits | ... | ... | ... | ... | ... | 522 | 598 |

STABLES.

| | | | | | | | <u>1898.</u> |
|------------------|-----|-----|-----|-----|-----|-----|--------------|
| Number of Visits | ... | ... | ... | ... | ... | ... | 3,341 |

FEMALE SANITARY STAFF.

As was the case in the preceding year, house-to-house visitation amongst the poorest and lowest classes in the city engaged most of the time and attention of the female staff. To ensure continuity of work, a district was allotted to each inspector, each family being seen in their own room or house, the requirements of the Health Committee as to cleanliness, &c., explained to them, and the advantages resulting from their observance pointed out. Specially dirty families are re-visited at frequent intervals, and the streets which call for attention are systematically re-visited every three or four months if circumstances allow this to be done.

In the lowest streets the work is very much impeded by the frequent removal of the people from house to house; this is especially the case with the dirtiest and most drunken families, and those who neglect their houses and children. It is no uncommon thing in these streets to find that in about three months half the people have gone from one house to another. On the other hand, there are many cases in which improvement is marked.

During the summer, three additional female sanitary inspectors were temporarily appointed, and valuable assistance was given by them to the permanent staff, enabling visits to be made to numbers of streets which had not previously been on the visiting list, owing to want of time.

The prevalence of infantile Diarrhœa, largely contributed to by the improper feeding of the children, and resulting in a high death-rate, engaged the careful attention of the staff. Infants under twelve months were commonly found to be receiving exactly the same kind of food and drink

as the adult members of the family, or artificial foods, dirty and decomposing, from dirty bottles and utensils. Instruction on this matter has been well received, and in many instances acted upon, with consequent improvement in the condition of the children.

The advantages of fresh air and cleanliness have been explained, and a greater frequency in the opening of windows, and a diminution in the quantity of insanitary refuse found in the rooms, has resulted.

Among the aged and helpless, who are not destitute, and also among those who are unable or unwilling to keep themselves clean, the work has been unsatisfactory, owing to unsuitability or refusal to go to the workhouse infirmary.

Very little improvement is apparent in the quarters of the city occupied by the foreign Jews (chiefly Polish or Russian); ignorance of the language is the most serious obstacle in the way of improving the condition of these people.

Care is taken, as far as possible, to trace the people who lived in houses demolished as insanitary, so that the influence of the inspectors may still be felt.

In addition to this routine work, cases of gross dirt and neglect of children were reported to the Liverpool Society for the Prevention of Cruelty to Children.

When sickness is found, the friends of the sick person have been influenced to seek medical treatment, or admission into hospital.

Structural and sanitary defects, and cases of overcrowding, are brought under the notice of the departments which deal with them.

The statistics of the Female Sanitary Staff indicate a great increase of work over the preceding year, the amount of work done being practically twice what it was in 1897.

It is a gratifying circumstance to note that the proportion of families reported as dirty is very much diminished, and the same remark applies to the number of houses found to be dirty. These are facts of some significance.

STATISTICS OF WORK OF FEMALE SANITARY STAFF.

| | | | <u>1897.</u> | <u>1898.</u> |
|--|-----|-----|--------------|--------------|
| Number of Street Houses examined... | ... | ... | 7,744 | 15,888 |
| „ Court „ „ | ... | ... | 3,547 | 8,908 |
| „ Cellars | ... | ... | 1,472 | 2,207 |
| „ Families found dirty | ... | .. | 1,792 | 2,581 |
| „ Re-visits to Families | ... | ... | 6,131 | 34,709 |
| „ Houses found dirty | ... | ... | 2,470 | 4,562 |
| „ Cellars „ „ | ... | ... | 241 | 364 |
| „ Notices issued to cleanse dirty premises | | | 256 | 853 |
| „ „ „ floors and woodwork } | | | — | 21 |
| „ References to Sanitary Inspectors | ... | | 2,703 | 3,762 |
| „ „ „ Lodging-house Inspectors | | | 20 | 21 |
| „ „ „ Veterinary Department | ... | | 50 | 42 |
| „ „ „ City Engineer | ... | ... | 1 | 28 |
| „ „ „ Water Engineer | ... | ... | 333 | 662 |
| „ „ „ Building Surveyor | ... | | — | 10 |
| „ „ „ School Board | ... | ... | 20 | 12 |
| „ „ „ The Shelter, Islington | ... | | 34 | 137 |
| „ „ „ Relieving Officer... | ... | | — | 10 |

THE AMBULANCE AND DISINFECTING STAFF.

The following table shews the number of patients removed by Officers of the Ambulance Staff, and the Hospitals to which they were taken : —

| Netherfield Road. | Grafton Street. | Park Hill. | Brownlow Hill. | Mill Lane. | Priory Road. | Northern Hospital. | Royal Infirmary. | Smithdown Road. | Total. |
|-------------------|-----------------|------------|----------------|------------|--------------|--------------------|------------------|-----------------|--------|
| 834 | 645 | 373 | 71 | 230 | 219 | ... | 9 | 6 | 2,387 |

For the removal of patients to hospital, and for the removal of infected bedding, and its return after disinfection, an adequate ambulance staff is maintained.

Four ambulance carriages are in use for the different forms of infectious disease. Bedding and clothing, after disinfection, are taken home by a staff and conveyance entirely distinct from that which removed them in the infected state.

All cases of Smallpox and all cases of Typhus Fever, with very rare exceptions, are removed to Hospital, and a special Inspector revisits the house from whence the patient was removed to ascertain whether any further sickness has developed. These inquiries are made at intervals of a day or two for one month, and any case of sickness, however trifling it may appear to be, is at once reported and visited by a medical man. By these inquiries cases of infectious sickness which may arise are discovered and removed to the hospital at the earliest possible stage of the disease, and often before any serious risk of infection has arisen. Without these inquiries, which have occasioned no inconvenience to anyone, the patients would have remained at home for a longer period, constituting centres of infection to the neighbourhood. The absence of friction indicates the care exercised by the Inspector in carrying this system into execution, (See pages 27 and 30).

The collection, removal, disinfection and return of infected bedding has been carried on as hitherto by the Ambulance Staff.

It has been found that in many instances in which compensation for clothing had been given in money to the poorer classes of people, that the money was spent in drink, and the people left without clothing. As a consequence of this, an arrangement was made with a firm of repute, to supply articles equivalent in value to those which had been destroyed, thus preventing an improper use of the money. There were difficulties incidental to this method, and the present plan is to keep at the dépôt a stock of mattresses, bedding, &c., and to give it out to suitable applicants, whose clothing or bedding have been destroyed on account of infection, under the Public Health Act.

Owing to the delays and difficulties which arose from time to time in causing compliance with notices served upon owners to strip the wall-paper from the walls of infected rooms, this work has been undertaken by the Disinfecting Staff.

The Health Committee felt that in dealing with infection, measures involving the least delay are the best, and investigation into the matter made it clear that time would be saved and efficiency ensured if the work were done by the Medical Officer's staff.

The Committee therefore authorised the Medical Officer of Health to make arrangements for this to be carried out, so that in future owners of property should be absolved from all responsibility in the case of houses under a rental of £30 per annum.

As soon as the infected wall-paper has been stripped, and the house ready for re-papering or other work, an intimation of the fact is sent to the owner.

In all cases of infectious disease the houses were disinfected by a trained staff, free of cost, with sulphurous gas ; but whenever there was sickness in any room of the house, disinfectants were given to the tenants for

use in the sick room until the sulphurous gas could be used safely. No house is considered properly disinfected until sulphurous gas has been used, and the wall-paper, previously sprayed with solution of perchloride of mercury, stripped. The wall-paper is conveyed in sacks to the refuse-destroyer and burnt. The existence of infectious sickness necessitates many visits by the persons in charge of disinfection. There were in all 6,128 visits paid during the year to houses for the purpose of disinfection, the number of houses completely disinfected being 3,578.

INFECTED HOUSES.

| | | <u>1897.</u> | <u>1898.</u> |
|--|-----|--------------|--------------|
| Number of Infected Street Houses Inspected | ... | 3,391 | 3,114 |
| " " Court " " | ... | 246 | 198 |
| " " Cellars " | ... | 75 | 43 |
| " " Houses Re-inspected | ... | 3,721 | 244 |
| " Notes to Owners to Cleanse | ... | — | 2,450 |
| " Notices to Occupiers | ... | 159 | 259 |
| " Enquiries | ... | — | 18,714 |
| " Informations | ... | 36 | 6 |
| " Fined | ... | 11 | — |
| " Acquitted and Withdrawn | ... | 25 | 6 |
| Amount of Fines and Costs | | £15 6s. 0d. | £0 3s. 0d. |

There is a decrease of about 357, compared with the preceding year, in the number of houses requiring to be dealt with on account of infection, and the falling-off in the number of re-inspections is due to the change in the system of dealing with infected wall-paper, already described.

INFECTED PREMISES CLEANSED BY DISINFECTING STAFF.

| | | <u>1898.</u> |
|--------|-----|--------------|
| Houses | ... | 3,417 |
| Rooms | ... | 6,067 |

NOTICES TO MASTERS OF SCHOOLS AND LIBRARIANS.*

In accordance with the arrangements made with the School Board, 4,383 postcards were sent to the Head Masters of the various schools informing them that children from infected houses attended their schools. Similar information was sent to the School Board.

Books borrowed from Lending Libraries which have been found in infected houses have been taken to the Disinfecting Station and either destroyed or disinfected and returned. In the case of books which have been destroyed, compensation has been paid under the Public Health Act.

PUBLIC ELEMENTARY SCHOOLS.

VISITS MADE BY SANITARY INSPECTORS.

| | 1898. |
|--|-------|
| No. of Visits to Schools... | 2,924 |
| „ Waterclosets and Latrines found dirty or defective ... | 284 |
| „ Notices issued for defects ... | 129 |
| „ „ „ dirty closets ... | 43 |

INFECTIOUS DISEASE IN SCHOOLS.

One of the most important measures to prevent the extension of infectious disease in schools is to ensure that, when sickness exists at the homes of the scholars, the earliest possible information shall be given to the Head Master, the Head Mistress, or Principal.

Usually the first intimation of such sickness is received by the Medical Officer, under the terms of the Notification Act, which, however, does not include measles and whooping-cough, both of which are liable to spread extensively amongst children of school age.

As soon as notification of infectious sickness is received by the Medical Officer of Health, the address of the patient and the nature of the illness are entered in a register specially made for the purpose, and from which each of the District Inspectors takes such addresses as are on his own district; he initials the register, and becomes responsible for ascertaining and reporting the names of any children of school age who may be living at the addresses in question, and the school they attend. It is part of the inspector's duty to forthwith warn the parents, or those in charge, that the children must be kept from school until fourteen days after the necessary disinfection has been carried out; he leaves a postcard, addressed to the Medical Officer of Health, to be filled up and forwarded by the parent or other responsible person, as soon as the doctor in attendance states that the disinfection may be proceeded with.

The information obtained by the inspector is duly entered in a permanent register, and intimation is sent by postcard the same day to the Head Master of the school the children attend if it is a Board School, or to the Principal in the case of a private school.

The permanent register in which the names have been entered is then passed on to the Clerk to the School Board, in order that the entries may be copied by his staff, and an intimation given to the School Visitor, warning him that the children from the address indicated are prohibited from attending school until further notice is sent to him.

When the source of infection is removed (either by removal of the patient to hospital, or by the recovery or death of the patient), the house and bedding are disinfected by the officers of the Public Health Department. These proceedings are duly recorded in a register, called the Disinfecting Book, which is also passed on to the Clerk to the School Board in the manner already described.

At the expiration of a fortnight from the date of disinfection, the School Visitor is notified to visit the house, and if no sickness of any kind has

occurred in the interval, he reports accordingly, and the following day intimation is sent by postcard to the Head Teacher of the school, to re-admit the children.

Information is received by the Medical Officer of Health of diseases not included under the Notification Act, from school visitors, inspectors, teachers, parents, and others, who are supplied with printed postcards suitable for the purpose, and each District Sanitary Inspector initials the address situated in his district, and reports the names of the children, in a similar manner to that followed in the case of diseases included under the Notification Act.

In the case of measles and chicken-pox, disinfection is carried out with the consent of the occupier of the house; the children are not allowed to return to school until a fortnight after the sickness has ceased to exist.

In cases of whooping-cough, ringworm, etc., only the affected child is kept from school.

The postcards sent to the school for the purpose of notifying the existence of infectious disease at the home of a pupil are accepted by the Government Education Department, also by the Liverpool Council of Education, as a valid reason for the non-attendance of the children at school, and qualify them to receive any benefits which regular attendance would have entitled them to.

When necessary, a certificate is furnished to the school authorities, stating that the pupil was absent on account of infectious sickness at home.

It must be borne in mind that the methods now described are directed to the suppression of infectious disease, and although the child may be free from infection, and therefore, so far as the risk of infection is concerned, may with perfect safety return to school, yet it must be remembered that the child may not be sufficiently recovered physically to undertake at once the full work and discipline which attendance at school entails.

The permission of the Health Department to return to school, therefore, implies nothing further than freedom from infection.

THE DISINFECTING APPARATUS.

The number of articles disinfected at the various Apparatus during the year amounted to 49,977.

| DATE. 1898. | Number of Beds. | Number of Mattresses. | Number of Pieces of Bedding. | Number of Pieces of Wearing Apparel, &c. | Total Number of Articles. |
|----------------|--------------------|--------------------------|------------------------------------|---|---------------------------------|
| January .. | 375 | 262 | 2,348 | 852 | 3,837 |
| February .. | 285 | 216 | 1,958 | 950 | 3,409 |
| March .. | 293 | 181 | 2,074 | 1,285 | 3,833 |
| April .. | 364 | 218 | 2,454 | 1,869 | 4,905 |
| May .. | 306 | 187 | 1,959 | 387 | 2,839 |
| June .. | 278 | 196 | 1,808 | 630 | 2,912 |
| July .. | 352 | 292 | 2,253 | 2,325 | 5,222 |
| August .. | 263 | 173 | 1,881 | 753 | 3,070 |
| September .. | 328 | 243 | 1,964 | 414 | 2,949 |
| October .. | 478 | 334 | 3,171 | 1,303 | 5,286 |
| November .. | 402 | 307 | 2,806 | 1,696 | 5,211 |
| December .. | 580 | 364 | 3,870 | 1,690 | 6,504 |
| Totals .. | 4,304 | 2,973 | 28,546 | 14,154 | 49,977 |

The number of articles destroyed at the various Apparatus during the year amounted to 1,092, compensation being paid in conformity with the provisions of the Public Health Act.

| DATE. 1898. | Number of Beds. | Number of Mattresses. | Number of Pieces of Bedding. | Number of Pieces of Wearing Apparel, &c. | Total Number of Articles. |
|----------------|--------------------|--------------------------|------------------------------------|---|---------------------------------|
| January .. | 16 | 38 | 14 | .. | 68 |
| February .. | 15 | 40 | 14 | .. | 69 |
| March .. | 11 | 8 | 4 | .. | 23 |
| April .. | 19 | 41 | 37 | 6 | 103 |
| May .. | 21 | 29 | 23 | 20 | 93 |
| June .. | 14 | 19 | 13 | .. | 46 |
| July .. | 20 | 43 | 21 | 11 | 95 |
| August .. | 10 | 32 | 14 | 80 | 136 |
| September .. | 20 | 50 | 27 | 8 | 105 |
| October .. | 34 | 50 | 43 | 24 | 151 |
| November .. | 31 | 63 | 25 | 9 | 128 |
| December .. | 25 | 28 | 22 | .. | 75 |
| Totals .. | 236 | 441 | 257 | 158 | 1,092 |

PRINCE'S DOCK MORTUARY.

The Mortuary at the Prince's Dock is for the reception of the bodies of persons who have been drowned, killed, &c., and over which the Coroner has to hold inquests. Bodies are taken there by the police, and when it may be necessary to make post-mortem examinations, any medical gentleman may have the assistance of an inspector on sending a communication to the Ambulance Superintendent, 54, Gascoyne Street.

| BODIES REMOVED TO THE PRINCE'S DOCK MORTUARY. | |
|---|-------------------|
| Number from River. | Number from City. |
| 10 | 154 |

REMOVALS TO MORTUARIES ON MEDICAL CERTIFICATES OR ONMAGISTRATES' ORDERS.

| Bodies Removed to Mortuaries. | | | | | | | | | | | |
|-------------------------------|------------|-------------|------------------|---------------|-----------|----------|---------------|------------|--------------------|-----------------|--------|
| Green Lane. | Lark Lane. | Waver-tree. | Smith-down Road. | St. Martin's. | Mill Road | Anfield. | Belmont Road. | Park Hill. | Nether-field Road. | Walton Village. | Total. |
| 5 | 2 | .. | 3 | 198 | .. | .. | .. | 1 | .. | .. | 209 |

The Caretaker of St. Martin's Mortuary is temporarily provided with a residence in Gascoyne Street.

The new Mortuary in Ford Street is almost completed, and will be substituted for St. Martin's Mortuary, the site of which will be added to the open space in Sylvester Street.

CREMATORIUM.

The Crematorium in Anfield Cemetery is availed of by an increasing number of persons as a means of reverent disposal of the dead by cremation, but the system has not yet found the favour which it does in many important centres of population throughout Europe. The building is of attractive appearance, and the surroundings are appropriate.

CITY BURIAL GROUNDS AND GRAVEYARDS.

The Sub-Committee of the Health Committee which was appointed to carry into effect the recommendation that steps should be taken to prevent further interments in certain burial grounds within the City, has accomplished its object.

Clauses were inserted in the Bill which the Corporation promoted last Session in Parliament, to enable them to acquire the several burial grounds referred to, and, if thought desirable, to convert the same into ornamental open spaces. The accompanying photograph indicates that the proposed change in these rank, dismal, and neglected places will be a beneficial one.

The inspections made in regard to interments in City graveyards during the last two years are as follows:—

| | <u>1897.</u> | <u>1898.</u> |
|---|--------------|--------------|
| Number of graves examined and measured... | 47 | 22 |
| „ visits to cemeteries | 10 | 11 |



BURIAL GROUNDS.

One of the City Grave Yards closed during the year against further interments.



PROCEEDINGS UNDER THE DISEASES OF ANIMALS ACT, 1894.

The Diseases of Animals Act relates in the main to certain diseases communicable amongst cattle, sheep and swine, and provides for the separation of diseased animals from healthy ones, and for the disinfection and cleansing of vessels, trucks, &c., in which animals have been carried.

The Board of Agriculture, under the powers of this Act, issue orders from time to time dealing with diseases of animals, or with their protection during transit. The Board also prescribes the manner under which animals may be imported or moved from place to place.

The accompanying table gives the statistics of the proceedings taken under the Act or under the Orders of the Board of Agriculture :—

| | <u>1897.</u> | <u>1898.</u> |
|---|--------------|--------------|
| Number of Visits to Railway Stations, including inspections | | |
| made on Sundays | 2,402 | 2,518 |
| „ Inspections of pens | 86,216 | 89,064 |
| „ found clean | 62,801 | 63,006 |
| „ „ dirty and cleansed before being used | 23,415 | 26,058 |
| „ Informations for dirty pens used before being cleansed | — | — |
| „ Inspections of Trucks | 36,368 | 39,124 |
| „ found clean | 33,196 | 36,743 |
| „ „ dirty and cleansed before being used, or leaving the City dirty | 3,172 | 2,381 |
| „ Informations for dirty trucks used before being cleansed | 1 | — |
| „ Inspections of Horse Boxes | 636 | 533 |
| „ found clean | 387 | 343 |
| „ „ dirty and cleansed before being used, or leaving the City dirty | 249 | 190 |
| „ Informations for dirty horse boxes used before being cleansed | — | — |
| „ Inspections of Vessels | 8,692 | 9,047 |
| „ found clean | 3,376 | 3,363 |
| „ „ dirty and cleansed before being used, or going to Sea without cattle or cargo | 5,316 | 5,684 |
| „ Informations for dirty vessels used before being cleansed | 4 | 3 |

| | 1897. | 1898. |
|---|----------|----------|
| Number of Inspections of Gangways | 7,571 | 8,170 |
| „ found clean | 5,871 | 6,534 |
| „ „ dirty and cleansed before being used ... | 1,700 | 1,636 |
| „ Informations for not cleansing gangways ... | — | — |
| „ Informations for not disinfecting scrapings and sweepings | — | — |
| „ Inspections of Lairage and Sale Yards ... | 4,536 | 4,784 |
| „ found clean | 3,481 | 3,729 |
| „ „ dirty and cleansed before being used ... | 1,055 | 1,055 |
| „ Informations for dirty Lairages used before being cleansed | — | — |
| „ Informations for landing fittings without consent in writing of the Local Authority ... | 2 | 2 |
| „ Informations for landing broken fodder ... | — | 2 |
| „ „ „ carrying newly-shorn sheep on upper deck | — | — |
| „ „ „ not providing pens for animals on vessel | — | — |
| „ „ „ neglecting to slaughter injured animals | — | 1 |
| „ „ „ cruelly torturing a pig ... | — | 1 |
| „ „ „ neglecting to securely tie cattle ... | — | — |
| „ „ „ removing animals without a license | — | 6 |
| „ „ „ not providing sufficient ventilation to vessel | — | 1 |
| Total Number of Informations | 7 | 16 |
| Fined | 7 | 12 |
| Withdrawn | — | 4 |
| Amount of Fines and Costs ... | £29 19 0 | £19 11 6 |

INSPECTION OF SLAUGHTER-HOUSES, &c.

| | 1897. | 1898. |
|---|--------|--------|
| Number of Visits to Slaughter-houses made by Meat Inspectors | 10,376 | 9,274 |
| Number of Visits to Butchers' Shops made by Meat Inspectors | 68,904 | 70,174 |
| Number of Visits to Fish and Fruit Shops made by Fish Inspectors | 34,710 | 52,634 |
| Number of Visits to Poultry Depots made by Fish Inspectors ... | 149 | 333 |

FISH PLATFORMS.

| | 1897. | 1898. |
|-------------------------|-------|-------|
| Number of Visits | 24 | 42 |

RETURNS OF ANIMALS KILLED IN THE CITY SLAUGHTER-HOUSES, AND OF
MEAT IMPORTED FOR SALE.

The decrease noted in the preceding year in the number of cattle slaughtered in the City Slaughter-houses, is more marked in 1898, about 1,500 less being slaughtered than in the preceding year. There is an increase in the number of carcasses of cattle imported for sale; the total being nearly 3,000 more than in the preceding year. With regard to sheep, there is an increase of over 2,000 in the number killed in the City, and an increase of about 43,000 in the number of carcasses imported for sale.

The decrease in the number of cattle slaughtered in, or of carcasses imported into the City Slaughter-houses, is explained by the practice of many butchers to purchase direct from the Abattoirs at Woodside, whilst a large number of dairy cows are, when intended for slaughter, sent out of the City.

| STREET. | Beasts. | Sheep. | Lambs. | Calves. | Pigs. | Dead Meat Imported for Sale. | | | |
|---------------------------|---------|--------|--------|---------|-------|------------------------------|--------|-------|---------|
| | | | | | | Beasts. | Sheep. | Pigs. | Calves. |
| Abattoir. | 3209 | 152005 | .. | 12920 | 41241 | 51762 | 442922 | 7657 | 841 |
| Back Butler Street | 43 | 482 | 248 | 5 | .. | .. | .. | .. | .. |
| Back Castle Street | 540 | 18 | .. | 248 | 11 | 28 | .. | .. | .. |
| Back Mount Vernon Green.. | 395 | 3297 | 319 | 10 | 78 | .. | .. | .. | .. |
| Cotter Street..... | 114 | 18 | .. | 54 | 1892 | .. | .. | .. | .. |
| Corlett Street | 24 | 248 | .. | 1 | .. | .. | .. | .. | .. |
| Crown Street..... | 99 | 1328 | 695 | 7 | 3 | .. | .. | .. | .. |
| Darnley Street | .. | .. | .. | .. | 1522 | .. | .. | .. | .. |
| Edgeware Street | 12 | 395 | 108 | .. | .. | .. | .. | .. | .. |
| Foley Street | .. | .. | .. | .. | 6941 | .. | .. | .. | .. |
| Peel Street..... | 41 | 441 | 107 | 6 | 59 | .. | .. | .. | .. |
| Bevington Hill | 923 | 216 | 17 | 858 | 13 | 85 | .. | .. | 5 |
| Byrom Street | .. | .. | .. | .. | 368 | .. | .. | .. | .. |
| Bolton Street..... | 54 | 2992 | 1017 | 3 | .. | .. | .. | .. | .. |
| Back Commutation Row.... | 182 | 1174 | 353 | .. | .. | .. | .. | .. | .. |
| Carried forward | 2427 | 10609 | 2864 | 1192 | 10887 | 113 | .. | .. | 5 |

RETURNS OF CATTLE KILLED IN THE CITY SLAUGHTER-HOUSES, AND OF
MEAT IMPORTED FOR SALE.--Continued.

| STREET. | Beasts. | Sheep. | Lambs | Calves | Pigs. | Dead Meat imported for Sale. | | | |
|--|---------|--------|-------|--------|-------|------------------------------|--------|-------|--------|
| | | | | | | Beasts. | Sheep. | Pigs. | Calves |
| Brought forward | 2427 | 10609 | 2864 | 1192 | 10887 | 113 | .. | .. | 5 |
| Copperas Hill | .. | .. | .. | .. | 11865 | .. | .. | .. | .. |
| Finch Place | 250 | 2004 | 688 | 1 | .. | .. | .. | .. | .. |
| Frederick Street | 78 | 521 | 242 | 7 | 85 | .. | .. | .. | .. |
| Norman Street | .. | .. | .. | .. | 2101 | .. | .. | .. | .. |
| Norfolk Street | .. | 1368 | 686 | .. | 62 | .. | .. | .. | .. |
| Soho Street | .. | .. | .. | .. | 1751 | .. | .. | .. | .. |
| Upper Milk Street | .. | .. | .. | .. | 7451 | .. | .. | .. | .. |
| Salisbury Road, Walton.... | 22 | 2 | 8 | 11 | 6 | .. | .. | .. | .. |
| West Derby Road, W. Derby | 119 | 1267 | 334 | 4 | 27 | .. | .. | .. | .. |
| „ Village „ | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Town Row „ | 5 | 350 | 139 | 2 | 11 | .. | .. | .. | .. |
| Prescot Road, Knotty Ash.. | 1 | 429 | 205 | 12 | 27 | .. | .. | .. | .. |
| 101, High Street, Wavertree | 4 | 18 | 24 | .. | .. | .. | .. | .. | .. |
| 105, „ „ | 64 | 290 | 151 | 15 | 18 | .. | .. | .. | .. |
| Sandown Lane „ | 26 | 692 | 223 | 1 | 6 | .. | .. | .. | .. |
| Derby Lane, Old Swan | .. | 576 | 249 | .. | .. | .. | .. | .. | .. |
| Allerton Road, Wavertree.. | 671 | 3453 | 1404 | 81 | 49 | .. | .. | .. | .. |
| Total in Private Slaughter-houses..... | 3667 | 21579 | 7217 | 1326 | 34346 | 113 | .. | .. | 5 |
| Total in the City | 6876 | 173584 | 7217 | 14246 | 75587 | 51875 | 442922 | 7657 | 846 |

PRECEDING YEAR.

| | | | | | | | | | |
|--|------|--------|------|-------|-------|-------|--------|-----|------|
| Total in Private Slaughter-houses..... | 3849 | 22390 | 6507 | 1275 | 40176 | 124 | .. | 163 | .. |
| Total in the City | 8402 | 171270 | 6507 | 15010 | 90619 | 49208 | 400034 | 615 | 1150 |

UNWHOLESOME MEAT, FISH, &c., SEIZED AND DESTROYED.

| DATE.—1898. | | Beef. | Veal. | Mutton. | Pork. | Poultry | Rabbits and Hares. | *Fish. | Shell-fish. | Oysters. | Miscellaneous. |
|--------------------|---------------------------|--------|-------|---------|-------|---------|--------------------|--------|-------------|----------|--|
| | | Lbs. | Lbs. | Lbs. | Lbs. | Head | | Lbs. | Bags. | | |
| MARKETS. | St. John's | 2536 | 112 | 85 | 2180 | 677 | 1103 | 173581 | 133 | 200 | 600 lb. Oranges. 160 " Onions. 240 " Tomatoes. 300 " Venison. |
| | St. Martin's | .. | .. | 70 | 80 | .. | .. | .. | .. | .. | |
| SLAUGHTER-HOUSES. | Abattoir | 90473 | 11337 | 25469 | 15696 | .. | .. | .. | .. | .. | .. |
| | Back Castle Street .. | 40751 | 2029 | 160 | .. | .. | .. | .. | .. | .. | .. |
| | Bevington Hill .. | 33112 | 1642 | 134 | .. | .. | .. | .. | .. | .. | .. |
| | Copperas Hill .. | .. | .. | .. | 3920 | .. | .. | .. | .. | .. | .. |
| | Norman Street .. | .. | .. | .. | 414 | .. | .. | .. | .. | .. | .. |
| | Soho Street .. | .. | .. | .. | 147 | .. | .. | .. | .. | .. | .. |
| | Brownlow Hill .. | 1220 | .. | 10 | .. | .. | .. | .. | .. | .. | .. |
| | Cotter Street .. | 1270 | .. | 50 | .. | .. | .. | .. | .. | .. | .. |
| | Dale Street .. | .. | .. | 50 | .. | .. | .. | .. | .. | .. | .. |
| | Foley Street .. | .. | .. | .. | 486 | .. | .. | .. | .. | .. | .. |
| | Great Charlotte Street .. | .. | .. | .. | .. | .. | .. | 6602 | .. | .. | .. |
| | Great Homer Street.. | 624 | .. | 32 | .. | .. | .. | .. | .. | .. | .. |
| | High Street, Wavertree } | .. | 42 | .. | .. | .. | .. | .. | .. | .. | .. |
| | Lime Street .. | .. | .. | .. | .. | .. | .. | 200 | .. | .. | .. |
| | North Haymarket .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 100 lb. Oranges, 2008 " Tomatoes, 1705 " Grapes, 800 " Walnuts, 700 " Cabbage. |
| | Roe Street .. | 60 | .. | .. | .. | .. | .. | .. | .. | .. | |
| | Rose Street .. | .. | .. | .. | .. | 18 | 350 | 58526 | 10 | .. | .. |
| | Scotland Road .. | 3893 | .. | 1680 | 120 | .. | .. | .. | .. | .. | .. |
| | Smithdown Road .. | 182 | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| | St. James' Street .. | .. | .. | .. | .. | .. | .. | 160 | .. | .. | .. |
| Carried forward .. | | 174121 | 15162 | 27740 | 23043 | 695 | 1453 | 239069 | 143 | 200 | |

UNWHOLESOME MEAT, FISH, &c., SEIZED AND DESTROYED.—*Continued.*

| DATE.—1898. | Beef. | Veal. | Mutton | Pork. | Poultry. | Rabbits and Hares. | Fish. | Shell fish. | Oysters. | Miscellaneous |
|------------------------|--------|-------|--------|-------|----------|--------------------|--------|-------------|----------|-------------------------|
| | Lbs. | Lbs. | Lbs. | Lbs. | Head | | Lbs. | Bags | | |
| Brought forward .. | 174121 | 15162 | 27740 | 23043 | 695 | 1453 | 239069 | 143 | 200 | |
| Stanley Street .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 600 lbs. Cocoanuts. |
| Stanley Road .. | 95 | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Tithebarn Street .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 2856 lbs. Straw-berries |
| Upper Frederick Street | 1400 | 75 | 70 | .. | .. | .. | .. | .. | .. | .. |
| Upper Milk Street .. | .. | .. | .. | 464 | .. | .. | .. | .. | .. | .. |
| Upper Pitt Street .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 72 lbs. Tomatoes. |
| Wavertree Road .. | 50 | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Williamson Square ... | .. | .. | 1698 | .. | .. | .. | .. | .. | .. | .. |
| Total | 175666 | 15237 | 29508 | 23507 | 695 | 1453 | 239069 | 143 | 200 | |

The total amount of Meat and Fish found to be unfit for human food is equivalent to—

| | Tons. | Cwts. | Qrs. | Lbs. |
|-------------|-------|-------|------|------|
| Meat | 108 | 17 | 3 | 10 |
| Fish | 106 | 14 | 2 | 5 |

and this does not include Fish removed as refuse by Officers of the Cleansing and Scavenging Department under the Veterinary Superintendent or the City Engineer.

The total amount of unwholesome meat which has been seized and destroyed during the year amounts to upwards of 108 tons.

The great bulk of this meat was not exposed for sale, and was dealt with under a Local Act, which does not require a Justices' order for its destruction.

The quantity of fish seized, amounting to nearly 107 tons, was in excess of the amount taken last year, and includes a large quantity of fresh fish which had gone bad in transit, and a large quantity of salt fish which had become tainted during transit or storage, a regrettable waste of food.

ANIMALS SMOTHERED AND INJURED IN TRANSIT ON BOARD SHIP.

| Beasts. | Sheep. | Pigs. | Number found good. | Number found bad. | Weight of Bad in pounds. |
|---------|--------|-------|--------------------|-------------------|--------------------------|
| 26 | 83 | 136 | 191 | 54 | 10,018 |

The Animals (Transit and General) Order compels the Master of the vessel to slaughter all seriously-injured animals forthwith. Such animals are slaughtered on board the vessel, and the carcasses removed to the abattoirs.

Police proceedings in respect to meat and fish and fruit were as follows :—

| | 1897. | 1898. |
|---|-----------|----------|
| Number of Informations in respect to Diseased Meat and Fish and Fruit ... | 18 | 7 |
| „ Fined ... | 12 | 7 |
| „ sent to Gaol ... | — | — |
| Amount of Fines and Costs ... | £102 11 1 | £13 19 6 |

| | 1897. | 1898. |
|---|---------|--------|
| Number of carcasses seized during the year by Medical Officer of Health and Inspectors under section 116 of the Public Health Act ... | 818 | 1,178 |
| *Number of such carcasses condemned by Justices under section 117 of the Public Health Act... | *4 | 3 |
| Number of carcasses so condemned in consequence of the animal having suffered from Tuberculosis | 114 | 134 |
| Amount of Fines and Costs ... | £44 9 8 | £5 9 6 |

REMOVING PIGS WITHOUT A DECLARATION.

| | 1898. |
|-------------------------------|--------|
| Number of Informations ... | 6 |
| Amount of Fines and Costs ... | £6 2 0 |

*The remainder were dealt with under a Local Act, which does not require a Justices' Order.

GLANDERS AND FARCY.

The Diseases of Animals Acts and the Order and Regulations made thereunder have been referred by the Health Committee to the Medical Officer of Health to carry out, in conjunction with the Veterinary Inspector and the Sanitary Staff.

Prior to the passing of the Diseases of Animals Act, and the Glanders or Farcy Order of 1894, the record of the number of cases of glanders occurring in the city is wholly unreliable. The number of cases reported during each of the three years preceding the Order is as follows:—

| | | |
|------|-----|----------|
| 1893 | ... | 2 cases. |
| 1894 | ... | 3 „ |
| 1895 | ... | 1 case. |

Early in 1896, under the principal Act, and the Glanders and Farcy Order, the Health Committee made regulations which were circulated amongst horsekeepers, together with a notice indicating general precautions against glanders.

The number of cases of glanders which were brought to light during each of the three years 1896, 7, and 8, is as follows:—

| CASES. | | | | |
|--------|-----|----|-----|---------------------------------------|
| 1896 | ... | 40 | ... | 5 brought into the city from outside. |
| 1897 | ... | 18 | ... | 2 „ „ „ |
| 1898 | ... | 9 | ... | 1 „ „ „ |

In giving effect to the Act the following procedure is usually adopted:—

Information of actual or suspected disease is usually received, under the terms of the Order

- (A) from the owner;
- (B) from the Police;
- (C) from the proprietor of the registered knacker's yard. (There is only one in the city.)

Immediately upon receipt of such information, or as speedily thereafter as possible, the Veterinary Surgeon examines the animal, and if he finds it to be infected with glanders he certifies accordingly. The horse is slaugh-

tered on the premises where it is found, and the carcase, head-stall, clothing, etc., removed in the knacker's cart in charge of an inspector appointed under the Act, a member of the staff of the Medical Officer of Health, to the knacker's yard, Holme Street, where, if necessary, a post-mortem examination is made.

The inspector attends to see that the carcase is destroyed. Carbolic acid is poured over the carcase, which is subsequently placed in a digester, with a certain amount of carbolic acid, and destroyed by boiling. The knacker's cart is thoroughly washed and cleansed in the inspector's presence.

In the meantime, another inspector, also similarly appointed, visits the premises, immediately notice is received of the existence of glanders in any place in the city, for the purpose of supervising the disinfection and cleansing of the stables and manure. All fodder and litter that have been in contact with the diseased animal, or in the stall adjoining, are removed and placed in the middenstead, and a quantity of quicklime is thrown over the manure, after which a quantity of carbolic acid and water is thrown over the lime.

A certificate is then signed in accordance with Article 12 of the Glanders Order, for the removal of the manure. The parts of the stable from which the horse has been removed are washed with hot water, and disinfected by hot limewashing, with limewash mixed with carbolic acid. The Veterinary Surgeon, after this has been done, gives a certificate certifying that the stable has been thoroughly cleansed and disinfected in accordance with the requirements of Article 10, Regulation C.

Powers are wanted in regard to the detention and supervision of animals which have been in contact with diseased animals, and it is most desirable that the owners of animals which have been so exposed should be prohibited from parting with them or selling them, excepting under such conditions as would enable them to be traced and kept under observation.

It is most necessary that the notification of glanders by Veterinary Surgeons should be made compulsory.

Power to mallein suspected horses under suitable regulations, and to separate all horses which react, is necessary; also power to keep them under observation.

Further control over infected stables.

Veterinary examinations, by request of Board of Agriculture, of horses imported from the American Continent.

| Horses Examined. | Horses found affected with | | |
|------------------|----------------------------|------------|------------|
| | Glanders. | Pneumonia. | Strangles. |
| 4,929 | ... | 76 | 23 |

In addition to those referred to in the foregoing table, 13,590 horses, some of which were landed beyond the city boundaries, have been examined at the various saleyards, with a view to the maintenance of the general health of the animals in the city.

| Horses Examined. | Horses found affected with | | |
|------------------|----------------------------|------------|------------|
| | Glanders. | Pneumonia. | Strangles. |
| 13,590 | ... | ... | ... |

The imported animals were on the whole in very good condition and the mortality small ; and no evidence of contagious disease was found,

GLANDERS AND FARCY.—Continued.

The number of cases detected in 1898 shows a very considerable decrease on those for 1897 ; but as compared with former years it is still large. Glanders and Farcy have been found to exist on 5 premises, 13 reports of suspicious cases were received, 65 animals were examined, and of these 8 were condemned and destroyed as being affected with Glanders and Farcy. Compensation was paid to the owners.

| Animals Examined. | Affected. | Suspicious. | Not Affected. |
|-------------------|-----------|-------------|---------------|
| 65 | 8 | — | 57 |

| Total Number of Animals in Stables, &c., where the Disease occurred. | SLAUGHTERED. | | Died. |
|--|--------------------|------------------------------|-------|
| | By Order of Owner. | By Order of Local Authority. | |
| 46 | 2* | 5 | 2 |

* One of these was brought into city from Bootle.

LUNGS OF HORSES EXAMINED AT KNACKER'S YARD, HOLME STREET,
SANDHILLS.

During the year 1898, the Veterinary Superintendent has caused to be examined the lungs of all horses sent to the above premises. In every instance where there was evidence of the disease manifested in the lungs, the owners of the animals were notified, and if within the city boundaries, the remainder of their studs were subjected to veterinary examination. In cases where the existence of Glanders or Farcy is capable of detection during the life of the animal, proceedings are taken against the responsible persons. Of the total number of lungs examined, one was taken from a horse that was brought into the city from outside the city boundary and found to be affected.

| Lungs Examined. | Glandered. | Not Affected. |
|-----------------|------------|---------------|
| 2,401 | 4 | 2,397 |

ANTHRAX.

On the 27th July, 1898, one cow died at the shippon, No. 1, Shallot Street, and the carcass was sent to the abattoir, where it was found by the inspector. On examination by the Veterinary Inspector, it was found that this cow died from anthrax. The carcass was condemned and destroyed. No other case occurred on the premises.

PLEURO-PNEUMONIA.

There was no case reported during the year.

RABIES.

In conformity with the requirements of the Board of Agriculture, reports were sent to the Board in respect to 16 suspected cases of rabies.

Post mortem examinations were made by the Veterinary Inspectors during the year on 30 dogs, and none of them shewed signs of having been affected with rabies.

SWINE FEVER.

The following table shows the number of animals affected and the number in the herds slaughtered under the Swine Fever Order.

| Total Number in Herds. | HEALTHY. | | DISEASED. | | Died. | Locality. | Remarks. |
|------------------------------|-----------------------|---|-----------------------|---|-------|----------------------------------|----------|
| | Slaughtered. | | Slaughtered. | | | | |
| | By Order of Owner. | By Order of Board of Agriculture. | By Order of Owner. | By Order of Board of Agriculture. | | | |
| 1 | ... | .. | ... | ... | 1 | Cromptons Lane, Wavertree | |
| 67 | ... | 61 | ... | 4 | 2 | Walton Workhouse | |
| 2 | ... | ... | ... | 1 | 1 | Little Bongs, Knotty Ash | |
| 2 | ... | 1 | .. | ... | 1 | 39, Prescott Road, Knotty Ash | |
| 87 | ... | ... | .. | .. | 1 | Walton Workhouse | |
| 6 | ... | ... | ... | ... | 1 | Thomas Lane, Knotty Ash | |
| 46 | ... | 45 | ... | ... | 1 | Belmont Road Workhouse | |

DAIRIES AND COWSHEDS (SHIPPONS).

LICENSES TO KEEP COWS.

Licenses to keep cows are granted under Section 43 of the Liverpool Improvement Act, 1867. The premises in respect to which application is made are inspected, in order to ascertain that the Regulations under the Dairies and Cowsheds Order can be carried out.

A list of requirements is served on the applicant, and when the premises are rendered suitable, a license is granted to keep the number of cows which the requirements as to cubic space will allow.

This license is an annual one, and is not transferable.

Shippons, after being licensed, are under constant supervision, both as regards their administration and the health of the cows.

Statistics respecting Shippons :—

| | 1898. |
|---|-------|
| No. of Applications to keep cows on premises not previously licensed | 13 |
| „ „ in added area | 11 |
| „ „ in old „ | 2 |
| „ „ granted | 6 |
| „ „ refused | 1 |
| „ „ in abeyance, pending alterations | 6 |
| „ Cows applied for on above applications | 218 |
| „ „ „ „ granted | 110 |
| „ Applications standing over from 1897 | 22 |
| „ „ now granted | 22 |
| „ Applications for transfer to fresh tenants of shippons previously licensed | 54 |
| „ „ now granted | 41 |
| „ „ in abeyance, pending alterations | 13 |
| „ Applications to keep more cows than the number for which the license was originally issued | 28 |
| „ „ granted | 24 |
| „ „ refused | 2 |
| „ „ in abeyance | 2 |

| | | | | | | |
|---|-----|-----|-----|-----|-----|-------|
| No. of additional cows applied for | ... | ... | ... | ... | ... | 93 |
| „ „ „ granted | ... | ... | ... | ... | ... | 68 |
| „ Shippons existing within the city during 1897 | ... | ... | ... | ... | ... | 453 |
| „ „ now existing | ... | ... | ... | ... | ... | 435 |
| During the year 24 old shippons have become disused, and six newly-built premises have been added. | | | | | | |
| „ Cows licensed to be kept within the city area | ... | ... | ... | ... | ... | 5,695 |

RE-CONSTRUCTION OF SHIPPONS.

Of the 135 licenses for shippons standing over from last year, pending alterations, all the necessary work is now practically complete, only eight of them being incomplete in a few small details.

In addition to these, 63 shippons which did not comply with existing regulations have been dealt with.

SHIPPON INSPECTION.

| | | | | | | |
|---|-----|-----|-----|-----|-----|----------|
| | | | | | | 1898. |
| Number of Inspections of Shippons by Shippon Inspectors | ... | ... | ... | ... | ... | 2,952 |
| „ found incorrect | ... | ... | ... | ... | ... | 331 |
| „ Informations | ... | ... | ... | ... | ... | 10 |
| „ Fined | ... | ... | ... | ... | ... | 8 |
| Amount of fines and costs | | | | | | £11 16 0 |

Number of shippons in the city during the years 1890 to 1898, inclusive, together with the number of cows licensed to be kept, and the number of applications for new shippons, is as follows:—

| | Shippons. | | Cows. | | Applications. | |
|------|-----------|-----|-------|-------|---------------|-----|
| 1890 | ... | 378 | ... | 5,104 | ... | 2 |
| 1891 | ... | 380 | ... | 4,950 | ... | 1 |
| 1892 | ... | 337 | ... | 4,539 | ... | 6 |
| 1893 | ... | 344 | ... | 4,634 | ... | 4 |
| 1894 | ... | 304 | ... | 4,005 | ... | 2 |
| 1895 | ... | 325 | ... | 4,311 | ... | 20 |
| 1896 | ... | 404 | ... | 5,393 | ... | 129 |
| 1897 | ... | 453 | ... | 5,650 | ... | 33 |
| 1898 | ... | 435 | ... | 5,695 | ... | 13 |

| | | | | | | <u>1897.</u> | <u>1898.</u> |
|---|-----|-----|-----|-----|----------|--------------|--------------|
| Number of Inspections of Shippons by District Staff | ... | | | | | 4,375 | 3,872 |
| „ found Incorrect | ... | ... | ... | ... | ... | 1,072 | 3,538 |
| „ Informations | ... | ... | ... | ... | ... | 19 | 9 |
| „ Fined | ... | ... | ... | ... | ... | 12 | 8 |
| Amount of Fines and Costs | ... | ... | ... | ... | £20 10 0 | £8 9 0 | |

LEAVELOOKERS' VISITS TO SHIPPONS FOR THE PURPOSE OF
EXAMINING COWS.

| No. of Visits. | No. of Examinations of Cows. | No. found Healthy. | No. found ill and referred to the Veterinary Inspector. |
|----------------|---------------------------------|--------------------|---|
| 2,053 | 24,041 | 23,961 | 80 |

DAIRIES AND MILK SHOPS INSPECTION.

| | | | | | | <u>1897.</u> | <u>1898.</u> |
|---|-----|-----|-----|-----|--------|--------------|--------------|
| Number of Inspections of Dairies and Milk Shops | ... | | | | | 5,289 | 6,084 |
| „ found Incorrect | ... | ... | ... | ... | ... | 1,414 | 1,154 |
| „ Informations | ... | ... | ... | ... | ... | 11 | 6 |
| „ Fined | ... | ... | ... | ... | ... | 8 | 6 |
| „ Acquitted and Withdrawn .. | ... | ... | ... | ... | ... | 3 | 0 |
| Amount of Fines and Costs... | ... | ... | ... | ... | £9 7 0 | £8 17 0 | |

REGISTRATION OF PLACES FOR THE SALE OF MILK.

Applicants for registration for the sale of milk are dealt with under the regulations contained in the Dairies and Cowsheds Order, 1885-1886.

After application, the premises are inspected, and their fitness for the purpose of a milkshop ascertained; a list of requirements is served upon the applicant, and after these are satisfactorily complied with, a certificate of registration is granted.

After registration, they are periodically inspected, and any breach of the Order or Regulations is dealt with by written caution or prosecution.

In case of infectious sickness occurring on premises used as milkshops or cowsheds, special attention is given to prevent the spread of the sickness.

Statistics respecting Milkshops :—

| | 1898. |
|---|-------|
| No. of Applications for registration | 177 |
| Of which Transfers were | 116 |
| No. of above Applications granted | 136 |
| " " " refused | 21 |
| " " " in abeyance | 20 |

Twenty-five applications, which were standing over at the close of last year, were granted.

| | |
|--|-----|
| No. of Milkshops on the register at the end of 1896 | 909 |
| " " " " 1897 | 988 |
| " " " " 1898 | 892 |

During the year it was found necessary in 205 instances to issue notices for contravention of the regulations.

DAIRIES AND MILKSHOPS INSPECTION.

| | |
|---|---------|
| Number of Inspections of Dairies and Milkshops | 4.384 |
| " found incorrect | 941 |
| " of Informations | 2 |
| " Fined | 2 |
| Amount of Fines and Costs | £1 19 0 |

The Milk Supply of the City, owing to the attention recently attracted to the subject, calls for some remark.

Milk is a perfectly suitable food for certain age periods, and may be considered to be the only perfect and natural food up to six months of age. But it is only a natural food so long as it is given in the natural manner, viz., direct from the gland to the stomach of the infant. Under these conditions, it is taken absolutely fresh, at the natural temperature, perfectly mixed, and without exposure to the air, consequently there has been no possibility of its being too rich or too poor, it contains neither adulterant nor preservative, no skimming of the cream, no possibility of contamination with dirt or specific disease, and no fermentation. The milk is, in fact, bacteriologically, pure and clean, and the advantage to the infant fed in this natural manner is very great.

On the other hand, the milk of commerce, even if it comes from a healthy animal—which is too often open to doubt—is exposed to risks of contamination in many ways, from dirty udders and dirty hands of milkers, from exposure in the open buckets in dirty shippings, from strainers, pails, milk-cans, and jugs, to which it must be transferred on its way to the table of the consumer, and, if it is neither skimmed nor watered, yet, after its railway journey, and after being hawked from door to door through dusty streets, it arrives in a varying degree of staleness, more or less contaminated, and loaded with microbes of various kinds, and sometimes of extreme virulence. There is a great gulf fixed between milk supplied as Nature intended it and milk which has gone through so many vicissitudes.

The aim in view in regard to cows' milk is to imitate the natural condition as closely as possible, that is, to ensure not only that the supply shall be free from intentional adulteration, which relatively is but a minor point, but that it shall be as free from contamination, or accidental or wilful impurity, as Nature intends.

There has always been a consensus of opinion as to necessity for some measures to ensure the attainment of these objects, and legislation upon the subject is not new.

The Liverpool Improvement Act of 1867 contains provisions requiring all cowsheds and dairies to be licensed and registered before they are occupied, and, when occupied, they are to be visited from time to time by an officer appointed for the purpose, with a view to ascertain that the premises are in good order, properly supplied with water, properly ventilated, and so forth.

In 1885 an Order of the Privy Council was made under the Contagious Diseases (Animals) Act, requiring that every person carrying on the trade of cowkeeper, dairyman, or purveyor of milk, should be registered by the Local Authority, and that before he commences his business he should satisfy the Local Authority that provision has been made for the lighting, ventilation, cleansing, drainage, and water-supply of the premises, and for the protection of the milk therein against infection or contamination of all kinds.

This Order of the Privy Council authorised the Local Authority to make detailed regulations to give effect to these requirements.

Provisions such as these are very admirable in their way, but it is plain that what is to be regarded as "proper ventilation," &c., must be adequately defined; and, moreover, it is equally plain that the administration must be such as to ensure that the requirements of the law shall not be evaded.

It will be perfectly obvious, too, that in dealing with a subject of this kind, in which requirements increase as knowledge grows, that all the improvements desired are not to be gained in a day. Like every other good movement, time is necessary to attain the object in view, and earlier legislation, if it gave but an imperfect weapon, yet served a useful purpose in preparing the way for regulations which could be applied with greater precision, and consequently with greater effect.

In 1895, the practical administration of dairies and cowsheds in Liverpool was actually in advance of the regulations which had been framed some ten years before, consequently, with the sanction of the Local Government Board, new regulations were framed and put in force. These describe in exact terms the conditions which the cowkeeper must observe in order that his cows shall be healthy and their milk pure. These regulations are freely distributed amongst those whom they concern. The few cowkeepers who had at first shown reluctance to fall in with the requirements soon came to see that it was really to their advantage to fulfil the obligations imposed upon them, and, generally speaking, in a very short time opposition gave way to co-operation. Indeed they have from time to time made application to the Medical Officer's Department for their cows to be examined, and a few have at their own initiative obtained certificates from qualified veterinary surgeons. These facts are important and gratifying, as far as they go, as indicating the trend of opinion in the matter.

Concerning the quantity of milk supplied to the City of Liverpool, it is interesting to notice that close upon half of it comes in by rail from the country. About 11,000 gallons are brought in every day from the country, and about 12,000 gallons are produced every day from cows kept within the city. There are 435 shippens within the city, licensed for keeping 5,695 cows, the license being subject to annual renewal, and there are 892 places within the city registered for the sale of milk.

The actual supervision and administration of cowsheds and dairies engages the personal attention of the Medical Officer and his Deputy, the details being in the hands of a competent staff. The structural and general sanitary condition of the shippens is dealt with by two suitably qualified inspectors, who give their whole time and undivided attention to this work. They are not only prepared to advise in regard to any new shippen, but their business is systematically to inspect those already licensed. The shippens in Liverpool, no doubt, in some instances, may leave something to be desired; many, however, are as good as are to be found in this country, and the average is up to a very good standard.

The cows themselves are carefully and systematically examined by the Leavelookers. These men, five in number, are qualified by experience and training for the work, and they examine on an average about 500 cows every week. Any cow which is found to be out of health is at once reported to the Medical Officer, and, if necessary, the Veterinary Superintendent, Mr. Reynolds, or his Deputy, examines the animal, and applies the tuberculin test if it is thought desirable to do so.

The arrangements, on the whole, are very complete, so far as city shippens are concerned. It would be an advantage if some supervision could be exercised by the officers of the Health Committee over those country shippens which supply milk to the city, and benefits will result when further powers are obtained in regard to the localities in which new shippens may be built. Provision for more open space surrounding shippens, and for greater yard space in connection with them, is wanted, and there can be no doubt at all that the hands of the authorities ought to be strengthened to enable them to deal with cowkeepers who place obstacles in the way of the removal of diseased animals from their shippens.

With this preliminary sketch of the official methods adopted to render the milk-supply a wholesome one, we turn to some considerations exceedingly important to the consumer, and which come within the scope of the domestic aspects of the question.

Apart from the harm which may result from the abstraction of the cream, or the addition of harmless adulterants, such as water, by either of which the nutritive value would be changed, milk is known to be a vehicle for the transmission of certain specific diseases. Scarlet fever and typhoid fever, undoubtedly, and possibly even diphtheria, may be conveyed by it; but of far greater consequence even than this, is the mischief wrought by the use of milk undergoing putrefactive changes. Without going into details as to the nature of the putrefying organisms, or how they find their way into the milk, it may be stated that the direct destruction of infant life every summer and autumn from putrefying milk-foods is remarkable. The facts may be illustrated by contrasting the mortality amongst an equal number of infants of equal ages fed respectively upon the breast alone, and upon cows' milk with artificial foods, of which milk, doctored in various ways, is the basis.

As the result of a most careful and patient personal investigation, extending over several years, and supplemented and checked by the experience of members of the Liverpool Medical Institution, it is found that the mortality amongst equal numbers of infants below three months of age, fed respectively upon cows' milk with artificial foods, as well as breast milk, is fifteen times as great as it is amongst those fed on breast milk alone; or, to put it in another way, if twenty infants out of every thousand below three months of age, fed upon the breast alone, die from infantile diarrhœa, no less than 300 die out of every thousand fed upon cows' milk and artificial foods as well as breast milk, but if they get no breast milk at all, nothing, in fact, but cows' milk and other artificial foods, it would appear that the deaths of those under three months of age would increase from 20 to 440 per thousand—a number almost incredible. The enormous mortality amongst infants during the autumn months is very largely accounted for by this circumstance.

The virulent nature which milk can assume is proved, not only by these facts, but also by the investigations of the bacteriologist; thus, in investigations undertaken for quite another purpose, it was found that some samples of the milk—ordinary milk purchased in the ordinary way—proved so highly virulent as to kill the animal inoculated with it within 48 hours.

No account of mischief which may possibly arise through milk would be complete without a reference to Tuberculosis.

Tuberculosis is a disease occasioned by the growth and multiplication in the system of human beings, or animals, of microscopic organisms called Tubercle Bacilli. The disease is commonly called Consumption when it

affects the lungs or the bowels, and it is, or was, frequently described as Scrofula when it affects certain other parts. It is associated, both in man and animals, with insanitary surroundings, dirt, bad ventilation and foul air, absence of sunlight, &c.

Under advancing sanitation, Tuberculosis has diminished during the past thirty years to an immense extent, and, as knowledge of its nature has become definite, measures directed against it have become more precise and more successful.

The effect of improved sanitation upon tubercular diseases in Liverpool is shown in the following table:—

| | 1886 to 1875. | 1876 to 1885. | 1886 to 1895. | 1896 to 1898. |
|---|---------------------|---------------------|---------------------|---------------------|
| Annual Average Death-rate per 100,000 of the population, at all ages, from all forms of Tuberculosis | 430·8 | 349·8 | 309·8 | 256·1 |
| Annual Average Death-rate per 100,000 of the population above 5 years of age from Phthisis | 362·8 | 278·6 | 244·4 | 207·1 |
| Annual Average Death-rate per 100,000 of the population below 5 years of age from:— | | | | |
| Tabes Mesenterica | 637·1 | 597·3 | 539·1 | 383·3 |
| Hydrocephalus | | | | |
| Scrofula | | | | |

We are concerned, however, here, with the fact that the *cow* is liable to suffer from tuberculosis—commonly of the lungs, as in the case of human beings; but, besides the lungs, certain glands, and notably the udder, may be affected. When the udder of the cow is affected with tuberculosis the tubercle bacilli, which are breeding there, flow away with the milk, and, still retaining all their activity and virulence, may enter the stomach and so infect with tuberculosis the person consuming the milk.

The real preventive remedy clearly is to aim at the root of the evil, and (1st) to have the shippens so well constructed and kept that the cows shall remain under conditions most favourable to health; and (2nd) to have them examined from time to time, at appropriate intervals, in order to

ascertain that they remain healthy. An additional safeguard, which is in the power of everybody, is to boil the milk for a few seconds, or to sterilise it by raising it to a temperature somewhat below boiling point, either of which would effectually destroy all tubercle bacilli.

The sterilisation can be accomplished if the vessel containing the milk is placed in a sauce-pan or other suitable vessel containing water, which can be heated to boiling.

The question has been mooted as to whether or not, in the event of a cow being so dangerously affected with tuberculosis as to contaminate the milk, compensation should not be paid to the owner if he removes it. The Medical Officer has, in certain cases, advised the Health Committee to purchase, for a small sum, cows taken from a shippon for sanitary purposes, but it must be remembered that no cowkeeper who wilfully keeps a diseased animal upon his premises would have any claim to sympathy or consideration. No man has a right to sell an article which damages the health of the consumer, without duly warning the consumer of the danger that he runs. The consumer is not prepared to meet the risk in the case of milk; moreover, there is no reason whatever why the cows should suffer at all from tuberculosis; in good and sanitary shippons such a condition is uncommon, it is only in those which are badly constructed and badly kept that tuberculosis is frequent.

In contrasting the relative purity of town and country supplies, it is satisfactory to find that adulteration is not frequent in either case. In both town and country milk, however, adulteration with water is found a little more frequently in samples taken on Sundays than on other days. In regard to the presence of tubercle bacillus, a most important difference is found. It would naturally be thought that, with the very great natural advantages which the country possesses, tubercle would be less frequent in the country than it is in the town. This, however, is very far from being the case, and it is a most serious reflection upon the sanitation of country shippons that tubercle is found more than twice as often in samples from the country as it is in samples from the town; thus, out of 312 town samples, 19 or 6·0 per cent., were found to be infected with tubercle, but out of 95 samples taken at the railway stations on arrival from the country, 14, or 14·7 per cent., were found to be infected. This shows the great need for sanitation of country shippons, and shows the consumer that he should take town milk when he can get it, rather than that sent in from the country, where little or no supervision is exercised.

ICE CREAM MAKERS AND VENDORS.

Under Section 32 of the Liverpool Corporation Act, 1898, Regulations are made relating to the manufacture and sale of ice cream, with a view to the prevention of contamination.

During the year, 1,678 visits have been made to 251 premises occupied by makers and sellers of ice cream.

Special attention has been devoted to the street traders in this commodity, most of whom now make use of premises approved by the Health Committee, thus removing, to a great extent, the insanitary conditions under which the commodity was previously made, a very striking proof of the value of the powers recently obtained.

PIGGERIES.

Licenses to keep pigs are granted under Section 43 of the Liverpool Improvement Act, 1867.

After application, the proposed piggery is inspected, attention being paid to the suitability of site, the probability or otherwise of a nuisance arising, and general sanitary conditions.

On the conditions being made satisfactory, a license is granted for a limited number of pigs; the license is subject to annual renewal.

The following table relates to the applications, &c., during the year:—

| | | | | | | |
|---------------------------------------|-----|-----|-----|-----|-----|-----|
| No. of Applications made to keep pigs | ... | ... | ... | ... | ... | 6 |
| " " granted | ... | ... | ... | ... | ... | 2 |
| " " refused | ... | ... | ... | ... | ... | 2 |
| " " in abeyance | ... | ... | ... | ... | ... | 2 |
| No. of Pigs applied for | ... | ... | ... | ... | ... | 49 |
| " " granted | ... | ... | ... | ... | ... | 18 |
| Total number of licensed piggeries | ... | ... | ... | ... | ... | 25 |
| " " pigs | ... | ... | ... | ... | ... | 412 |

PROCEEDINGS UNDER THE FOOD AND DRUGS
AND MARGARINE ACTS.

All samples of food or drugs are taken either by, or under the superintendence of Inspectors of the Health Department. It becomes necessary, however, from time to time to employ women or young lads as agents, to go into the shop to ask for the articles, and as soon as the agent receives them, the Inspector enters the shop and completes the formalities which the Act requires. This is rendered necessary, as the Inspectors become known in the district. Special attention is paid to milk, of which a large number of samples are taken. Some samples of "fruit wines" were found to contain salicylic acid in quantities far in excess of what is necessary for preserving purposes. The acid in question is of some medicinal use, but is unnecessary in a beverage, and objectionable, as it interferes with the processes of digestion. The following were the

SAMPLES TAKEN FOR CHEMICAL ANALYSIS.

| No. of Samples purchased. | Description of Samples. | Adulterated. | Informations. |
|---------------------------------|-------------------------|--------------|---------------|
| 1 | Cream | .. | .. |
| 670 | New Milk | 101 | 61 |
| 103 | Skimmed Milk | 9 | 9 |
| 6 | Separated Milk | 1 | 1 |
| 23 | Condensed Milk | .. | .. |
| 33 | Butter.. .. . | 11 | 9 |
| 24 | Lard | .. | .. |
| 17 | Margarine | .. | .. |
| 1 | Beef Dripping | .. | .. |
| 43 | Cheese | 5 | 3 |
| 12 | Tea | .. | .. |

SAMPLES TAKEN FOR CHEMICAL ANALYSIS—CONTINUED.

| No. of Samples purchased. | Description of Samples. | Adulterated. | Informations. |
|---------------------------------|-------------------------------|--------------|---------------|
| 22 | Coffee | 3 | 3 |
| 11 | Sugar | .. | .. |
| 4 | Mustard | .. | .. |
| 45 | Pepper | .. | .. |
| 3 | Cayenne Pepper | .. | .. |
| 27 | Ginger (whole and ground) .. | .. | .. |
| 1 | Carraway Seeds | .. | .. |
| 1 | Horse Raddish | .. | .. |
| 7 | Pickles | .. | .. |
| 3 | Piccalilli | .. | .. |
| 4 | Vinegar | 3 | 1 |
| 3 | Tapioca | .. | .. |
| 9 | Arrowroot | .. | .. |
| 1 | Macaroni | .. | .. |
| 7 | Bread | .. | .. |
| 32 | Flour | .. | .. |
| 2 | Cornflower | .. | .. |
| 6 | Oatmeal | .. | .. |
| 6 | Yeast | .. | .. |
| 13 | Sweetmeats | .. | .. |
| 2 | Honey | .. | .. |
| 3 | Marmalade | .. | .. |
| 17 | Jam | .. | .. |
| 3 | Tartaric Acid.. .. . | .. | .. |
| 7 | Cream of Tartar | .. | .. |
| 13 | Carbonate of Soda | .. | .. |
| 4 | Olive Oil | .. | .. |
| 1 | Medicine Prescription | .. | .. |

SAMPLES TAKEN FOR CHEMICAL ANALYSIS—CONTINUED.

| No. of Samples purchased. | Description of Samples. | Adulterated. | Informations. |
|---------------------------------|----------------------------|----------------------------|---------------|
| 2 | Headache Powders | .. | ... |
| 1 | Syrup of Lemons | .. | ... |
| 1 | Castor Oil | .. | .. |
| 1 | Glycerine | ... | .. |
| 9 | Preserved Peas | 8 | .. |
| 1 | „ Pine Apple | .. | .. |
| 1 | „ Tomatoes . .. | .. | .. |
| 1 | „ Vegetables | .. | .. |
| 5 | Rum | .. | .. |
| 2 | Irish Whiskey | .. | .. |
| 1 | Scotch Whiskey | .. | .. |
| 3 | Gin | .. | .. |
| 2 | Port Wine | .. | .. |
| 1 | Burgundy Wine | .. | .. |
| 1 | Tintara Wine | .. | .. |
| 1 | Raisin Wine | .. | .. |
| 1 | Sherry Wine | .. | .. |
| 1 | Fruit Juice Lemonade | 1 | .. |
| 1 | Ginger Ale | .. | .. |
| 5 | Beer | .. | .. |
| 2 | Stout | .. | .. |
| Total 1233 | | 143 Adulterated. | 87 |
| 1161 preceding year. | | 154 preceding year. | |

| | <u>1897.</u> | <u>1898.</u> |
|---------------------------------|--------------|--------------|
| Number of Informations | 104 | 87 |
| „ Fined | 79 | 81 |
| Acquitted or Withdrawn | 25 | 16 |
| Amount of Fines and Costs | £222 1 8 | £186 4 0 |

It will be seen with interest that there is a marked decrease in the proportion of adulterated samples of milk purchased within the City, a condition which applies to samples taken on Sundays, as well as those taken on week-days.

The milk sent in from the country however has not shown any diminution in adulteration, on the contrary, the tendency to adulterate this milk has apparently increased.

DETAILS OF FOREGOING SAMPLES OF MILK OBTAINED

| | <u>DURING THE YEAR 1898.</u> | <u>1897.</u> | <u>1898.</u> |
|--|------------------------------|--------------|--------------|
| Number of Samples purchased on Week-days in Town... | | 409 | 464 |
| „ Informations | | 54 | 42 |
| Number of Samples taken at Railway Stations on Week-days | | 200 | 146 |
| „ Informations | | 8 | 11 |
| Number of Samples purchased on Sundays in Town ... | | 117 | 76 |
| „ Informations | | 23 | 9 |
| Number of Samples taken at Railway Stations on Sundays | | 97 | 94 |
| „ Informations | | 2 | 8 |

It is gratifying to notice that the amount of fines for offences under the Sale of Food and Drugs Act has decreased during the past twelve months as compared with the preceding twelve months, but it is to be recorded that the common fraud of adulterating milk with water or abstracting cream is more frequently practised on Sundays than on week-days, both in regard to town and country milk.

| | <u>MARGARINE ACT.</u> | <u>1897.</u> | <u>1898.</u> |
|---------------------------------|-----------------------|--------------|--------------|
| Number of Visits to Shops... .. | | 3,816 | 2,350 |
| „ Samples obtained | | 17 | 10 |
| „ „ Analysed | | — | — |
| „ Informations | | 21 | 14 |
| „ Fined | | 17 | 11 |
| Amount of Fines and Costs... .. | | £11 4s. | £30 8s. |

REFUSING TO SELL SAMPLES FOR ANALYSIS.

| | <u>1897.</u> | <u>1898.</u> |
|---------------------------------|--------------|--------------|
| No. of Informations | 2 | 1 |
| „ Fined | 1 | — |
| Acquitted or Withdrawn | 1 | 1 |
| Amount of Fines and Costs... .. | £5 4 6 | — |

CONDENSED MILK.

The very varying character of what is known as "condensed milk" will be seen from the analyses of the following samples, which were obtained for the purpose; the chief variation is in the amount of cream, some samples containing practically none; the amount of added sugar is usually considerable:—

| BRAND AND DESCRIPTION ON LABEL. | RESULT OF ANALYSIS. |
|---|--|
| <p>"TIP TOP."</p> <p>Warranted not skimmed, and to contain nothing but the finest sugar.</p> | <p>11·06 per cent. of fat.—NOT STERILE. 22·34 " other solids of milk. 42·40 " added sugar.</p> <hr/> <p>75·80 " total solids.</p> <hr/> <p>OBSERVATIONS.—This sample has been prepared from new milk.</p> |
| <p>"CALF."</p> <p>Contains skimmed milk, and nothing added but the finest sugar.</p> | <p>0·51 per cent. of fat.—NOT STERILE. 29·69 " other solids of milk. 43·90 " added sugar.</p> <hr/> <p>74·10 " total solids.</p> <hr/> <p>OBSERVATIONS.—This sample has been prepared from separated milk.</p> |
| <p>"CUP."</p> <p>Separated milk, nothing added but the finest sugar.</p> | <p>0·58 per cent. of fat.—NOT STERILE. 29·93 " other solids of milk. 40·90 " added sugar.</p> <hr/> <p>71·41 " total solids.</p> <hr/> <p>OBSERVATIONS.—This sample prepared from separated milk.</p> |

CONDENSED MILK.—CONTINUED.

| BRAND AND DESCRIPTION ON LABEL. | RESULT OF ANALYSIS. |
|---|--|
| <p align="center">"NESTLE'S."</p> <p>Prepared in Switzerland from pure milk of Swiss cows, and in condensation nothing but water is taken from it, and only a small quantity of pure cane sugar added.</p> | <p>10.88 per cent. of fat.—NOT STERILE. 28.02 " other solids of milk. 36.00 " added sugar.</p> <hr/> <p>74.90 " total solids.</p> <hr/> <p>OBSERVATIONS.—This sample has been prepared from new milk.</p> |
| <p align="center">"FLAG."</p> <p>Skimmed milk and pure cane sugar added.</p> | <p>1.31 per cent. of fat.—NOT STERILE. 30.26 " other solids of milk. 39.50 " added sugar.</p> <hr/> <p>71.07 " total solids.</p> <hr/> <p>OBSERVATIONS.—This sample has been prepared from separated milk.</p> |
| <p align="center">"CRUISER."</p> <p>Skimmed or separated milk, preserved and prepared with finest sugar.</p> | <p>1.32 per cent. of fat.—NOT STERILE. 28.68 " other solids of milk. 41.60 " added sugar.</p> <hr/> <p>71.60 " total solids.</p> <hr/> <p>OBSERVATIONS.—This sample has been prepared from separated milk.</p> |
| <p align="center">"MILKMAID."</p> <p>Best unskimmed Swiss milk, condensed, with nothing added except pure sugar.</p> | <p>10.53 per cent. of fat.—NOT STERILE. 25.96 " other solids of milk. 40.00 " added sugar.</p> <hr/> <p>76.49 " total solids.</p> <hr/> <p>OBSERVATIONS.—This sample has been prepared from whole milk.</p> |

CONDENSED MILK.—CONTINUED.

| BRAND AND DESCRIPTION ON LABEL. | RESULT OF ANALYSIS. |
|---|---|
| <p align="center">"FAMILY."</p> <p>Partly skimmed, warranted free from foreign matters but purified sugar.</p> | <p>1.06 per cent. of fat.—NOT STERILE. 35.76 ,, other solids of milk. 38.00 ,, added sugar. <hr/> 74.82 ,, total solids. <hr/> OBSERVATIONS.—This sample has been prepared from separated milk, from which at least nine-tenths of the original fat has been removed.</p> |
| <p align="center">"STANDARD."</p> <p>Skimmed milk, nothing added but finest sugar.</p> | <p>0.27 per cent. of fat.—NOT STERILE. 28.77 ,, other solids of milk. 44.20 ,, added sugar. <hr/> 73.24 ,, total solids. <hr/> OBSERVATIONS.—This sample has been prepared from separated milk.</p> |
| <p align="center">"FOURPENNY."</p> <p>Guaranteed not skimmed, nothing added but best refined sugar.</p> | <p>9.10 per cent. of fat. 27.38 ,, other solids of milk. 39.62 ,, added sugar. <hr/> 76.10 ,, total solids. <hr/> OBSERVATIONS.—This sample has been prepared from whole milk.</p> |
| <p align="center">"KNIGHT."</p> <p>Condensed separated milk.</p> | <p>1.12 per cent. of fat.—NOT STERILE. 31.03 ,, other solids of milk. 40.08 ,, added sugar. <hr/> 72.23 ,, total solids. <hr/> OBSERVATIONS.— This sample has been prepared from separated milk.</p> |

CONDENSED MILK.—CONTINUED.

| BRAND AND DESCRIPTION ON LABEL. | RESULT OF ANALYSIS. |
|--|---|
| <p align="center">"SWAN."</p> <p>Skimmed or separated milk, prepared and preserved with finest sugar.</p> | <p>0.58 per cent. of fat.—NOT STERILE. 27.92 " other solids of milk. 42.53 " added sugar.</p> <hr/> <p>71.03 " total solids.</p> <hr/> <p>OBSERVATIONS.—This sample has been prepared from separated milk.</p> |
| <p align="center">"DAILY."</p> <p>Skimmed milk, warranted free from foreign matters but purified sugar.</p> | <p>1.86 per cent. of fat.—NOT STERILE. 26.72 " other solids of milk. 43.75 " added sugar.</p> <hr/> <p>72.33 " total solids.</p> <hr/> <p>OBSERVATIONS.—This sample has been prepared from separated milk.</p> |
| <p align="center">"HEAD."</p> <p>Condensed, skimmed, or separated milk, and refined sugar.</p> | <p>1.37 per cent. of fat.—NOT STERILE. 25.00 " other solids of milk. 43.81 " added sugar.</p> <hr/> <p>70.18 " total solids.</p> <hr/> <p>OBSERVATIONS.—This sample has been prepared from separated milk.</p> |
| <p align="center">"NURSE."</p> <p>Skimmed or separated milk, prepared and preserved with finest sugar.</p> | <p>1.37 per cent. of fat.—NOT STERILE. 25.33 " other solids of milk. 42.72 " added sugar.</p> <hr/> <p>69.42 " total solids.</p> <hr/> <p>OBSERVATIONS.—This sample has been prepared from separated milk.</p> |

CONDENSED MILK.—CONTINUED.

| BRAND AND DESCRIPTION ON LABEL. | RESULT OF ANALYSIS. |
|---|--|
| <p align="center">"POLO."</p> <p>Separated milk, nothing added but finest sugar.</p> | <p>1.04 per cent. of fat.—NOT STERILE. 25.68 " other solids of milk. 43.53 " added sugar.</p> <hr/> <p>70.25 " total solids.</p> <hr/> <p>OBSERVATIONS.—This sample has been prepared from separated milk.</p> |
| <p align="center">"JERSEY COW."</p> <p>Separated milk.</p> | <p>2.24 per cent. of fat.—NOT STERILE. 26.41 " other solids of milk. 38.56 " added sugar.</p> <hr/> <p>67.21 " total solids.</p> <hr/> <p>OBSERVATIONS.—This sample has been prepared from separated milk.</p> |
| <p align="center">"TANTIVY."</p> <p>Skimmed milk, nothing added but finest sugar.</p> | <p>1.60 per cent. of fat.—NOT STERILE. 29.16 " other solids of milk. 41.55 " added sugar.</p> <hr/> <p>72.31 " total solids.</p> <hr/> <p>OBSERVATIONS.—This sample has been prepared from separated milk.</p> |
| <p align="center">"TABLE."</p> <p>Skimmed milk, with nothing added but finest sugar.</p> | <p>0.63 per cent. of fat.—NOT STERILE. 30.72 " other solids of milk. 41.04 " added sugar.</p> <hr/> <p>72.39 " total solids.</p> <hr/> <p>OBSERVATIONS.—This sample has been prepared from separated milk.</p> |

CONDENSED MILK.—CONTINUED.

| BRAND AND DESCRIPTION ON LABEL. | RESULT OF ANALYSIS. |
|--|--|
| <p>"MAGPIE."</p> <p>Skimmed milk, with nothing added but finest sugar.</p> | <p>0.98 per cent. of fat.—NOT STERILE. 27.07 " other solids of milk. 43.91 " added sugar.</p> <hr/> <p>71.96 " total solids.</p> <hr/> <p>OBSERVATIONS.—The sample has been prepared from separated milk.</p> |
| <p>"CROW."</p> <p>Separated milk, with nothing added but finest sugar.</p> | <p>1.57 per cent. of fat.—NOT STERILE. 26.98 " other solids of milk. 42.94 " added sugar.</p> <hr/> <p>71.94 " total solids.</p> <hr/> <p>OBSERVATIONS.—This sample has been prepared from separated milk.</p> |
| <p>"ANGLO-IRISH."</p> <p>Full cream condensed milk, pre- pared from pure sterilized milk.</p> | <p>9.01 per cent. of fat.—NOT STERILE. 25.04 " other solids of milk. 40.97 " added sugar.</p> <hr/> <p>75.02 " total solids and is genuine.</p> <hr/> |

SAMPLES TAKEN FOR BACTERIOLOGICAL ANALYSIS OR
EXAMINATION.

| | | | |
|--------------------------------|-----|----------------------------|------------|
| New Milk | 113 | Ham and Chicken | 1 |
| Condensed Milk | 32 | Potted Tongue | 1 |
| Oysters | 23 | „ Veal and Ham | 3 |
| Mussels | 25 | „ Beef | 1 |
| Cockles | 22 | „ Ham | 2 |
| Periwinkles | 9 | „ Strasburg Meat | 1 |
| Whelks | 1 | Ribs of Beef | 1 |
| Shrimps (Potted) | 2 | Lard | 1 |
| Salmon (Tinned) | 18 | Water | 1 |
| Lobster „ | 5 | Preserved Pineapple | 2 |
| Sardines „ | 8 | „ Peas | 3 |
| Bloater Paste | 2 | „ Apricots | 3 |
| Kipper Paste | 1 | „ Tomatoes | 3 |
| Salmon and Shrimp Paste | 2 | „ Plums | 1 |
| Meat Paste | 1 | „ Damsons | 1 |
| Gravy Soup... .. | 1 | Jam | 2 |
| Boiled Rabbit (Tinned) .. | 1 | Golden Syrup | 1 |
| Roast Mutton | 1 | Treacle | 1 |
| Lunch Tongue | 1 | Walnuts | 1 |
| Turkey and Tongue | 2 | Ice Cream | 2 |
| Chicken and Tongue | 1 | Samples of Hay | 7 |
| Ham and Tongue | 1 | TOTAL | <u>311</u> |

The Report of the Bacteriologist, and the work performed by him during the year, are summarised in the following pages.

The total number of samples examined bacteriologically was 438.

They may be divided into five classes, viz. :—

CLASS I.—FOODS.

(a) Raw Foods.—Milk, Ice Cream, Shell Fish, etc.

(b) Preserved Foods.—Tinned Milks, Tinned and Potted Meats and Preserved Fruits.

CLASS II.—Water.

CLASS III.—Special Bacteriological Investigations.

CLASS IV.—Examination for Rabies.

CLASS V.—Examination for Diphtheria and Typhoid (see page 214).

CLASS I.—FOOD.—**Milk.**—Samples of milk were sent to the Bacteriologist mainly with a view to determine whether they were free from the Tubercle Bacillus.

The precautions taken in carrying on the investigation have already been detailed in previous reports, and it is not necessary to repeat them. It may be remarked that Professor Boyce, like the other bacteriologists who have carried on researches into the presence or absence of the tubercle bacillus, alludes incidentally to the important fact that in a certain proportion of cases the inoculated animal dies long before the time necessary for a tubercular lesion to develop. This result has been shown to be due to the presence in the milk of a virulent spore-bearing bacillus, possessing characters similar to those of the bacillus enteritidis sporogenes, and which is apparently associated with the choleraic disease so fatal to children during dry and hot weather.

The total number of samples of milk examined was 112, 28 being samples taken from the railway stations, on arrival from the country, and 84 from the town. Of the 84 town samples seven were proved to contain the tubercle bacillus, and of the 28 railway samples five were shown to contain the tubercle bacillus. These proportions of tubercular milk are in excess of the average.

With regard to ice creams, the samples examined were found to contain a large number of micro-organisms, a circumstance which affords confirmatory evidence of the necessity for the measures obtained in the Liverpool Corporation Act of 1898, for ensuring cleanliness in the manufacture of ice cream.

MILK.

| Sample Number. | Source. | Date 1898 | Tubercle Bacilli Present or Absent. | Remarks. |
|----------------|-------------------------|------------|-------------------------------------|---|
| 150 | Town | Jan. 4th | Absent. | |
| 154 | Town | Jan. 14th | Absent. | |
| 155 | Town | Jan. 14th | Absent. | |
| 156 | Town | Jan. 14th | Absent. | |
| 160 | Railway Station | Jan. 26th | Absent. | |
| 161 | Railway „ | Jan. 26th | Absent. | |
| 162 | Railway „ | Jan. 26th | Absent. | |
| 163 | Grafton Street Hospital | Jan. 27th | | Inoculated animal died Feb. 4th, from local abscess at seat of inoculation. |
| 185 | Town | Feb. 17th | Absent. | |
| 186 | Town | Feb. 17th | Absent. | |
| 187 | Town | Feb. 17th | Absent. | |
| 192 | Railway Station | Feb. 23rd | Absent. | |
| 193 | Town | Feb. 25th | Absent. | |
| 194 | Town | Feb. 25th | Absent. | |
| 197 | Town | Mar. 3rd | | Animal died on March 10th from natural malnutrition. |
| 198 | Town | Mar. 3rd | Absent. | |
| 199 | Town | Mar. 3rd | Present. | |
| 200 | Town | Mar. 3rd | Absent. | |
| 208 | Town | Mar. 8th | Absent. | |
| 209 | Town | Mar. 8th | Absent. | |
| 212 | Town | Mar. 17th | Absent. | |
| 213 | Town | Mar. 17th | Absent. | |
| 217 | Railway Station | Mar. 24th | Absent. | |
| 218 | Railway „ | Mar. 24th | Absent. | |
| 219 | Railway „ | Mar. 24th | Absent. | |
| 220 | Town | Mar. 25th | Absent. | |
| 225 | Town | April 6th | Absent. | |
| 226 | Town | April 6th | | A large abscess developed at seat of inoculation, and animal died April 26th, 1898. |
| 227 | Town | April 6th | Absent. | |
| 228 | Town | April 6th | Absent. | |
| 229 | Park Hill Hospital | April 7th | | Animal died within 24 hours. The milk was ropy, and contained a large number of organisms (non-pathogenic). |
| 230 | Park Hill Hospital | April 7th | | Animal died. |
| 237 | Town | April 19th | Absent. | |
| 238 | Town | April 19th | Absent. | |
| 241 | Town | April 26th | Absent. | |
| 242 | Town | April 26th | Present. | |

MILK.—(Continued)—

| Sample Number. | Source. | Date 1898 | Tubercle Bacilli Present or Absent. | Remarks. |
|----------------|-----------------|------------|-------------------------------------|--|
| 243 | Town | April 26th | Absent. | |
| 244 | Town | April 26th | Absent. | |
| 249 | Town | May 5th | Absent. | |
| 250 | Town | May 5th | Absent. | |
| 251 | Town | May 5th | Absent. | |
| 252 | Town | May 5th | Absent. | |
| 253 | Town | May 6th | Absent. | |
| 256 | Town | May 10th | Absent. | |
| 257 | Town | May 10th | Absent. | |
| 258 | Railway Station | May 12th | Absent. | |
| 259 | Railway „ | May 12th | Present. | |
| 281 | Town | June 9th | Absent. | |
| 282 | Town | June 9th | Absent. | |
| 283 | Town | June 9th | Absent. | |
| 284 | Town | June 9th | Absent. | |
| 295 | Town | June 23rd | Absent. | |
| 296 | Town | June 23rd | Absent. | |
| 297 | Town | June 23rd | Absent. | |
| 298 | Town | June 23rd | | Animal found dead June 27th, 1898. Cause of death unknown. |
| 312 | Railway Station | July 7th | Absent. | |
| 313 | Railway Station | July 7th | Absent. | |
| 321 | Railway Station | July 21st | Absent. | |
| 322 | Railway Station | July 21st | | Animal died on July 24th, 1898, from peritonitis and pleurisy. |
| 327 | Railway Station | July 21st | Absent. | |
| 328 | Railway Station | July 26th | Absent. | |
| 330 | Town | Aug. 6th | Absent. | |
| 331 | Town | Aug. 6th | Absent. | |
| 336 | Town | Aug. 12th | Absent. | |
| 337 | Town | Aug. 12th | Absent. | |
| 342 | Town | Aug. 18th | Absent. | |
| 343 | Town | Aug. 18th | | Inoculated animal died, but not from tubercle. |
| 344 | Town | Aug. 18th | Absent. | |
| 348 | Railway Station | Aug. 26th | Absent. | |
| 356 | Town | Sep. 7th | Absent. | |
| 359 | Town | Sep. 7th | Absent. | |
| 363 | Town | Sep. 16th | Absent. | |
| 364 | Town | Sep. 16th | Absent. | |
| 365 | Railway Station | Sep. 23rd | Absent. | |
| 366 | Railway Station | Sep. 23rd | Absent. | |
| 371 | Railway Station | Sep. 30th | Absent. | |
| 376 | Town | Oct. 6th | Absent. | |
| 377 | Town | Oct. 6th | Absent. | |

MILK.—(Continued)—

| Sample Number. | Source. | Date 1898 | Tubercle Bacilli Present or Absent. | Remarks. |
|-------------------|-----------------|--------------|--|---|
| 380 | Town | Oct. 12th | | Inoculated animal died on Oct. 16th, 1898, with considerable subcuta- neous extravasation. |
| 381 | Town | Oct. 12th | Absent. | |
| 382 | Town | Oct. 12th | Absent. | |
| 385 | Town | Oct. 21st | Absent. | |
| 386 | Town | Oct. 21st | | Animal died, but not from tubercle. |
| 387 | Town | Oct. 21st | Absent. | |
| 400 | Railway | Nov. 7th | | Animal died, but not from tubercle. |
| 401 | Railway Station | Nov. 7th | | Animal died Nov. 11th, but not from tubercle. |
| 402 | Railway .. | Nov. 7th | Absent. | |
| 409 | Town | Nov. 17th | Present. | |
| 410 | Town | Nov. 17th | Absent. | |
| 411 | Town | Nov. 23rd | Absent. | |
| 412 | Town | Nov. 23rd | Absent. | |
| 413 | Town | Nov. 23rd | Absent. | |
| 414 | Town | Nov. 23rd | Absent. | |
| 415 | Town | Nov. 25th | Absent. | |
| 420 | Railway Station | Nov. 30th | Present. | |
| 421 | Railway .. | Nov. 30th | Present. | |
| 422 | Railway .. | Nov. 30th | Present. | |
| 423 | Railway .. | Nov. 30th | Present. | |
| 434 | Town | Dec. 16th | Absent. | |
| 435 | Town | Dec. 16th | Present. | |
| 436 | Town | Dec. 16th | Present. | |
| 437 | Town | Dec. 16th | Present. | |
| 438 | Town | Dec. 16th | Present. | |
| 441 | Town | Dec. 22nd | Absent. | |
| 442 | Town | Dec. 22nd | | Animal died Dec. 31st, but not from tubercle. |
| 443 | Town | Dec. 29th | Absent. | |
| 444 | Town | Dec. 29th | | Animal died on Jan. 29th, but not from tubercle. |
| 445 | Town | Dec. 29th | Absent. | |
| 446 | Town | Dec. 29th | Absent. | |
| 448 | Railway Station | Dec. 30th | Absent. | |
| 449 | Railway .. | Dec. 30th | Present. | |

SHELL-FISH.

Twenty-two samples of oysters, 22 of mussels, 23 of cockles, and 10 of periwinkles were examined bacteriologically. It is beyond dispute that these fish may be the means of transmitting certain forms of disease, notably typhoid fever. The most careful attention was given in investigating the micro-organisms which the samples were found to contain, special importance being attached to those groups of organisms which might be taken to indicate sewage contamination. Although the typhoid bacillus was not isolated in any of the samples, the bacillus coli, which is commonly associated with sewage contamination, was isolated in 15 per cent. of the samples, and in the cases in which special search was made for the bacillus enteriditis sporogenes, this bacillus was found. The full details of the methods employed are set forth in the reports already published by Professor Boyce and Professor Herdman, to the British Association, 1895-6-7-8. In the same report will be found the reasons which led up to the following recommendations, which were made by those gentlemen, as to the means to prevent oyster beds, &c., from being contaminated with sewage:—

(A) That the necessary steps should be taken to induce the oyster trade to remove any possible suspicion of sewage contamination from the beds and layings from which oysters are supplied to the market. This could obviously be effected in one of two ways, either (1) by restrictive legislation and the licensing of beds only after due inspection by the officials of a Government Department, or (2) by the formation of an association amongst the oyster-growers and dealers themselves, which should provide for the due periodic examination of the grounds, stores, and stock by independent properly qualified inspectors. Scientific assistance and advice given by such independent inspectors would go far to improve the condition of the oyster beds and layings, to re-assure the public, and to elevate the oyster industry to the important position which it should occupy.

(B) Oysters imported from abroad (Holland, France, or America) should be consigned to a member of the 'Oyster Association,' who

should be compelled by the regulations to have his foreign oysters as carefully inspected and certificated as those from his home layings. A large proportion of the imported oysters are, however, deposited in our waters for such a period before going to market that the fact of their having originally come from abroad may be ignored. If this period of quarantine were imposed upon all foreign oysters a great part of the difficulty as to inspection and certification would be removed.

(c) The grounds from which mussels, cockles, and periwinkles are gathered should be periodically examined by scientific inspectors in the same manner as the oyster beds. The duty of providing for this inspection might well, we should suggest, be assumed by the various Sea Fisheries Committees round the coast.

The samples examined are indicated in the following table:—

Table I.—OYSTERS.

| Sample Number. | Date 1898 | Colon Bacillus | Remarks. |
|----------------|------------|--------------------|---|
| | | Present or Absent. | |
| 147 | Jan. 4th | Absent. | Actively motile bacillus isolated, no gas, no coagulation, thick growth in potato, no indol, alkaline reaction. |
| 174 | Feb. 3rd. | Absent. | |
| 175 | Feb. 8th | Absent. | |
| 178 | Feb. 8th | Absent. | Actively motile bacillus isolated, gas forming, no indol, no coagulation, thick growth upon potato, alkaline reaction in neutral litmus whey. |
| 184 | Feb. 12th | Absent. | |
| 204 | Mar. 3rd | Absent. | |
| 207 | Mar. 8th | Absent. | |
| 216 | Mar. 18th | Absent. | |
| 232 | April 14th | Absent. | |
| 235 | April 14th | Absent. | B. enteritidis present. |
| 248 | April 28th | Absent. | |
| 255 | May 6th | Absent. | |
| 269 | May 20th | Absent. | |
| 278 | June 3rd | Absent. | |
| 289 | June 10th | Absent. | |
| 345 | Aug. 22nd | Present. | |
| 391 | Oct. 27th | Present. | |
| 397 | Nov. 4th | Present. | |
| 427 | Dec. 5th | Absent. | |
| 428 | Dec. 5th | Absent. | |
| 429 | Dec. 5th | Absent. | |
| 439 | Dec. 22nd | Absent. | |

Table II.—MUSSELS.

| Sample Number. | Date 1898 | Colon Bacillus Present or Absent. | Remarks. |
|-------------------|--------------|--|--|
| 145 | Jan. 4th | Absent. | |
| 146 | Jan. 4th | Absent. | |
| 152 | Jan. 11th | Absent. | |
| 157 | Jan. 18th | Absent. | Gas forming, coccus isolated. |
| 158 | Jan. 18th | Absent. | Gas forming, coccus isolated. |
| 171 | Feb. 3rd | Absent. | |
| 172 | Feb. 3rd | Absent. | |
| 177 | Feb. 8th | Absent. | Actively motile bacillus isolated, no gas, no coagulation, no indol, thick growth on potato, alkaline reaction. |
| 180 | Feb. 12th | Absent. | |
| 201 | Mar. 3rd | Absent. | Gas forming, coccus isolated. |
| 202 | Mar. 3rd | Absent. | Small actively motile bacillus isolated, no gas, no coagulation, no indol formation, thick growth on potato, neutral reaction. |
| 205 | Mar. 8th | Absent. | |
| 214 | Mar. 18th | Absent. | Gas forming, coccus isolated. |
| 215 | Mar. 18th | Absent. | |
| 222 | Mar. 30th | Absent. | Actively motile bacillus isolated, gas forming, milk coagulated, no indol, abundant growth on potato, alkaline reaction. |
| 240 | April 21st | Absent. | |
| 243 | April 28th | Absent. | |
| 250 | Sep. 2nd | Present. | |
| 370 | Sep. 23rd | Present. | |
| 384 | Oct. 14th | Absent. | |
| 392 | Oct. 27th | Absent. | |
| 398 | Nov. 4th | Present. | |
| 417 | Nov. 23rd | Present. | |
| 430 | Dec. 5th | Absent. | B. enteriditis present. |
| 440 | Dec. 22nd | Absent. | |

Table III.—COCKLES.

| Sample Number. | Date 1898 | Colon Bacillus | Remarks. |
|-------------------|--------------|-----------------------|--|
| | | Present or Absent. | |
| 148 | Jan. 4th | Absent. | |
| 149 | Jan. 4th | Absent. | |
| 153 | Jan. 11th | Absent. | |
| 159 | Jan. 18th | Absent. | |
| 173 | Feb. 3rd | Absent. | |
| 176 | Feb. 8th | Absent. | |
| 183 | Feb. 12th | Absent. | |
| 196 | Feb. 25th, | Absent. | |
| 203 | Mar. 3rd | Absent. | |
| 206 | Mar. 8th | Absent. | |
| 221 | Mar. 30th | Absent. | Motionless bacillus isolated, no gas, no coagulation, no indol. |
| 231 | April 14th | Absent. | |
| 233 | April 14th | Absent. | Gas forming, coccus isolated. |
| 239 | April 21st | Absent. | |
| 247 | April 28th | Absent. | |
| 254 | May 6th | Absent. | |
| 268 | May 20th | Absent. | |
| 277 | June 3rd | Absent. | |
| 285 | June 10th | Absent. | |
| 349 | Sep. 2nd | Present. | |
| 369 | Sep. 23rd | Present. | |
| 399 | Nov. 4th | Present. | |
| 418 | Nov. 25th | Present. | |

Table IV.—PERIWINKLES.

| Sample Number. | Date 1898 | Colon Bacillus | Remarks. |
|-------------------|--------------|-----------------------|---|
| | | Present or Absent. | |
| 179 | Feb. 11th | Absent. | |
| 181 | Feb. 12th | Absent. | |
| 182 (Whelks) | Feb. 12th | Absent. | Bacillus, gas forming, no coagulation, no indol, neutral reaction. |
| 195 | Feb. 25th | Absent. | |
| 234 | April 14th | Absent. | |
| 245 | April 28th | Absent. | |
| 285 | June 10th | Present. | |
| 288 | June 10th | Absent. | |
| 383 | Oct. 14th | Absent. | |
| 426 | Dec. 5th | Absent. | B. enteritidis present. |

B.—PRESERVED FOODS.—**Condensed Milks.**—The temperature at which tinned foods is put up is usually supposed to lead to their complete sterilisation. The Bacteriologist's observations show that, on the contrary, many examples of tinned foods are far from sterile, and that, therefore, they may be the carriers of pathogenic organisms.

Thirty-four samples of various brands of condensed milks were examined bacteriologically, and out of these only one appeared free from micro-organisms.

In the others the number of organisms varied, being very abundant in some samples. No pathogenic forms were found. These observations are of importance, because no article of food of the nature of milk or meat should be tinned without making absolutely certain that it is sterilised. Spore-bearing bacilli similar to the bacillus enteriditis sporogenes can develop in the sealed tins if sterilisation is not complete, and lead to the production of irritant and harmful products. If condensed milk is not sterile, it has no advantage over raw milk from a bacteriological point of view.

CONDENSED MILK.

| Sample Number. | Brand. | Date 1898 | Remarks. |
|----------------|----------------|-----------|--------------|
| 260 | Head Brand | May 14th | Not Sterile. |
| 261 | Nestle's | May 14th | Not Sterile. |
| 266 | Calf Brand | May 20th | Not Sterile. |
| 267 | Table Brand | May 20th | Not Sterile. |
| 270 | Head Brand | May 27th | Not Sterile. |
| 271 | Nestle's | May 27th | Not Sterile. |
| 272 | Irish | May 27th | Not Sterile. |
| 273 | Magpie | May 27th | Not Sterile. |
| 274 | Nestle's | June 3rd | Not Sterile. |
| 275 | Cup | June 3rd | Not Sterile. |
| 279 | Hawthorn | June 3rd | Not Sterile. |
| 280 | Tip-top | June 3rd | Not Sterile. |
| 293 | Anglo-Swiss | June 16th | Not Sterile. |
| 294 | ... | June 16th | Not Sterile. |
| 299 | Flag | June 25th | Not Sterile. |
| 300 | Cruiser | June 25th | Not Sterile. |
| 306 | Family | July 1st | Not Sterile. |
| 307 | Royal Standard | July 1st | Not Sterile. |
| 308 | Nestle's | July 1st | Not Sterile. |
| 309 | Calf | July 1st | Not Sterile. |
| 310 | Tip-top | July 1st | Not Sterile. |
| 311 | Head | July 1st | Not Sterile. |

NOTE.—The term pathogenic is used to denote those organisms which produce disease in man.

CONDENSED MILK.—(Continued).—

| Sample Number. | Brand. | Date 1898 | Remarks. |
|----------------|-------------|-----------|--------------|
| 314 | ... | July 8th | Not Sterile. |
| 329 | Swan | July 26th | Not Sterile. |
| 338 | Daily | Aug. 13th | Not Sterile. |
| 339 | White Star | Aug. 13th | Not Sterile. |
| 340 | Nurse | Aug. 16th | Not Sterile. |
| 341 | Polo | Aug. 16th | Not Sterile. |
| 346 | Tantivy | Aug. 25th | Not Sterile. |
| 347 | Jersey Cow | Aug. 25th | Not Sterile. |
| 372 | ... | Sep. 30th | Not Sterile. |
| 404 | Crow | Nov. 9th | Not Sterile. |
| 416 | Anglo-Irish | Nov. 25th | Not Sterile. |
| 447 | Ideal | Dec. 29th | Sterile. |

Tinned Salmon.—Seventeen samples were examined, Agar plate cultivations being made from each. The majority proved sterile, only three samples giving rise to colonies of bacteria upon the plates.

TINNED SALMON.

| Sample Number. | Brand. | Date 1898 | Remarks. |
|----------------|---------------|------------|--------------|
| 164 | ... | Feb. 3rd | Sterile. |
| 224 | ... | Mar. 30th | Sterile. |
| 236 | ... | April 19th | Sterile. |
| 276 | ... | June 3rd | Sterile. |
| 287 | ... | June 10th | Sterile. |
| 305 | ... | June 29th | Sterile. |
| 315 | Silver Crown | July 8th | Sterile. |
| 316 | Gem | July 8th | Decomposed. |
| 317 | Royal York | July 16th | Sterile. |
| 351 | Puritan | Sep. 2nd | Sterile. |
| 352 | ... | Sep. 2nd | Sterile. |
| 354 | Cycle | Sep. 7th | Sterile. |
| 361 | Signal | Sep. 14th | Sterile. |
| 375 | ... | Oct. 1st | Not Sterile. |
| 378 | Cleeves | Oct. 7th | Sterile. |
| 388 | English Crown | Oct. 22nd | Not Sterile. |
| 408 | ... | Nov. 17th. | Sterile. |

Tinned Sardines.—Nine samples were examined, and five were shown to be not sterile.

TINNED SARDINES.

| Sample Number. | Brand. | Date 1898 | Remarks. |
|----------------|---------------|-----------|--------------|
| 223 | ... | Mar. 30th | Not Sterile. |
| 290 | ... | June 10th | Sterile. |
| 318 | International | July 16th | Sterile. |
| 353 | ... | Sep. 2nd | Not Sterile. |
| 360 | ... | Sep. 14th | Sterile. |
| 373 | ... | Oct. 1st | Sterile. |
| 374 | ... | Oct. 18th | Not Sterile. |
| 389 | ... | Oct. 22nd | Not Sterile. |
| 396 | ... | Oct. 29th | Not Sterile. |

Tinned Lobster.—One sample out of five examined was found to be not sterile.

TINNED LOBSTER.

| Sample Number. | Brand. | Date 1898 | Remarks. |
|----------------|--------|-----------|--------------|
| 165 | ... | Feb. 3rd | Sterile. |
| 191 | ... | Feb. 18th | Sterile. |
| 304 | ... | June 29th | Sterile. |
| 355 | ... | Sep. 7th | Not Sterile. |
| 407 | ... | Nov. 17th | Sterile. |

Miscellaneous Tinned and Potted Meats.—As the table shows, these were very varied and amounted to twenty-nine samples; they included tinned meats, potted meats, meat pastes and lard. Sixteen of the samples contained micro-organisms, and were therefore liable to undergo decomposition and to prove a source of danger.

Preserved Fruits.—What has been said as regards the importance of tinned meats holds equally good in the case of preserved fruits. It is essential that every care should be taken to see that they are put up completely sterile. The loss to the manufacturer from the preserved fruits and jams undergoing fermentation, and the unwholesomeness of such articles of food, could be prevented by more scientific methods of preparation. Out of the fifteen samples examined, six contained micro-organisms of various kinds.

Fresh Fruits.—One sample of sprouting and fermenting fresh walnuts was examined. What has been said concerning the unwholesomeness of non-sterilised preserved fruits, is equally applicable to the unsound ripe fruit caused by the presence of organisms.

PRESERVED FOODS—Miscellaneous..

| Sample Number. | Article. | Date. 1898 | Remarks. |
|----------------|----------------------|---------------|--------------|
| 166 | Lunch Tongue | Feb. 3rd | Sterile. |
| 167 | Preserved Pine Apple | Feb. 3rd | Sterile. |
| 168 | Preserved Apricots | Feb. 3rd | Sterile. |
| 169 | Preserved Tomatoes | Feb. 3rd | Sterile. |
| 170 | Preserved Pears | Feb. 3rd | Sterile. |
| 188 | Potted Tongue | Feb. 18th | Not Sterile. |
| 189 | Turkey and Tongue | Feb. 18th | Sterile. |
| 190 | Chicken and Tongue | Feb. 18th | Sterile. |
| 210 | Potted Veal and Ham | Mar. 12th | Not Sterile. |
| 211 | Bloater Paste | Mar. 12th | Not Sterile. |
| 262 | Kipper Paste | May 20th | Not Sterile. |
| 263 | Veal and Ham | May 20th | Sterile. |
| 264 | Meat Paste | May 20th | Sterile. |
| 265 | Salmon and Shrimp | May 20th | Sterile. |
| 291 | Apricots | June 15th | Sterile. |
| 292 | Tomatoes | June 15th | Sterile. |
| 301 | Gravy Soup | June 29th | Sterile. |
| 302 | Pears | June 29th | Sterile. |
| 303 | Golden Syrup | June 29th | Sterile. |
| 319 | Boiled Rabbit | July 16th | Not Sterile. |
| 320 | Roast Mutton | July 16th | Not Sterile. |
| 323 | Veal and Ham | July 23rd | Not Sterile. |
| 324 | Ham and Chicken | July 23rd | Not Sterile. |
| 325 | Potted Ham | July 23rd | Not Sterile. |
| 326 | Turkey and Tongue | July 23rd | Not Sterile. |
| 332 | Potted Ham | Aug. 6th | Sterile. |
| 333 | Strasburg Meats | Aug. 6th | Sterile. |
| 334 | Potted Beef | Aug. 6th | Sterile. |
| 335 | Ham and Tongue | Aug. 6th | Not Sterile. |
| 357 | Bloater Paste | Sep. 7th | Not Sterile. |
| 358 | Salmon and Shrimp | Sep. 7th | Not Sterile. |
| 362 | Apricots | Sep. 14th | Sterile. |

PRESERVED FOODS—Miscellaneous.—(*Continued*)—

| Sample Number. | Article. | Date. 1898 | Remarks. |
|----------------|----------------|---------------|-----------------------------|
| 367 | Ice Cream | Sep. 23rd | Not Sterile. |
| 368 | Ice Cream | Sep. 23rd | Not Sterile. |
| 379 | Ribs of Beef | Oct. 7th | Sterile. |
| 390 | Pine Apple | Oct. 22nd | Not Sterile. |
| 393 | Peas | Oct. 29th | Not Sterile. |
| 394 | Tomatoes | Oct. 29th | Not Sterile. |
| 395 | Treacle | Oct. 29th | Not Sterile. |
| 405 | Blackberry Jam | Nov. 9th | Not Sterile. |
| 406 | Rhubarb Jam | Nov. 9th | Sterile. |
| 419 | Lard | Nov. 25th | Not Sterile. |
| 424 | Plums | Dec. 1st | Not Sterile. |
| 425 | Damsons | Dec. 1st | Not Sterile. |
| 431 | Walnuts | Dec. 5th | Undergoing fermentation. |
| 432 | Potted Shrimps | Dec. 7th | Not Sterile. |
| 433 | Potted Shrimps | Dec. 8th | Not Sterile. |

CLASS II. — **Water supplied for ordinary purposes**—Systematic fortnightly and monthly examinations of the drinking water have been made. The samples of water are collected by a member of the Bacteriologist's staff, in small sterilised bottles, and plate cultivations made as quickly as possible after collecting. One cubic centimetre of water is added to the sterilised gelatine and agar, shaken, and then poured into the sterilised dishes. The analyses show that the water supplied to the city is very good. No pathogenic forms have been isolated, but numerous other non-pathogenic forms, such as would have been expected in wholesome water, have been met with. These are kept and propagated in the Laboratory, and are always useful for reference.

The following are the sources which have been examined.

Fortnightly Examinations—

Ashton Hall Tap.

Monthly Examinations—

| | |
|-----------|--|
| WELLS — | { Windsor Well. Dudlow Lane Well. Green Lane Well. |
| PRESCOT — | { Vyrnwy Water. Rivington Water. Mixed Water. |

WATER—Fortnightly Samples.

| Source. | Date 1898 | Time of Collecting. | Time of Examination. | Bacteria Present. | |
|-----------------|--------------|------------------------|-------------------------|-------------------|--------|
| | | | | Gelatine. | Agar. |
| Ashton Hall Tap | Jan. 24th | 5 30 p.m. | 5 30 p.m. | 46 .. | 4 .. |
| Ashton Hall Tap | Feb. 7th | 11 a.m. | 11 a.m. | 60 .. | 14 .. |
| Ashton Hall Tap | Feb. 20th | 2 p.m. | 2 p.m. | 14 .. | 1 .. |
| Ashton Hall Tap | Mar. 7th | 11 30 a.m. | 11 30 a.m. | 24 .. | — .. |
| Ashton Hall Tap | Mar. 15th | 5 p.m. | 5 p.m. | 60 .. | 2 .. |
| Ashton Hall Tap | Mar. 6th | 2 p.m. | 2 p.m. | 60 .. | 4 .. |
| Ashton Hall Tap | April 18th | 11 a.m. | 11 a.m. | 80 .. | 6 .. |
| Ashton Hall Tap | April 25th | 3 p.m. | 3 p.m. | 30 .. | 14 .. |
| Ashton Hall Tap | May 15th | 11 a.m. | 11 a.m. | 50 .. | 8 .. |
| Ashton Hall Tap | May 27th | 12 a.m. | 12 a.m. | 94 .. | 14 .. |
| Ashton Hall Tap | June 10th | 11 a.m. | 11 a.m. | 92 .. | 17 .. |
| Ashton Hall Tap | June 22nd | 3 p.m. | 3 p.m. | 27 .. | 11 .. |
| Ashton Hall Tap | July 25th | 10 a.m. | 10 a.m. | 100 .. | — .. |
| Ashton Hall Tap | Aug. 6th | 9 30 a.m. | 9 30 a.m. | 30 .. | 8 .. |
| Ashton Hall Tap | Aug. 18th | 3 p.m. | 3 p.m. | 33 .. | — .. |
| Ashton Hall Tap | Sep. 3rd | 10 a.m. | 10 a.m. | 54 .. | 17 .. |
| Ashton Hall Tap | Sep. 17th | 11 a.m. | 11 a.m. | 140 .. | 170 .. |
| Ashton Hall Tap | Sep. 26th | 12 a.m. | 12 a.m. | 36 .. | 14 .. |
| Ashton Hall Tap | Oct. 15th | 10 a.m. | 10 a.m. | 40 .. | 6 .. |
| Ashton Hall Tap | Oct. 25th | 9 a.m. | 9 a.m. | 70 .. | 4 .. |
| Ashton Hall Tap | Nov. 12th | 9 a.m. | 9 10 a.m. | 120 .. | 27 .. |
| Ashton Hall Tap | Nov. 25th | 2 p.m. | 2 10 p.m. | 6 .. | — .. |
| Ashton Hall Tap | Dec. 19th | 4 p.m. | 4 5 p.m. | 3 .. | 31 .. |

WATER—Monthly Samples.

| Source. | Date 1898 | Time of Collecting. | Time of Examination. | Bacteria Present. | |
|------------------------------|--------------|------------------------|-------------------------|-------------------|-------------|
| | | | | Gelatine. | Agar. |
| Dudlow Lane | Jan. 31st | 1 45 p.m. | 5 p.m. | 120 per c.c. | 4 per c.c. |
| Dudlow Lane | Mar. 4th | 2 45 p.m. | 5 p.m. | 22 .. | — .. |
| Dudlow Lane | April 29th | 1 40 p.m. | 3 p.m. | 72 .. | 12 .. |
| Dudlow Lane | July 12th | 11 a.m. | 12 a.m. | 224 .. | — .. |
| Dudlow Lane | Aug. 30th | 10 30 a.m. | 11 30 a.m. | 500 .. | 7 .. |
| Dudlow Lane | Sep. 27th | 10 a.m. | 1 p.m. | 44 .. | 100 .. |
| Dudlow Lane | Oct. 25th | 3 30 p.m. | 4 30 p.m. | 15 .. | 6 .. |
| Dudlow Lane | Nov. 24th | 2 30 p.m. | 3 30 p.m. | 35 .. | 56 .. |
| Dudlow Lane | Dec. 19th | 10 35 a.m. | 12 a.m. | 5 .. | 4 .. |
| G. Holt Well (Green Lane) | April 29th | 2 30 p.m. | 3 p.m. | 50 per c.c. | — .. |
| G. Holt Well .. | Aug. 31st | 10 a.m. | 11 a.m. | 100 .. | 20 per c.c. |
| G. Holt Well .. | Sep. 27th | 11 30 a.m. | 1 p.m. | 16 .. | 12 .. |
| G. Holt Well .. | Oct. 26th | 3 30 p.m. | 4 p.m. | 200 .. | 120 .. |
| G. Holt Well .. | Dec. 19th | 11 a.m. | 12 a.m. | 18 .. | 1 .. |
| Green Lane Well | Jan. 31st | 2 35 p.m. | 5 p.m. | *4,000 .. | *200 .. |

* Harmless organisms, the increase due to incidental disturbances of the source at time of taking the sample.

WATER—Monthly Samples—(Continued)—

| Source. | Date 1898 | Time of Collecting. | Time of Examination. | Bacteria Present. | |
|--------------------------------|--------------|------------------------|-------------------------|-------------------|------------|
| | | | | Gelatine. | Agar. |
| Green Lane Well | Mar. 4th | 3 p.m. | 5 p.m. | 30 per c.c. | — per c.c. |
| Green Lane Well | May 26th | 3 p.m. | 4 20 p.m. | 26 „ | 9 „ |
| Green Lane Well | Aug. 6th | 12 30 p.m. | 1 30 p.m. | 60 „ | 6 „ |
| J. Holmes Well (Green Lane) | April 29th | 2 30 p.m. | 3 p.m. | 896 „ | — „ |
| J. Holmes Well „ | Aug. 31st | 10 a.m. | 11 a.m. | 40 „ | 15 „ |
| J. Holmes Well „ | Sep. 27th | 11 30 a.m. | 1 p.m. | 18 „ | 10 „ |
| J. Holmes Well „ | Oct. 26th | 3 30 p.m. | 4 p.m. | 100 „ | 300 „ |
| J. Holmes Well „ | Nov. 25th | 10 40 a.m. | 11 35 a.m. | 122 „ | 230 „ |
| J. Holmes Well „ | Dec. 19th | 11 a.m. | 12 a.m. | 20 „ | 10 „ |
| Mixing Well (Prescot) | Mar. 4th | 3 45 p.m. | 5 p.m. | 30 „ | — „ |
| Mixing Well „ | May 24th | 11 30 a.m. | 2 30 p.m. | 30 „ | 10 „ |
| Mixing Well „ | July 7th | 2 p.m. | 4 p.m. | 40 „ | 10 „ |
| Mixing Well „ | Aug. 5th | 3 p.m. | 5 p.m. | 200 „ | 40 „ |
| Mixing Well „ | Aug. 29th | 11 a.m. | 1 p.m. | 300 „ | 100 „ |
| Mixing Well „ | Sep. 26th | 2 p.m. | 3 30 p.m. | 200 „ | 180 „ |
| Mixing Well „ | Oct. 26th | 11 30 a.m. | 12 15 p.m. | 26 „ | 30 „ |
| Mixing Well „ | Nov. 23rd | 11 30 a.m. | 12 30 p.m. | 330 „ | 70 „ |
| Mixing Well „ | Dec. 19th | 2 35 p.m. | 4 p.m. | 12 „ | 30 „ |
| Rivington Aqueduct | Jan. 31st | 3 30 p.m. | 5 p.m. | 6 „ | — |
| Rivington Aqueduct | Mar. 4th | 3 45 p.m. | 5 p.m. | 20 „ | — „ |
| Rivington Aqueduct | Mar. 31st | 1 p.m. | 3 p.m. | 44 „ | 6 „ |
| Rivington Aqueduct | April 26th | 2 p.m. | 5 p.m. | 60 „ | — |
| Rivington Aqueduct | May 24th | 11 30 a.m. | 2 30 p.m. | 18 „ | 4 „ |
| Rivington Aqueduct | July 7th | 2 p.m. | 4 p.m. | 21 „ | 5 „ |
| Rivington Aqueduct | Aug. 5th | 3 p.m. | 5 p.m. | 30 „ | 2 „ |
| Rivington Aqueduct | Aug. 29th | 11 a.m. | 1 p.m. | 12 „ | 6 „ |
| Rivington Aqueduct | Sep. 26th | 2 p.m. | 3 30 p.m. | 20 „ | 22 „ |
| Rivington Aqueduct | Oct. 26th | 11 30 a.m. | 12 15 p.m. | 70 „ | 100 „ |
| Rivington Aqueduct | Nov. 23rd | 11 30 a.m. | 12 30 p.m. | 450 „ | 33 „ |
| Rivington Aqueduct | Dec. 19th | 2 30 p.m. | 4 p.m. | 6 „ | 9 „ |
| Vyrnwy Aqueduct | Jan. 31st | 3 30 p.m. | 5 p.m. | 6 „ | — „ |
| Vyrnwy Aqueduct | Mar. 4th | 3 45 p.m. | 5 p.m. | 10 „ | — |
| Vyrnwy Aqueduct | Mar. 31st | 1 p.m. | 3 p.m. | 60 „ | 30 „ |
| Vyrnwy Aqueduct | April 26th | 2 p.m. | 5 p.m. | 6 „ | — |

WATER—Monthly Samples.—(Continued)—

| Source. | Date 1898 | Time of Collecting. | Time of Examination. | Bacteria Present. | |
|-----------------|--------------|------------------------|-------------------------|-------------------|-------------|
| | | | | Gelatine. | Agar. |
| Vyrnwy Aqueduct | May 24th | 11 30 a.m. | 2 30 p.m. | 6 „ | 6 „ |
| Vyrnwy Aqueduct | July 7th | 2 p.m. | 4 p.m. | 11 „ | 7 „ |
| Vyrnwy Aqueduct | Aug. 5th | 3 p.m. | 5 p.m. | 30 „ | 8 „ |
| Vyrnwy Aqueduct | Aug. 29th | 11 a.m. | 1 p.m. | 30 „ | 12 „ |
| Vyrnwy Aqueduct | Sep. 26th | 2 p.m. | 3 30 p.m. | 42 „ | 34 „ |
| Vyrnwy Aqueduct | Oct. 26th | 11 30 a.m. | 12 15 p.m. | 4 „ | 76 „ |
| Vyrnwy Aqueduct | Nov. 23rd | 11 30 a.m. | 12 30 p.m. | 24 „ | 7 „ |
| Vyrnwy Aqueduct | Dec. 19th | 2 30 p.m. | 4 p.m. | 4 „ | 21 „ |
| Windsor Well | Jan. 31st | 1 30 p.m. | 5 p.m. | 14 „ | — „ |
| Windsor Well | July 8th | 11 a.m. | 12 a.m. | 24 „ | 13 „ |
| Windsor Well | Aug. 6th | 11 a.m. | 11 40 a.m. | 58 „ | 11 „ |
| Windsor Well | Aug. 31st | 3 p.m. | 3 30 p.m. | 40 „ | 15 „ |
| Windsor Well | Sep. 26th | 11 a.m. | 11 15 a.m. | 28 per c.c. | 22 per c.c. |
| Windsor Well | Oct. 25th | 12 a.m. | 12 20 p.m. | 140 „ | 8 „ |
| Windsor Well | Nov. 25th | 9 30 a.m. | — | 97 „ | — „ |

WATER—Miscellaneous Samples.

| Source. | Date 1898 | Time of Collecting. | Time of Examination. Sep. 1st, | Bacteria Present. | |
|--------------------------------|--------------|------------------------|--------------------------------------|-------------------|----------------|
| | | | | Gelatine. | Agar. |
| Anderton Hall | Aug. 31st | 4 45 p.m. | 9 10 a.m. | 800 per c.c. | 2,000 per c.c. |
| Paddington | Sep. 8th | 3 p.m. | 3 p.m. | 20 „ | 12 „ |
| Eustace Street | Sep. 8th | 3 p.m. | 3 p.m. | 136 „ | 120 „ |
| Sefton Park (Croxteth Road) | Sep. 12th | — | 4 p.m. | 20 „ | 6 „ |
| Croxteth Road | Sep. 12th | — | — | 26 „ | 6 „ |
| Grantham Street | Sep. 15th | — | 10 a.m. | 10 „ | 28 „ |
| Chatham Street | Nov. 14th | — | 4 p.m. | 50 „ | 21 „ |
| 1, Hope Street | Nov. 14th | — | 4 p.m. | 70 „ | 16 „ |
| 16, Walnut Street | Nov. 14th | — | 4 p.m. | 60 „ | 10 „ |
| 175, Brownlow Hill | Nov. 14th | — | 4 p.m. | 44 „ | 7 „ |
| 58A, Grove Street | Nov. 14th | — | 4 p.m. | 30 „ | 8 „ |

CLASS III.—**Special Bacteriological Investigations.**—Under this heading ten examinations were made. There were two cases of suspected food poisoning where bacteriological examination failed to reveal the presence of pathogenic organisms. Anthrax bacilli were shown to be present in one case of spleen sent for examination.

An investigation of several samples of Hay, to determine whether the bacillus anthracis was present or not, as the hay was suspected to be the cause of infection, gave negative results, as the anthrax bacillus was not found.

Autopsies.—One autopsy was performed upon a suspected case of death from Cholera, and the bacteriologist was able to definitely state that death was not due to cholera, but to ptomaine poisoning from eating unsound food.

MISCELLANEOUS ARTICLES.

| Article. | Date. | Remarks. |
|------------------------|-----------|---------------------------|
| | 1898. | |
| Liver | Feb. 2nd | Normal. |
| Portion of Cow's Udder | Feb. 2nd | Normal. |
| Pork (1) | April 5th | No pathogenic organisms. |
| Pork (2) | April 5th | No pathogenic organisms. |
| Piece of Spleen | July 27th | Anthrax bacilli present. |
| Hay | Aug. 2nd | No anthrax bacilli found. |
| Hay (1) | Aug. 11th | No anthrax bacilli found. |
| Hay (2) | Aug. 11th | No anthrax bacilli found. |
| Hay (3) | Aug. 11th | No anthrax bacilli found. |
| Food | Oct. 31st | Normal. |

CLASS IV.—**Examination for Rabies.**—The head of the dog which is suspected to have been suffering from Rabies is, by permission of the Board of Agriculture, sent to the Laboratory, and a subdural inoculation of an emulsion of the brain made. The brain is very carefully examined for any signs of congestion. In more than one instance during the year the bacteriologist was able, at a very early period, to allay the naturally great cause of anxiety which the bite from a suspected rabid dog produces. Out of the twenty-six cases examined no signs of rabies were found.

RABIES.

| Date. | Source. | Remarks. |
|------------|-------------------------------|------------|
| 1898. | | |
| Jan. 1st | Prescot Street Police Station | No rabies. |
| Jan. 11th | Breck Road „ | No rabies. |
| Feb. 3rd | Rose Hill „ | No rabies. |
| Feb. 16th | Lark Lane „ | No rabies. |
| Feb. 20th | Jordan Street „ | No rabies. |
| Mar. 14th | Jordan Street „ | No rabies. |
| Mar. 14th | Kingsley Road „ | No rabies. |
| Mar. 29th | Rose Hill „ | No rabies. |
| Mar. 29th | Rose Hill „ | No rabies. |
| April 12th | Lark Lane „ | No rabies. |
| April 23rd | Olive Street „ | No rabies. |
| May 9th | Warren Street „ | No rabies. |
| June 16th | Fairfield „ | No rabies. |
| June 18th | Durning Road „ | No rabies. |
| June 28th | Seel Street „ | No rabies. |
| July 8th | Olive Street „ | No rabies. |
| July 26th | Prescot Street „ | No rabies. |
| Aug. 2nd | Breck Road „ | No rabies. |
| Aug. 6th | Westminster Road „ | No rabies. |
| Sep. 2nd | Rose Hill „ | No rabies. |
| Sep. 9th | Prescot Street „ | No rabies. |
| Sep. 19th | Westminster Road „ | No rabies. |
| Oct. 6th | Rose Hill „ | No rabies. |
| Oct. 28th | Essex Street „ | No rabies. |
| Nov. 29th | Westminster Road „ | No rabies. |
| Dec. 17th | Breck Road „ | No rabies. |

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WATER FOR SANITARY PURPOSES.

CLEANSING AND SCAVENGING.

WATER FOR RAILROAD PURPOSES
CHINA AND SOUTHERN

WATER SUPPLY.

The quantity of water supplied to the City during the year 1898 was about $28\frac{1}{2}$ gallons per head per day. During the hot weather, and in the absence of rain, events proved with the utmost clearness that the amount of water which this figure represents did not include a sufficiency of water either for (A) public sanitary purposes, for which 501,926,000 gallons were used, or for (B) domestic sanitary purposes, &c., for which 4,943,440,000 were used, notwithstanding that the amounts distributed to the credit of these two purposes were, roughly, 200 million gallons more than was supplied to the City in 1896, and 20 million gallons more than in 1897, the actual quantity being 5,445,366,000 gallons.

The excessively inconvenient unit of a gallon runs into figures which convey no idea to the human mind, and is like calculating distances in fractions of an inch, or time by seconds, but in the absence of a better unit it must be employed.

With regard to the quantity (A), which represents a little more than $1\frac{1}{2}$ gallons per head per day, this amount may reasonably be doubled, and still leave room for doubt as to its sufficiency. With regard to the quantity (B), which represents 16·8 gallons per head per day, in the absence of means of defining with anything like precision how much of it is absorbed in supplying (1) warehouses, offices, shops, &c., (2) hotels, public-houses, &c., (3) purely domestic wants, and how much is (4) waste, it is nevertheless plain that the deficiency in (3) the purely domestic supply, is considerable. Let it be considered for a moment that the average cleanly person who starts his day with a morning bath of 20 gallons has already far exceeded his personal allowance for that day, and has encroached upon the quantity allotted to his neighbour, as well as for all purposes referred to as 1, 2, 3, 4.

The Medical Officer has no means of expressing in actual millions of gallons the quantity requisite for each of the purposes 1, 2, 3, 4, but it does appear that a very liberal addition is called for to estimate (B), which should be increased by 25 per cent. This would bring the total allowance per head per day for purposes (A) up to say three gallons per head per day, and for purposes (B) up to say 21 gallons per head per day.

No doubt, owing to frost, waste may be greater in one year than in another.

Upon the present estimated population, the amount in gallons of the increased supply would be represented by 885,547,000 gallons for purposes (A) and 6,179,300,000 gallons for purposes (B), but the Medical Officer has already submitted evidence upon the probable rate at which the population is increasing, and this increase must be reckoned with.

With the proposed additions, three gallons per head per day would be the total allowance for public sanitary purposes, and for all domestic purposes the amount would be increased to 21 gallons per head per day.

With regard to the general question of water supply, there is no doubt at all that a more abundant supply of water for cleansing and general sanitary purposes is called for. No one can be unfamiliar with the stinted and niggardly supply which is eked out in many public and private conveniences, and although the smell from the decomposing filth is oftentimes disguised by the use of smelling substances, such as carbolic acid, camphor, etc., the practice is dirty and ineffective, and the proper remedy is to be found in cleanliness only. No one can fail to have noticed the foul smells arising in warm weather from tramway and omnibus stations, cab ranks, etc., due to the want of a freer use of water.

The domestic use of water for baths, washing, and for general domestic sanitary purposes should be unstinted, and domestic closets should be frequently flushed.

Twenty-eight gallons per head per day may be thought a liberal allowance, but a consideration of the many claims upon that amount for business and kindred purposes, for extinguishing fires, washing streets, and for other requirements incidental to city life, will show but a narrow margin for individual use. The greater part of Liverpool is very densely populated, many of the streets are, in proportion to the volume of traffic passing through them, narrow, and soon made dirty. As a consequence, the tendency to the accumulation of dirt is certainly not less than it is in other cities where the business and the life are extended over a much wider area. It is not, therefore, to be expected that a smaller water-supply will suffice for Liverpool than for other cities, nor is there any evidence at all for the belief that the interests of health can be advanced by a quantity below that which other cities find requisite.

It is of interest to note what some of these quantities are:—

Glasgow receives 50 gallons per head per day, of which 32 are estimated to be for domestic purposes.

| | | | |
|-----------|---|------|---------------------------|
| Edinburgh | „ | 35 | gallons per head per day. |
| Aberdeen | „ | 48 | „ „ |
| Leeds | „ | 33 | „ „ |
| Dublin | „ | 32.6 | „ „ |
| London | „ | 35 | „ „ |

Manchester, and some other inland towns, have a less supply, in consequence of the dry-closet systems adopted. Abroad, and in America, the supply is very much more liberal. In Paris, where, as is well known, a liberal use is made of water, 47 gallons per head per day are allowed. In New York and other prominent American and Canadian cities the supply is very much more liberal even than that. It may perhaps be true that in American cities which have a supply of over 100 gallons per head per day, a considerable amount is wasted. Waste of any kind is to be deplored, but no question of waste arises so long as it can be proved that the increased use results in preserving health and removing dirt and discomfort.

Water, as a fundamental sanitary necessity, ranks almost with sunlight and fresh air, and if the construction of some parts of the city prevents the access of these, there is greater need that there should be unrestricted use of water.

PUBLIC BATHS AND WASHHOUSES.

The value of these establishments as accessories in the promotion of the public health is well recognised, and it is worthy of mention that the first Municipal Public Baths and Washhouses in the country were constructed in Liverpool, under the initiation of the late Mr. Newlands, the eminent Engineer, to whose foresight the city owes so much.

The public baths will ultimately bring the means of personal cleanliness within the reach of every able-bodied inhabitant of the city.

Year by year, as facilities are increased, the public are availing themselves more and more of the advantages offered. In the year 1894, 432,000 persons made use of the baths; this number has steadily increased since, and upwards of 955,000 persons used the baths in 1898. The Baths Engineer reckons that 50,000 would have been added to this number had not the plunge baths in the Westminster Road establishment been closed for alterations during the bathing season of that year.

Additional public baths are being constructed in Gore Street and Mansfield Street, and there is not the least doubt that they will supply a much-felt want.

In some of the open-air plunge baths, salt water is used, but the demand for more fresh water will still be very much increased, not only for the new fresh-water baths, but also on account of the increasing number of bathers, which will render it necessary to change the water in the baths more frequently.

It is estimated that the four new open-air baths, which will be in use in 1899, will alone require about 9,000,000 gallons of water per annum.

It is hoped that another form of bath will shortly be established, that is the Free "Stand-up" Washing Bath, what are called the "People's Baths," both for men and for women, after the pattern made use of by the men engaged at the refuse destructor. The labouring population will be encouraged in every way to make use of these baths, tickets for which can be distributed by the District Inspectors and in other ways.

Extension and improvement of the public wash-houses are much needed. The number of persons using the public wash-houses in 1898 was 168,229, against 167,626 in the preceding year. It shows that the establishments are being more largely patronised by the people for whom they were erected. These people are artizans' and labourer's wives, and are termed "one penny washers"—they only wash for one hour and pay one penny. The other class who use the wash-houses are termed "professional washers," these persons make the public wash-house their laundry; many of them use the wash-houses six and seven hours a day, three or four days per week (each person washing for more than one hour pays at the rate of 1½d. per hour).

Some of the more-recently erected groups of artizans' dwellings have accommodation similar to that provided by the public wash-houses. More frequent and more efficient washing of clothing of the artizan and labourer population are being encouraged in every way as far as it possibly can be, but the extension and improvement of the wash-house system are necessary.

It is clear that the quantity of water used in the public baths and wash-houses will require to be supplemented as the public become more alive to the advantages of these establishments.

The Chief Superintendent of Baths, in his Annual Report, calls attention to the small use which is made of the baths by the school children. It would appear that relatively few of the schools avail themselves at all of the baths, and it may be hoped that the managers of the various schools, who are fully alive to the advantages of bathing and cleanliness, will devise means by which the children can be taken to the baths at suitable intervals, and, what is of very vital importance, at an appropriate hour.

WATER SUPPLY IN THE PARKS AND PUBLIC GARDENS.

A very important as well as pleasant means of promoting the health of the City is by open spaces, parks and gardens.

Well-understood benefits result from vegetation, grass, shrubs and trees, maintained in a healthy and vigorous condition.

Rainfall must, to a great extent, be depended upon for this, but if it is possible to supplement rainfall by watering, much mischief will be averted.

The vegetation of various city gardens and squares, and the sites of disused burial grounds, might be kept in a healthier condition if a more liberal supply of water were given.

Under recent powers, more of the disused city graveyards and burial grounds will be dealt with. The effacement of these long-neglected, rank, unwholesome places is in itself a gain to propriety and sanitation, but the full benefits resulting from their conversion into ornamental gardens will not be realised unless ample provision is made for watering.

The importance of this matter from a health point of view is apt to be under-estimated. Indirectly, but yet in ways obvious enough, the advantage to public health is increased as the attractiveness of the parks and gardens is enhanced. Lakes and ornamental water-courses must be removed from the negative condition of being no nuisance, to the positive one of being a distinct benefit, the water must be pure and derived from a pure source; rainfall alone is too uncertain in quantity to be solely relied upon, and at all times slush and mud may be washed in which is hardly fit for a lake in a public recreation ground. During the past year upwards of one hundred tons of mud, washed in, have been removed from the water-course near the bridge in Sefton Park. The two fountains which have been fixed in Sefton Park Lake and the supply to the grotto are a considerable help in maintaining the water in a pure condition.

The lakes of Newsham and Stanley Parks are fed much in the same way as Sefton Park, and, as a consequence, quantities of mud are washed into them, with detrimental results.

Mr. Plummer, M.A., F.R.A.S., Astronomer to the Mersey Docks and Harbour Board, has kindly supplied the following tables relating to Meteorological observations made by him at the Liverpool Observatory, Bidston :—

LIVERPOOL OBSERVATORY, BIDSTON, BIRKENHEAD.

Latitude 53° 24' 5" N.; Longitude 3° 4' 20" W.

Height above the Mean Level of the Sea, 202 feet.

| Year and Month, 1898. | Barometer. Mean. | Temperature. Mean. | Rainfall. Amount. | No. of days on which 0·01 ins. or more rain fell. | Mean Monthly Humidity. Complete Satur- ation equal 100. |
|--------------------------|---------------------|-----------------------|----------------------|--|--|
| | Inches. | Degrees. | Inches. | | |
| January | 30·264 | 45·1 | 1·578 | 14 | 83 |
| February | 29·895 | 41·3 | 1·807 | 20 | 81 |
| March | 29·928 | 40·4 | 0·755 | 14 | 80 |
| April | 29·863 | 47·5 | 1·911 | 11 | 74 |
| May | 29·833 | 50·1 | 4·511 | 17 | 78 |
| June | 29·968 | 56·7 | 2·331 | 13 | 77 |
| July | 30·114 | 58·7 | 0·475 | 6 | 75 |
| August | 29·967 | 61·2 | 3·837 | 21 | 78 |
| September | 30·058 | 58·8 | 1·394 | 11 | 78 |
| October | 29·796 | 52·1 | 3·496 | 21 | 83 |
| November | 29·808 | 45·5 | 1·668 | 16 | 85 |
| December | 29·952 | 46·6 | 1·956 | 19 | 83 |

DIFFERENCES FROM THE AVERAGE QUANTITIES OBSERVED DURING THE LAST 30 YEARS.

| 1898. | BAROMETER. | | TEMPERATURE. | | RAINFALL. | |
|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| | Above Average. | Below Average. | Above Average. | Below Average. | Above Average. | Below Average. |
| | Inches. | Inches. | Degrees. | Degrees. | Inches. | Inches. |
| January | 0·340 | .. | 5·9 | .. | .. | 0·530 |
| February | .. | 0·063 | 0·1 | .. | 0·171 | .. |
| March | 0·031 | .. | .. | 1·7 | .. | 0·987 |
| April | .. | 0·038 | 0·2 | .. | 0·304 | .. |
| May | .. | 0·133 | .. | 1·7 | 2·699 | .. |
| June | .. | 0·020 | .. | 0·7 | 0·315 | .. |
| July | 0·192 | .. | .. | 2·1 | .. | 2·431 |
| August | 0·060 | .. | 0·7 | .. | 0·949 | .. |
| September | 0·126 | .. | 2·6 | .. | .. | 1·786 |
| October | .. | 0·072 | 2·6 | .. | .. | 0·091 |
| November | .. | 0·088 | 2·3 | .. | .. | 1·091 |
| December | 0·080 | .. | 6·7 | .. | .. | 0·576 |

OBSERVATIONS OF VELOCITY OF WIND.

| 1898. | Average Hourly Velocity for Month. | Maximum Hourly Velocity. | Date of Maximum Velocity. | Minimum Hourly Velocity. | Date of Minimum Velocity. |
|--------------|--|--------------------------------|---------------------------------|--------------------------------|---------------------------------|
| | Miles per hr. | Miles. | | Miles | |
| January .. | 16·0 | 57 | Jan. 30 | 0 | Jan. 2 |
| February .. | 25·1 | 68 | Feb. 2 | 1 | Feb. 17, 24 |
| March .. | 16·6 | 55 | Mar. 1 | 1 | Mar. 5, 8, 11, 22, 29, 31 |
| April | 15·9 | 44 | April 30 | 0 | April 24 |
| May | 16·2 | 58 | May 11 | 1 | May 13 |
| June | 13·9 | 46 | June 1 | 1 | June 8, 13 |
| July | 15·9 | 41 | July 3 | 2 | July 1 |
| August .. | 16·6 | 56 | Aug. 30 | 1 | Aug. 14, 15, 16, 25 |
| September .. | 14·0 | 49 | Sept. 18 | 1 | Sept. 4, 8 |
| October .. | 14·8 | 46 | Oct. 31 | 1 | Oct. 1, 2, 3, 19, 21, 27 |
| November .. | 16·0 | 47 | Nov. 3 | 1 | Nov. 13, 29 |
| December .. | 21·8 | 60 | Dec. 2 | 0 | Dec. 21 |

CLEANSING AND SCAVENGING.

During the year marked benefit has resulted from the extension of the practice of street washing; this was experimentally commenced in 1895, and has been gradually extended since. Such other improvements in the details of the methods of cleansing and scavenging the streets as it has been possible to put into operation, have also contributed to the health and comfort of the inhabitants. Complaints have been fewer, and there is no doubt that the general appearance of the streets, more especially the main streets, has been improved; but, owing to the great difficulties which the bad construction of many of the smaller streets and the want of adequate back passages give rise to, many obstacles have yet to be overcome before the collection and removal of domestic refuse can be regarded as altogether satisfactory.

The practice of depositing the contents of ashpits upon the street surface, and leaving them to be blown about by the winds or scattered by traffic, or where children can play with it, will, it may be hoped, soon be obviated.

With regard to street washing, it is now plain that the water can be applied in such a way as to effect the purpose desired, without in any way damaging the surface of the street. During the hot weather of last year, street washing was considerably extended; 107 streets were washed once a week, 60 streets twice a week, 7 three times a week, 1 four times a week, and all tunnel entrances to courts were washed three times a week.

Heavy falls of rain were, as is always the case in the summer months, followed by immense benefit, and the close connection between the thorough washing of the streets by rain, and the diminution in the prevalence of autumnal diarrhœa, is very striking. Attention to the cleansing of courts and alleys requires to be incessant, since the least relaxation in the efforts of the officers of the Committee results at once in the grossest filthiness on the part of the occupants, most of whom are indifferent, and very many drunken.

In addition to the ordinary street washing, a system which ought to be largely extended in the interests of health, is special hosing, with unstinted hand, of footwalks, cab ranks, omnibus and tramway stations, &c.

A more liberal supply of water for the purposes of flushing domestic and office drains, public and private urinals, &c., will be largely beneficial.

At present all private, domestic, and office drains are flushed by the City Engineer's staff twice a year, and there can be no question that a more frequent and very thorough flushing would be attended with great advantage.

It is particularly striking to note how the value of street washing, drain flushing, and so forth, is illustrated by the effects of heavy rainfall. As has been shown in previous reports, it is an almost invariable experience that the choleraic disease of the summer and autumn months is highest when rainfall is low, and declines to its minimum when sudden and heavy, rather than continuous, rainfall occurs. The explanation is that in a fine and warm summer, the accumulations of dust and dirt, largely unavoidable unless removed by washing, give rise to a filth-laden atmosphere, and the mischief which follows from such a condition. No one could fail to appreciate this who has noticed the foul smells arising in warm weather from cab ranks, omnibus stations, etc.

The connection between cleanliness and health is indicated by the table showing the association of rainfall with diminished mortality from choleraic diarrhoea, during the last twenty years, six of which were average wet summers, with relatively low mortality, and fourteen were average dry summers, with considerably higher mortality; the extremes being 1891 and 1895:—

| Period. | | Average Annual Rainfall, June to September. | | Annual Average of Deaths from Zymotic Diarrhoea during the Third Quarter of the year. | |
|----------------|-----------|--|-----|---|---------|
| Six years | ... | 13·8 inches | ... | { Average wet Summers } | ... 373 |
| Fourteen years | | 10·9 inches | ... | { Average dry Summers } | ... 573 |
| Extreme years. | Year 1891 | ... 16 inches | .. | { Wet Summer } | ... 203 |
| | Year 1895 | ... 7·7 inches | ... | { Dry Summer } | ... 819 |

The difference in rainfall in the two years 1891 and 1895 means that upwards of 900 millions of gallons of water were distributed to the then City in the season of low mortality, which were absent in the year of high mortality.

It may be necessary to explain that public cleanliness is only one factor in the prevention of this form of disease, but at the same time it is one of the most important, and it is easy to see the benefits which must result when Nature applies an additional 900 million gallons of water to cleansing purposes.

The City Engineer has kindly supplied the following table, which indicate the magnitude of the operations carried out by that portion of the staff under his control:—

TABLE No. 1.
NIGHT SERVICE FOR EMPTYING MIDDENS, COURT ASHPITS, AND SOME OFFICE ASHPITS.

Consequent upon the gradual extinction of middens, either by entire demolition or by the conversion of them into dry ashpits, the operations of the night service are now confined to the removal of domestic and office ashes from the neighbourhood of the Exchange, where it would be impracticable to perform the necessary work during business hours.

| Notices Received. | Middens, &c., Emptied. | Loads of Nightsoil and Ashes. | | | | Nightly average Working Staff. | | | | Analysis of Work. | | Average contents of each Midden. | | |
|----------------------|------------------------------|-------------------------------|--------|------------------|------------------------|--------------------------------|---------------|--------|---------|--------------------------------|---------------------------------|---|---|-----|
| | | Number Removed. | | Where Deposited. | | Midden Men. | Wharf Men. | Carts. | Horses. | Loads per Man per Night. | Loads per Cart per Night. | | | |
| | | Manure. | Ashes. | Total. | Chisen- hale Street | | | | | | | | Sandhills. Dock, and Queens Half-Tide Dock. | |
| 629 | 4,060 | .. | 4,598 | 4,598 | 4,529 | .. | 69 | 6.5 | 1. | 3. | 3. | 2.3 | 4.9 | 1.1 |

TABLE No. 2.

SERVICE FOR THE COLLECTION AND REMOVAL OF DRY ASHPIT ASHES.

| Notices Received. | Ashpits Emptied. | Loads of Dry Ashes. | | | | | | | | | | Average Daily Working Staff. | | | Analysis of Work. | | Average contents of each Ashpit. |
|------------------------|---------------------|---------------------|--|-----------|---------------------------------|----------------------------------|----------------------|-------|----------------|----------------------|---------|------------------------------|----------------------------|-----|----------------------|--|---|
| | | Number Removed. | Where Deposited. | | | | | | Ashpit Men. | Carts and Wagons. | Horses. | Loads per Man per Day. | Loads per Cart per Day. | | | | |
| Chisen hale Street. | Sandhills. | | River Craft Dock, and Queens Half-Tide Dock. | Waverree. | Rathbone Road Destructor. | Smithdown Road Destructor. | Rubbish Tips, &c. | | | | | | | | | | |
| 2,047 | 730,950 | 97,729 | 19,968 | 20,945 | 18,012 | 20 | 6,304 | 7,301 | 25,179 | 124.5 | 73.5 | 93.1 | 1.2 | 4.2 | .13 | | |

It will be observed that the number of notices received to empty ashpits is only .3 per cent. of the total number of ashpits actually emptied. The number of brick ashpits within the old City and Added Areas is approximately 65,000, and the figures show that the average number of times each ashpit was emptied was 11.2. From the 65,000 pits 97,729 loads were removed, therefore, the average contents at each time of emptying was only .13 of a load.

TABLE No. 3.
SERVICE FOR THE COLLECTION AND REMOVAL OF BELL CART ASHES.

The bell cart service is one of the greatest importance, as it provides the means for the daily removal of domestic refuse from shops, business premises, and dwellings, which have not any convenience for the storage of ordinary household waste except from day to day. The service is also one demanding, not only regular attention as regards daily observance, but it must be conducted at certain hours of the morning to suit the convenience of the tenants.

It is an exceedingly important service from a sanitary point of view, and householders should avail themselves of its advantages to the fullest.

| Loads Removed. | Where Deposited. | | | | | | Carts Employed. |
|-------------------|-----------------------|------------|----------------------|------------------------------|---------------------------------|----------------------------------|--------------------|
| | Chisenhale Street. | Sandhills. | River Craft Dock. | Queens Halt-Tide Dock. | Rathbone Road Destructor. | Smithdown Road Destructor. | Rubbish Tips. |
| 21,731 | 9,670 | 2,373 | 6,282 | 106 | 981 | 1,600 | 719 |
| | | | | | | | 14.2 |

TABLE No. 4.
SERVICE FOR FLUSHING AND CLEANSING TROUGH WATER CLOSETS, &c.

| Underground Conveniences. | Urinals. | Number of Trough Water Closets. | Average Working Staff. | |
|---------------------------|-----------------|---------------------------------|------------------------|--|
| | | | Trough W. C. Men. | Underground Conveniences and Urinal Men. |
| 17-146 Stalls. | 225-719 Stalls. | 2,419 | 36.9 | 15, and 4 partially engaged. |

The regular and frequent flushing of trough water closets has a material influence upon the maintenance of public health, more especially so as this form of closet has been found necessary for the tenants of confined and densely-populated portions of the City. During the Summer months a large number of the urinals and the major proportion of the trough water closets are cleansed and disinfected twice daily. During the remaining part of the year each receives daily attention.

TABLE No. 7.

SERVICE FOR STREET WATERING.

A great quantity of water is spread upon the streets during the Summer months, and a small proportion of the total is also used for washing their surfaces throughout the year under certain conditions of weather. It may be taken that upwards of 63 millions gallons of water were distributed during the season ; a small proportion of the whole being taken from the salt-water mains.

FRESH WATER.

| Number of Days on which Carts were out. | Total Number of Loads Distributed. | | | Average Daily Staff employed during the Season. | | Average No. of Loads Distributed Daily per Cart. |
|---|------------------------------------|--------|-------------|---|-------------------|--|
| | | | | | | |
| | Large. | Small. | | Watermen. | Carts and Horses. | Large. |
| | | Day. | Night. Day. | | | |
| 205 | 207,772 | 11,528 | 18,444 | 25·2 | 35· | 30·5 |

SALT WATER.

| Number of Days on which Carts were out. | Total Number of Loads Distributed. | | | Average Daily Staff employed during the Season. | | Average No. of Loads Distributed Daily per Cart. |
|---|------------------------------------|--------|-------------|---|-------------------|--|
| | | | | | | |
| | Large. | Small. | | Watermen. | Carts and Horses. | Large. |
| | | Day. | Night. Day. | | | |
| 85 | 1,962 | .. | .. | ·3 | ·6 | 38·4 |

TABLE No. 8.

REMOVAL OF GARBAGE FROM ABATTOIR.

| Loads Removed. | Where Deposited. | | | Carts employed Daily. |
|-------------------|-----------------------|------------|--|-----------------------------|
| | Chisenhale Street. | Sandhills. | River Craft Dock, and Queens Half-Tide Dock. | |
| 1,477 | 1,260 | — | 217 | 1·2 |

TABLE No. 9.

REMOVAL OF HORSE, COW, AND FOWL MANURE.

| GRAND TOTAL. | | | | CHISENHALE STREET. | | | | RIVER CRAFT DOCK AND QUEEN'S HALF-TIDE DOCK. | | | | SANDHILLS. | | | | WAVERTREE. | | | |
|--------------|------|-------|-------|--------------------|------|-------|--------|--|------|-------|--------|------------|------|-------|--------|------------|------|-------|--------|
| Horse. | Cow. | Fowl. | Total | Horse. | Cow. | Fowl. | Total. | Horse. | Cow. | Fowl. | Total. | Horse. | Cow. | Fowl. | Total. | Horse. | Cow. | Fowl. | Total. |
| 884 | 407 | 32 | 1,323 | 471 | 256 | 32 | 759 | 345 | 151 | .. | 496 | 54 | .. | 54 | 14 | .. | .. | .. | 14 |

TABLE No. 10.
DESPATCHES OF MANURE AND REFUSE.

| | Saleable Manure. | | | Unsaleable Refuse. | | | | | | | Grand Total in Tons. | Average Daily Staff. | | |
|---|------------------|------------|----------|--------------------|--------------|----------|---------|---------|-------------|--------------|----------------------|----------------------|-------------------------|------------|
| | Night Soil. | Sweepings. | Mixture. | Total. | Contractors. | Farmers. | Depôts. | Sea. | Destructor. | Sundry Tips. | | Total. | Inspectors and Foremen. | Labourers. |
| Chisenhale St., by Flats.. | .. | 864 | 5,568 | 32 | 1,344 | 52,560 | 816 | .. | .. | .. | 54,720 | } | 1. | 24.1 |
| Sandhills, do. .. | .. | .. | .. | .. | 864 | 11,760 | 2,208 | .. | .. | .. | 14,832 | | | |
| Do., by Rail .. | .. | 923 | .. | 923 | .. | 9,039 | .. | .. | .. | .. | 9,039 | } | .. | 2.1 |
| Wavertree do. .. | .. | 2,928 | .. | 2,928 | .. | 920 | .. | .. | .. | .. | 920 | | | |
| Chisenhale Street and Sandhills, <i>via</i> Stanley D'k | .. | .. | .. | .. | .. | .. | .. | 8,485 | .. | .. | 8,485 | } | .. | 4.5 |
| per "Alpha" | .. | .. | .. | .. | .. | .. | .. | 62,555 | .. | .. | 62,555 | | | |
| per "Beta" | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | } | 1. | 5.2 |
| River Craft Dock and Queens Half-Tide Dock. | .. | 1,035 | 2,630 | 3,665 | .. | 205 | .. | .. | .. | .. | 205 | | | |
| Do., per "Alpha" | .. | .. | .. | .. | .. | .. | .. | 67,758 | .. | .. | 67,758 | } | .. | 51.6 |
| Do., per "Beta" | .. | .. | .. | .. | .. | .. | .. | 5,440 | .. | .. | 5,440 | | | |
| Chisenhale Street Wharf. | .. | .. | .. | .. | .. | .. | .. | .. | 32,635 | .. | 32,635 | } | .. | .. |
| Rathbone Road | .. | .. | .. | .. | .. | .. | .. | .. | 10,755 | .. | 10,755 | | | |
| Smithdown Road | .. | .. | .. | .. | .. | .. | .. | .. | 11,019 | .. | 11,019 | } | .. | 3.8 |
| Sundry Tips | .. | .. | .. | .. | .. | .. | .. | .. | 69,151 | 69,151 | 69,151 | | | |
| .. | .. | 5,750 | 8,198 | 13,948 | 2,208 | 74,484 | 3,024 | 144,238 | 54,409 | 69,151 | 347,514 | 2. | .. | 91.3 |

The foregoing Table shows that in all not less than 361,462 tons of town refuse have been disposed of by the various means available for the purpose. Large as the total is, it does not represent the quantity actually collected and carted to the Wharves, for during the Winter months a large proportion of the street sweepings consists of a quantity of water, which is drained out before it is dispatched from the Wharves and Railway Sidings.

TABLE No. 11

Deals with the horses employed on the work of the Cleansing Department.

HORSES.—DAILY AVERAGE NUMBER.

| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------|----|------------------|------|------------------|----|-------------------|------|--------------------|------|-------------------------|-----|---------------------------|------|----------|----|---------|-----|-----------|------|----------------------------------|-----|-----------|-----|----------|-----|---------------|---|
| Night Ash Removal. | 3. | Dry Ash Removal. | 92.6 | Sundry Ash Tips. | .6 | Beil Ash Removal. | 19.9 | Street Scavenging. | 82.4 | Sweeping Machines, Day. | 8.2 | Sweeping Machines, Night. | 17.1 | Wharves. | .2 | Market. | 1.2 | Watering. | 19.9 | Watering before Street Machines. | 3.5 | Abattoir. | 1.2 | Cannals. | 2.8 | Carting Salt. | — |
|--------------------|----|------------------|------|------------------|----|-------------------|------|--------------------|------|-------------------------|-----|---------------------------|------|----------|----|---------|-----|-----------|------|----------------------------------|-----|-----------|-----|----------|-----|---------------|---|

TABLE No. 12.

AVERAGE DAILY STAFF OF MEN EMPLOYED.

Dealing with the number of men actually employed upon the different services, it will be noted that there is a total of 850·2 men always employed.

The trough-closet men number 36·9, and these cleanse once daily in Winter, and in a large number of cases twice daily in Summer—2,419 trough water closets.

The employment of 126·4 ashmen proved sufficient to maintain in first-rate order the 65,000 ashpits contained within the old City and Added Areas, and were capable of emptying these receptacles upon an average of 11·2 times during the twelve months. The disposal of refuse entailed the employment of 93·2 wharf labourers, in addition to 32·6 hands employed upon the steam hopper and canal barges.

| General | Night Service | | | | Day Service. | | | | | | | | | | | | | | | Wharves, Depôts, &c. | | | | | | | | | | Grand Total | 850 | | | | | | | | | | | | | |
|---------|---------------|--------------|--------|------------|--------------|-------------|------------------------|----------|-------------|-----------|-----------------|--------------|------------|-----------------|-------------------|---------|----------|-----------|----------------------|----------------------|--------|------------|------------|------------|------------|------------|------------|----------|----------|-------------|-----|------------|----------|---------------------------------|------------------------------|----------|------------|---------------|------------|--------|---|---|----|---|
| | Inspectors. | Checker, &c. | Clerks | Office Boy | Total. | Inspectors. | District Storekeepers. | Watermen | Narrow Men. | Sweepers. | Cart Followers. | Passage Men. | Gully Men. | Washing Courts. | Trough Closet Men | Casual. | Ash Men. | Boat Men. | Crews Hopper Barges. | Orderly Boys. | Total. | Inspector. | Labourers. | Inspector. | Inspector. | Inspector. | Labourers. | Foreman. | Foreman. | | | Labourers. | Foreman. | Corsey Lane, Mintree, and Ford. | Various Town Deposit Places. | Foreman. | Labourers. | Stanley Dock. | Labourers. | Total. | | | | |
| 79 | 1 | 2 | 1 | 11 | 9 | 1 | 8 | 6 | 27 | 10 | 4 | 11 | 7 | 79 | 5 | 214 | 82 | 4 | 37 | 26 | 5 | 4 | 36 | 9 | 3 | 5 | 126 | 4 | 9 | 1 | 23 | 5 | 1 | 56 | 8 | 1 | 9 | 5 | 9 | .. | 4 | 5 | 94 | 2 |

INSANITARY PROPERTY.

THE UNIVERSITY OF CHICAGO

INSANITARY PROPERTY.

The property included in the Fifteenth Presentment differed in one important respect from that dealt with in previous presentments, by reason of a very large proportion of it being scattered in various parts of the city, the sites consequently affording very little available area upon which houses could be built for the people displaced. This property, like the rest of its class, had been erected at a time when there were no building regulations to control the operations of builders, and it furnished striking evidence of the absolute disregard of the requirements of sanitation and decency.

The dwellings in question were erected upon what ought to have been the open spaces connected with other dwellings; but, at the time of their erection, it was the practice, whenever it was physically possible, to construct a small, pent-up alley or court upon any spot which afforded room.

In the property dealt with under the Fifteenth Presentment, by reason of the smallness of the isolated groups, the nuisance was less than it would have been in a larger area, but it is obvious that property of this kind calls for attention as urgently as any other.

The presentment included a total of 365 houses, and 54 of them were unoccupied, owing, in many cases, to their extreme dilapidation; this proportion of unoccupied houses is, however, considerably below the average.

The general arrangement of the dwellings correspond to the well-known and often-described court property in Liverpool, the houses being back to back and side to side with others, having no adequate or through ventilation, and without a sufficient closet accommodation to fulfil the requirements of health and decency. In many instances little, if any, sunlight could get to the courts, and the atmosphere within the dwellings was always foul, owing largely to the saturated condition of the walls and ceilings, which for so many years had absorbed the exhalations of the occupants into their porous material. Singular testimony to the absence of sunlight in these courts was furnished by the action of the Parks and Gardens Committee, who desired to brighten the homes of the poorest class by gifts of growing flowers and window boxes; but these gifts could not be made in courts such as these, as flowers and plants were susceptible to the unwholesome surroundings, and would not live.

The number of inhabitants displaced by the presentment was 1,528; the rate of mortality amongst them during the last two years had been 37 per thousand, as against a death rate of 23 per thousand in the whole City during the same period. One of the isolated groups of the property had further forced itself upon the attention by the prevalence of typhus fever, which, for a considerable period, gave rise to much anxiety, and was with difficulty held in check.

As is usual in property of the kind, the owners, apparently recognising its hopeless character, neglected to remedy the more gross sanitary defects incidental to it, such as defective roofs, choked drains, defective cisterns, dangerous walls, etc. No less than 333 notices to abate nuisances were issued from the Sanitary Department in one year, relating to the houses dealt with in this presentment.

Some photographs of the insanitary property are shown (see page 196). In photograph (1) the two tunnel entrances to the court are well illustrated, and photograph (2) shows the front of the houses, these having no back at all, being back to back with similar ones. The character of the occupants is also indicated by the photographs.

Photographs (3) and (4) show some types of dwellings erected by the Corporation upon sites cleared of insanitary dwellings.

It seems almost superfluous to point out either the impossibility of placing upon the cleared areas as many houses as formerly occupied the site, or the undesirability of doing so, even if it were possible. When locomotion to the outskirts is easy and cheap, the advantages to the working-man and his family, resulting from cheaper rents and fresher air, need not be emphasised. The best interests of the working man are served rather in this direction than in seeking to re-house him and his family upon small sites, shut up by warehouses and commercial buildings, and made costly by the value of the site which increases with the growth of commerce.

It may be remarked that the good effect of sanitary operations, which are admitted on all hands to be necessary, is enhanced if they can be speedily carried out. This is especially the case in dealing with insanitary property.

Protracted delay in carrying out the successive steps in effecting purchases of property, in demolishing it, in re-building either on the same sites or elsewhere, one and all add to the mischief; and it must be borne in mind that, with lapse of time, worn-out, ruinous, ill-ventilated, sunless hovels are becoming year by year more deteriorated and more prejudicial to the health of the occupants.

FIFTEENTH PRESENTMENT.

The court known as No. 2 court in SOHO STREET in the City of Liverpool.

The dwelling-houses numbered 1, 2, 3, 4, 5, 6 and 8 in the said No. 2 court.

The court known as No. 2 court in DALTON STREET in the City of Liverpool.

The dwelling-houses numbered 1, 2, 3, 4, 5, 6, 7 and 8 in the said No. 2 court.

The dwelling-houses numbered 6 and 8 in DALTON STREET aforesaid, contiguous to No. 2 court in the said street.

The court known as No. 4 court in DALTON STREET aforesaid.

The dwelling-houses numbered 1, 2, 3, 4, 5, 6, 7 and 8 in the said No. 4 court.

The dwelling-houses numbered 10 and 12 in DALTON STREET aforesaid, contiguous to No. 4 court in the said street.

The court known as No. 6 court in DALTON STREET aforesaid.

The dwelling-houses numbered 1, 2, 3, 4, 5 and 6 in the said No. 6 court.

The dwelling-houses numbered 14 and 16 in DALTON STREET aforesaid, contiguous to No. 6 court in the said street.

The court known as No. 1 court in UPPER DALTON STREET in the City of Liverpool.

The dwelling-houses numbered 1, 2, 3, 4, 5, 6, 7, 8 and 10 in the said No. 1 court.

The dwelling-houses numbered 21 and 23 in UPPER DALTON STREET aforesaid, contiguous to No. 1 court in the said street.

The court known as No. 3 court in UPPER DALTON STREET aforesaid.

The dwelling-houses numbered 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 and 14 in the said No. 3 court.

The dwelling-houses numbered 25 and 27 in UPPER DALTON STREET aforesaid, contiguous to No. 3 court in the said street.

The court known as No. 2 court in UPPER DALTON STREET aforesaid.

The dwelling-houses numbered 1, 2, 3, 4, 5, 6, 7, 8 and 9 in the said No. 2 court.

The dwelling-house numbered 24 in UPPER DALTON STREET aforesaid, contiguous to No. 2 court in the said street.

The court known as No. 4 court in UPPER DALTON STREET aforesaid.

The dwelling-houses numbered 1, 2, 3, and 4 in the said No. 4 court.

The dwelling-houses numbered 26 and 28 in UPPER DALTON STREET aforesaid, contiguous to No. 4 court in the said street.

The court known as No. 1 court in MOUNT VERNON ROAD in the City of Liverpool.

The dwelling-houses numbered 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10 in the said No. 1 court.

The dwelling-house numbered 5 in MOUNT VERNON ROAD aforesaid, contiguous to No. 1 court in the said street.

The court known as No. 3 court in MOUNT VERNON ROAD aforesaid.

The dwelling-houses numbered 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 and 11 in the said No. 3 court.

The dwelling-house numbered 7 in MOUNT VERNON ROAD aforesaid, contiguous to No. 3 court in the said street.

The court known as No. 1 court in JERVIS STREET in the City of Liverpool.

The dwelling-houses numbered 1, 2, 3, 4, 5 and 6 in the said No. 1 court.

The dwelling-houses numbered 17, 19 and 21 in JERVIS STREET aforesaid, contiguous to No. 1 court in the said street.

The dwelling-houses numbered 18, 20 and 22 in TROWBRIDGE STREET in the City aforesaid, contiguous to No. 1 court in JERVIS STREET.

The court known as No. 1 court in BROWNLOW HILL in the City of Liverpool.

The dwelling-houses numbered 1, 2 and 3 in the said No. 1 court.

The court known as No. 3 court in BROWNLOW HILL aforesaid.

The dwelling-house numbered 1 in the said No. 3 court.

The court known as No. 2 court in OLDHAM PLACE in the City of Liverpool.

The dwelling-houses numbered 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10 in the said No. 2 court.

The court known as No. 2 court in ROSCOE STREET in the City of Liverpool.

The dwelling-houses numbered 1, 2, 3 and 4 in the said No. 2 court.

The dwelling-house numbered 10 in ROSCOE STREET aforesaid, contiguous to No. 2 court in the said street.

The court known as No. 4 court in ROSCOE STREET aforesaid.

The dwelling-houses numbered 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12 in the said No. 4 court.

The dwelling-houses numbered 12 and 14 in ROSCOE STREET aforesaid, contiguous to No. 4 court in the said street.

The court known as No. 6 court in ROSCOE STREET aforesaid.

The dwelling-houses numbered 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12 in the said No. 6 court.

The dwelling-houses numbered 16 and 18 in ROSCOE STREET aforesaid, contiguous to No. 6 court in the said street.

The court known as No. 8 court in ROSCOE STREET aforesaid.

The dwelling-houses numbered 1, 2, 3, and 4 in the said No. 8 court.

The dwelling-houses numbered 20 and 22 in ROSCOE STREET aforesaid, contiguous to No. 8 court in the said street.

The court known as No. 1 court in LEECE STREET in the City of Liverpool.

The dwelling-houses numbered 2, 3, 4, 5, 6, 7, 8, 9, 10 and 12 in the said No. 1 court.

The court known as No. 3 court in LEECE STREET aforesaid.

The dwelling-houses numbered 1, 2, 3, 4, 5, 6, 7, 8 and 9 in the said No. 3 court.

The court known as No. 2 court in BACK LEECE STREET in the City of Liverpool.

The dwelling-houses numbered 1, 2, 3, 5 and 6 in the said No. 2 court.

The court known as No. 2 court in BACK RENSHAW STREET in the City of Liverpool.

The dwelling-houses numbered 1, 2, 3, and 4 in the said No. 2 court.

The dwelling-houses numbered 20, 22, 24 and 26 in BACK RENSHAW STREET aforesaid, contiguous to No. 2 court in the said street.

The court known as No. 1 court in PILGRIM STREET in the City of Liverpool.

The dwelling-houses numbered 1, 2, 3, 4, 5, 6, 7 and 8 in the said No. 1 court.

The dwelling-houses numbered 21 and 23 in PILGRIM STREET aforesaid, contiguous to No. 1 court in the said street.

The court known as No. 2 court in RICE STREET in the City of Liverpool.

The dwelling-houses numbered 1 and 2 in the said No. 2 court.

The dwelling-houses numbered 2 and 4 in RICE STREET aforesaid, contiguous to No. 2 court in the said street.

The court known as No. 4 court in RICE STREET aforesaid.

The dwelling-houses numbered 1, 2, 3 and 4 in the said No. 4 court.

The dwelling-house numbered 6 in RICE STREET aforesaid, contiguous to No. 4 court in the said street.

The court known as No. 6 court in RICE STREET aforesaid.

The dwelling-houses numbered 1, 2, 3, 4, 5, 6, 7 and 8 in the said No. 6 court.

The dwelling-houses numbered 8 and 10 in RICE STREET aforesaid, contiguous to No. 6 court in the said street.

The court known as No. 1 court in BEAUFORT STREET in the City of Liverpool.

The dwelling-houses numbered 1, 2, 3, 4, 5, 6, and 7 in the said No. 1 court.

The court known as No. 23 court in UPPER FREDERICK STREET in the City of Liverpool.

The dwelling-houses numbered 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10 in the said No. 23 court.

The court known as No. 5 court in ATHERTON STREET in the City of Liverpool.

The dwelling-houses numbered 1, 2, 3, 4 and 5 in the said No. 5 court.

The dwelling-house numbered 17 in ATHERTON STREET aforesaid, contiguous to No. 5 court in the said street.

The court known as No. 7 court in **ATHERTON STREET** aforesaid.

The dwelling-houses numbered 1, 2 and 3 in the said No. 7 court.

The dwelling-house numbered 31 in **ATHERTON STREET** aforesaid, contiguous to No. 7 court in the said street.

The court known as No. 1 court in **LANCELOT'S HEY** in the City of **Liverpool**.

The dwelling-houses numbered 2 and 3 in the said No. 1 court.

The court known as No. 1 court in **VERNON STREET** in the City of **Liverpool**.

The dwelling-houses numbered 1, 2 and 3 in the said No. 1 court.

The court known as No. 3 court in **VERNON STREET** aforesaid.

The dwelling-houses numbered 1, 2 and 4 in the said No. 3 court.

The court known as No. 2 court in **VERNON STREET** aforesaid.

The dwelling-houses numbered 1, 2, 3, 4 and 5 in the said No. 2 court.

The dwelling-houses numbered 18 and 20 in **VERNON STREET** aforesaid, contiguous to No. 2 court in the said street.

The court known as No. 4 court in **VERNON STREET** aforesaid.

The dwelling-houses numbered 2, 3 and 4 in the said No. 4 court.

The dwelling-house numbered 24 in **VERNON STREET** aforesaid, contiguous to No. 4 court in the said street.

The dwelling-house numbered 42 in **FONTENOY STREET** in the City of **Liverpool**.

The court known as No. 2 court in **FONTENOY STREET** aforesaid.

The dwelling-houses numbered 1, 2, 3 and 4 in the said No. 2 court.

The court known as No. 2 court in **GRAHAM'S PLACE** in the City of **Liverpool**.

The dwelling-houses numbered 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 and 11 in the said No. 2 court.

The dwelling-houses numbered 2 and 4 in **GRAHAM'S PLACE** aforesaid, contiguous to No. 2 court in **GRAHAM'S PLACE**.

The court known as No. 5 court in JOHNSON STREET in the City of Liverpool.

The dwelling-houses numbered 1, 2, 3 and 4 in the said No. 5 court.

The dwelling-house numbered 49 in JOHNSON STREET aforesaid, contiguous to No. 5 court in the said street.

The court known as No. 3 court in BENT STREET in the City of Liverpool.

The dwelling-houses numbered 1, 2, 3 and 4 in the said No. 3 court.

The dwelling-houses numbered 21 and 23 in BENT STREET aforesaid, contiguous to No. 3 court in the said street.

The court known as No. 1 court in BANASTRE STREET in the City of Liverpool.

The dwelling-houses numbered 1, 2, 3, 4, 5 and 6 in the said No. 1 court.

The dwelling-houses numbered 39 and 41 in BANASTRE STREET aforesaid, contiguous to No. 1 court in the said street.

The dwelling-houses numbered 50 and 52 in FREEMASON'S ROW in the City aforesaid, contiguous to No. 1 court in BANASTRE STREET.

The court known as No. 2 court in GASCOYNE STREET in the City of Liverpool.

The dwelling-house numbered 1 in the said No. 2 court.

The dwelling-house numbered 18 in GASCOYNE STREET aforesaid, contiguous to No. 2 court in the said street.

The dwelling-houses numbered 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24 and 25 in ELM TERRACE, METLEY STREET, in the City of Liverpool.

The dwelling-houses numbered 1, 3, 5, 7 and 9 in ELM ROAD, in the said City.

The dwelling-houses numbered 24 and 26 in STANCLIFFE STREET, in the said City.

The dwelling-houses numbered 32 and 34 in HUGHSON STREET, in the said City.

The dwelling-house, unnumbered, situated between 29A and 35 in ALEXANDER POPE STREET, in the said City.

The dwelling-houses numbered 50, 52 and 54 (formerly 36, 38 and 40) in PAUL STREET, in the said City.

The dwelling-houses numbered 1, 3, 5, 7 and 9 in MARSHALL PLACE, MAGUIRE STREET, in the said City.

The dwelling-house numbered 43 in MAGUIRE STREET, in the said City.

In addition to the foregoing dealt with by presentment, the Medical Officer of Health certified that the following premises were unfit for human habitation and ought to be demolished. These reports were laid before the Council, and referred to the Insanitary Property Committee, who purchased the property, and caused it to be demolished:—

The court known as No. 4 court in KEMPSTON STREET in the City of Liverpool.

The dwelling-houses numbered 1, 2, 3, 4, 5 and 6 in the said No. 4 court.

The dwelling-houses numbered 102 and 104 in KEMPSTON STREET aforesaid, contiguous to No. 4 court in the said street.

The court known as No. 15 court in KEMPSTON STREET aforesaid.

The dwelling-houses numbered 2, 4, 6 and 8 in the said No. 15 court.

The dwelling-house numbered 67 in KEMPSTON STREET aforesaid, contiguous to No. 15 court in the said street.

The court known as No. 17 court in KEMPSTON STREET aforesaid.

The dwelling-houses numbered 1, 2, 3, 4, 5, 6, 7 and 8 in the said No. 17 court.

The dwelling-houses numbered 69 and 71 in KEMPSTON STREET aforesaid, contiguous to No. 17 court in the said street.

The court known as No. 19 court in KEMPSTON STREET aforesaid.

The dwelling-houses numbered 1, 3, 5 and 7 in the said No. 19 court.

The dwelling-house numbered 73 in KEMPSTON STREET aforesaid, contiguous to No. 19 court in the said street.

The court known as No. 21 court in KEMPSTON STREET aforesaid.

The dwelling-houses numbered 1, 2, 3, 4 and 5 in the said No. 21 court.

The dwelling-house numbered 77 in KEMPSTON STREET aforesaid, contiguous to No. 21 court in the said street.

The court known as No. 23 court in KEMPSTON STREET aforesaid.

The dwelling-houses numbered 1, 2, 3, 4, 5, 6, 7 and 8 in the said No. 23 court.

The dwelling-houses numbered 99 and 101 in KEMPSTON STREET aforesaid, contiguous to No. 23 court in the said street.

The court known as No. 25 court in KEMPSTON STREET aforesaid.

The dwelling-houses numbered 1, 2, 3, 4, 5, 6, 7, 8 and 9 in the said No. 25 court.

The dwelling-houses numbered 103 and 105 in KEMPSTON STREET aforesaid, contiguous to No. 25 court in the said street.

The dwelling-house numbered 57 in KEMPSTON STREET aforesaid.

The dwelling-houses numbered 4, 6, 8, 10, 16, 18 and 20 in GILDART STREET in the City of Liverpool.

The court known as No. 1 court in BAYHORSE LANE in the City of Liverpool.

The dwelling-houses numbered 1, 2, 3 and 4 in the said No. 1 court.

The dwelling-houses numbered 1, 3 and 5 in BAYHORSE LANE aforesaid, contiguous to No. 1 court in the said street.

The court known as No. 3 court in BAYHORSE LANE aforesaid.

The dwelling-houses numbered 1 and 2 in the said No. 3 court.

The dwelling-house numbered 7 in BAYHORSE LANE aforesaid, contiguous to No. 3 court in the said street.

The court known as No. 5 court in BAYHORSE LANE aforesaid.

The dwelling-houses numbered 1 and 2 in the said No. 5 court.

The dwelling-houses numbered 9 and 11 in BAYHORSE LANE aforesaid, contiguous to No. 5 court in the said street.

The court known as No. 7 court in BAYHORSE LANE aforesaid.

The dwelling-houses numbered 1 and 2 in the said No. 7 court.

The dwelling-houses numbered 13 and 15 in BAYHORSE LANE aforesaid, contiguous to No. 7 court in the said street.

The court known as No. 9 court in BAYHORSE LANE aforesaid.

The dwelling-houses numbered 1 and 2 in the said No. 9 court.

The dwelling-houses numbered 17 and 19 in BAYHORSE LANE aforesaid, contiguous to No. 9 court in the said street.

The court known as No. 2 court in CONSTANCE STREET in the City of Liverpool.

The dwelling-houses numbered 1, 2, 3 and 4 in the said No. 2 court.

The dwelling-houses numbered 12 and 14 in CONSTANCE STREET aforesaid, contiguous to No. 2 court in the said street.

The court known as No. 4 court in CONSTANCE STREET aforesaid.

The dwelling-houses numbered 1, 2, 3 and 4 in the said No. 4 court.

The dwelling-houses numbered 16 and 18 in CONSTANCE STREET aforesaid, contiguous to No. 4 court in the said street.

The court known as No. 6 court in CONSTANCE STREET aforesaid.

The dwelling-houses numbered 1, 2, 3 and 4 in the said No. 6 court.

The dwelling-house numbered 20 in CONSTANCE STREET aforesaid, contiguous to No. 6 court in the said street.

The dwelling-houses numbered 2, 4, 6, 8, 10 and 22 in CONSTANCE STREET in the said City.

The court known as No. 1 court in CLIFFORD STREET in the City of Liverpool.

The dwelling-houses numbered 1, 2, 3 and 4 in the said No. 1 court.

The dwelling-houses numbered 13 and 15 in CLIFFORD STREET aforesaid, contiguous to No. 1 court in the said street.

The court known as No. 8 court in SHELLEY STREET in the City of Liverpool.

The dwelling-houses numbered 1, 3, 5 and 7 in the said No. 8 court.

The dwelling-house numbered 22 in SHELLEY STREET aforesaid, contiguous to No. 8 court in the said street.

The court known as No. 10 court in SHELLEY STREET aforesaid.

The dwelling-houses numbered 2, 4, 6 and 8 in the said No. 10 court.

The dwelling-house numbered 24 in SHELLEY STREET aforesaid, contiguous to No. 10 court in the said street.

The court known as No. 11 court in COMBERMERE STREET in the City of Liverpool.

The dwelling-houses numbered 1, 2, 3, 4, 5, 6, 7 and 8 in the said No. 11 court.

The court known as No. 14 court in NAYLOR STREET in the City of Liverpool.

The dwelling-houses numbered 1, 2, 3, 4, 5, 6, 7 and 8 in the said No. 14 court.

The dwelling-houses numbered 34 and 36 in NAYLOR STREET aforesaid, contiguous to No. 14 court in the said street.

The court known as No. 16 court in NAYLOR STREET aforesaid.

The dwelling-houses numbered 1, 2, 3, 4, 5, 6, 7, 8 and 10 in the said No. 16 court.

The dwelling-houses numbered 38 and 40 in NAYLOR STREET aforesaid, contiguous to No. 16 court in the said street.

The court known as No. 18 court in NAYLOR STREET aforesaid.

The dwelling-houses numbered 1, 2, 3, 4, 5, 6, 7, 8 and 9 in the said No. 18 court.

The dwelling-houses numbered 42 and 44 in NAYLOR STREET aforesaid, contiguous to No. 18 court in the said street.

The dwelling-houses numbered 26, 28, 30, 32, 34, 36 and 38 in BEN JONSON STREET in the said City.

The dwelling-houses numbered 4, 6, 8, 10, 12, 14, 16, 18, 20 and 22 in CALVIN STREET in the said City.

The dwelling-houses numbered 1, 3, 5, 7, 9, 11, 13, 15, 17 and 19 in BURNET STREET in the said City.

The court known as No. 1 court in ENNERDALE STREET in the City of Liverpool.

The dwelling-houses numbered 1, 2 and 3 in the said No. 1 court.

The dwelling-houses numbered 5, 7 and 9 in ENNERDALE STREET aforesaid, contiguous to No. 1 court in the said street.

The court known as No. 3 court in ENNERDALE STREET aforesaid.

The dwelling-house numbered 1 in the said No. 3 court.

The dwelling-house numbered 11 in ENNERDALE STREET aforesaid, contiguous to No. 3 court in the said street.

The dwelling-house numbered 11 in BISPHAM STREET in the City of Liverpool.

The court known as No. 11 court in HENRY EDWARD STREET in the City of Liverpool.

The dwelling-houses numbered 1 and 2 in the said No. 11 court.

The dwelling-houses numbered 25 and 27 in HENRY EDWARD STREET aforesaid, contiguous to No. 11 court in the said street.

The court known as No. 6 court in HENRY EDWARD STREET aforesaid.

The dwelling-houses numbered 1 and 2 in the said No. 6 court.

The dwelling-houses numbered 16 and 18 in HENRY EDWARD STREET aforesaid, contiguous to No. 6 court in the said street.

The court known as No. 12 court in HENRY EDWARD STREET aforesaid.

The dwelling-houses numbered 1 and 2 in the said No. 12 court.

The dwelling-houses numbered 32 and 34 in HENRY EDWARD STREET aforesaid, contiguous to No. 12 court in the said street.

The dwelling-house numbered 97 in FONTENOY STREET in the City of Liverpool.

The premises (unnumbered) consisting of stables at the rear of the dwelling-house numbered 2 in COW LANE, in the City of Liverpool.

The court known as No. 20 court in PORTER STREET in the City of Liverpool.

The dwelling-houses numbered 1, 2, 3, and 4 in the said No. 20 court.

The dwelling-houses numbered 48 and 50 in PORTER STREET aforesaid, contiguous to No. 20 court in the said street.

The court known as No. 11 court in WOODSTOCK STREET in the City of Liverpool.

The dwelling-houses numbered 1, 2, 3, and 4 in the said No. 11 court.

The dwelling-houses numbered 23 and 25 in WOODSTOCK STREET aforesaid, contiguous to No. 11 court in the said street.

The court known as No. 1 court in BACK BOND STREET in the City of Liverpool.

The dwelling-houses numbered 2 and 4 in the said No. 1 court.

The dwelling-house numbered 17 in BACK BOND STREET aforesaid, contiguous to No. 1 court in the said street.

The dwelling-houses numbered 49 and 51 in LACE STREET, in the City of Liverpool.

The dwelling-houses numbered 28, 32, 60, 62, 64 and 66 in DRYDEN STREET in the City of Liverpool.

The dwelling-houses numbered 41, 43, 45, 69, 71, 73 and 75 in RACHEL STREET in the City of Liverpool.

The premises (unnumbered) consisting of stables at the rear of the dwelling-house numbered 28 in DRYDEN STREET in the City of Liverpool.

The Corporation Surveyor has kindly supplied the following tables:—

INSANITARY PROPERTY.

INSANITARY PROPERTY PURCHASED 1898—

| | | | | |
|---|-----|-----|-----|-----|
| Number of houses included in 13th Presentment | ... | ... | ... | 5 |
| „ „ 14th Presentment | ... | ... | ... | 571 |
| „ „ 15th Presentment | ... | ... | ... | 72 |
| Number of houses purchased by Insanitary Property Committee included in Reports referred by Council to Committee | ... | ... | ... | 179 |
| Total | | | | 827 |

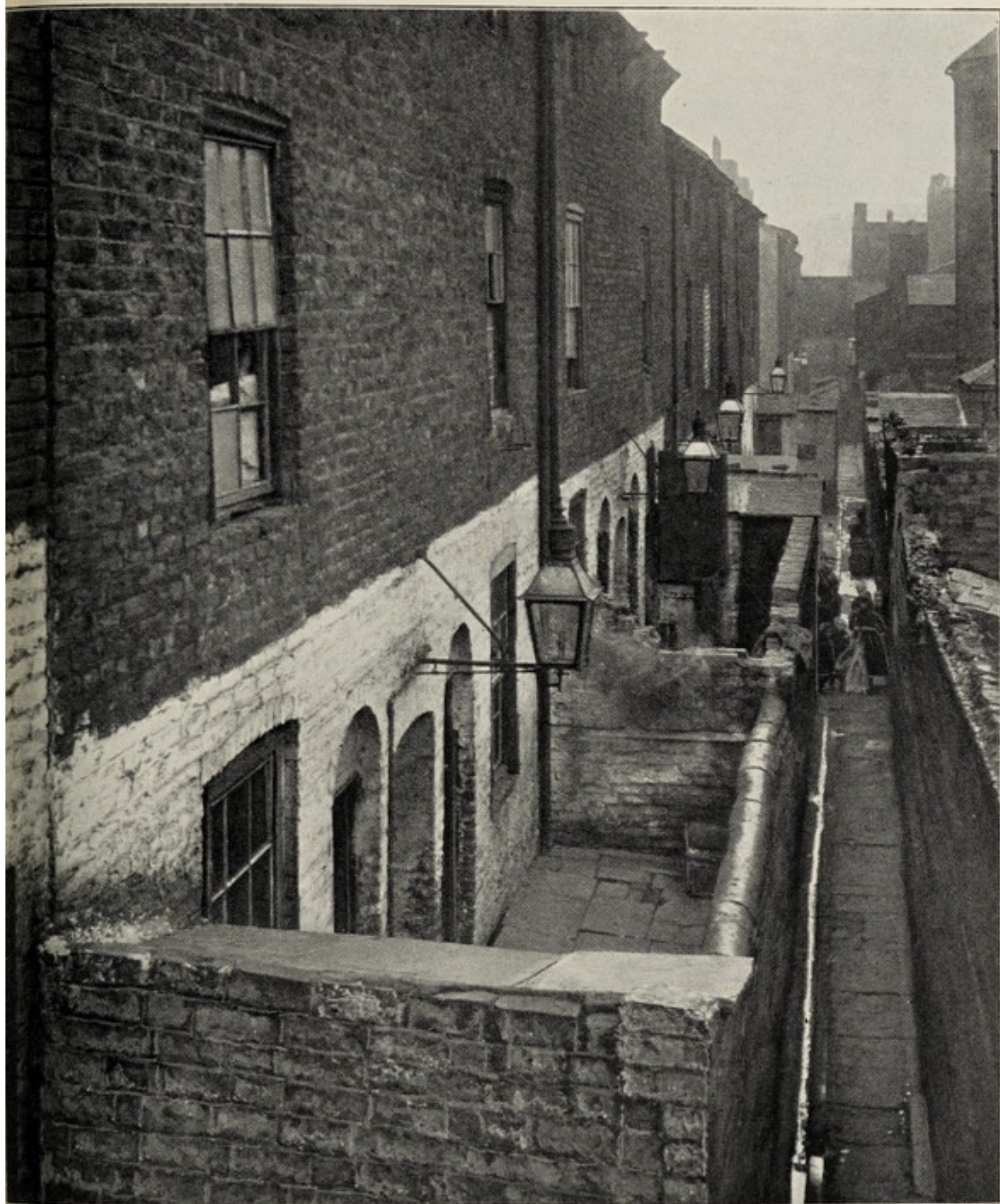
INSANITARY PROPERTY DEMOLISHED, 1898—

| | | | | |
|---|-----|-----|-----|-----|
| Number of houses included in 13th Presentment | ... | ... | ... | 5 |
| „ „ 14th Presentment | ... | ... | ... | 332 |
| Number of houses demolished by Insanitary Property Committee, included in Reports referred by Council to Committee | ... | ... | ... | 134 |
| Total | | | | 471 |

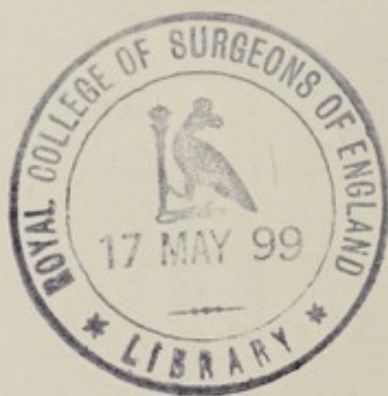


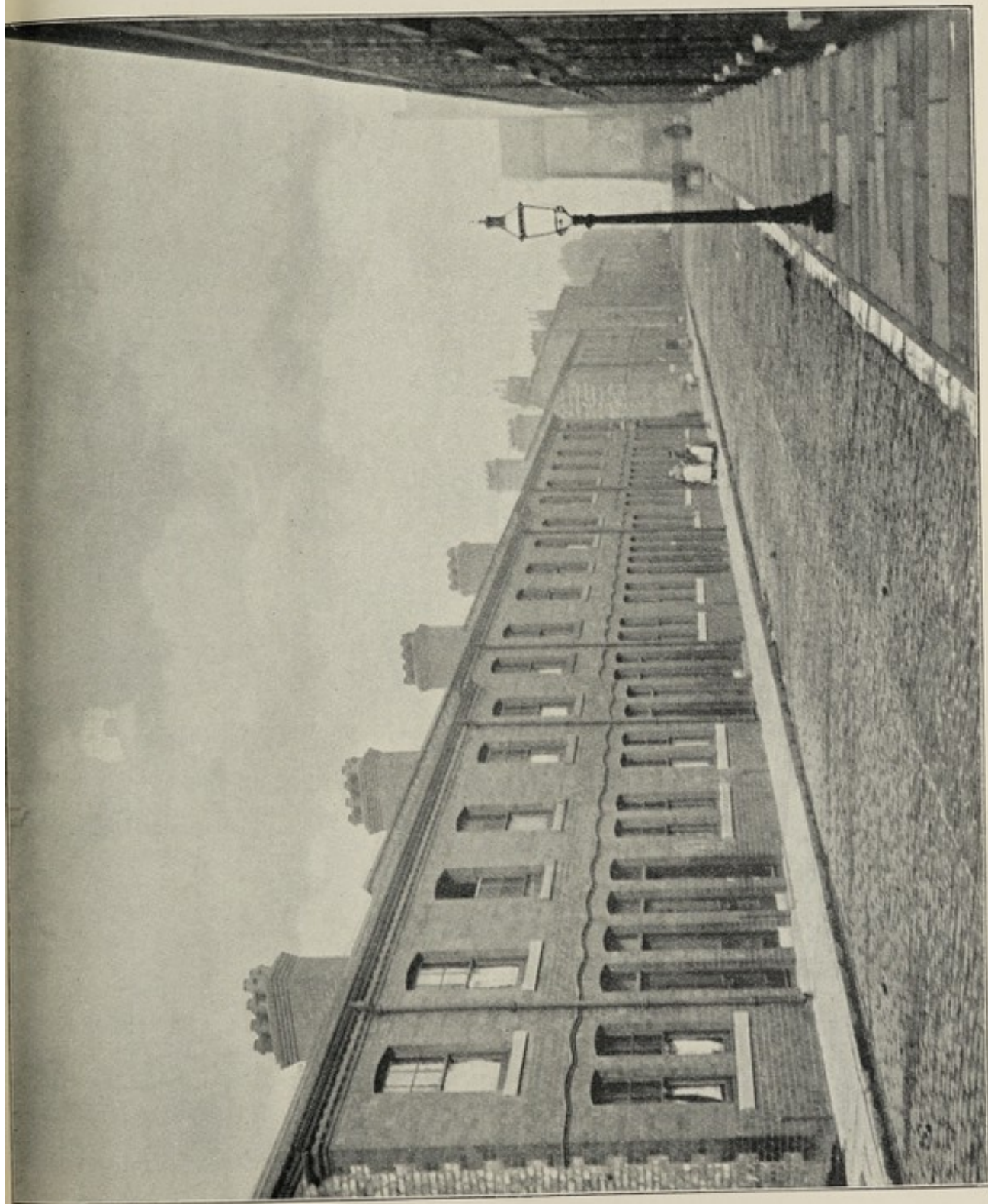
The photograph shows parts of two front houses in Smithfield Street and the tunnel entrances to No. 10 Court, in which there are eight houses.





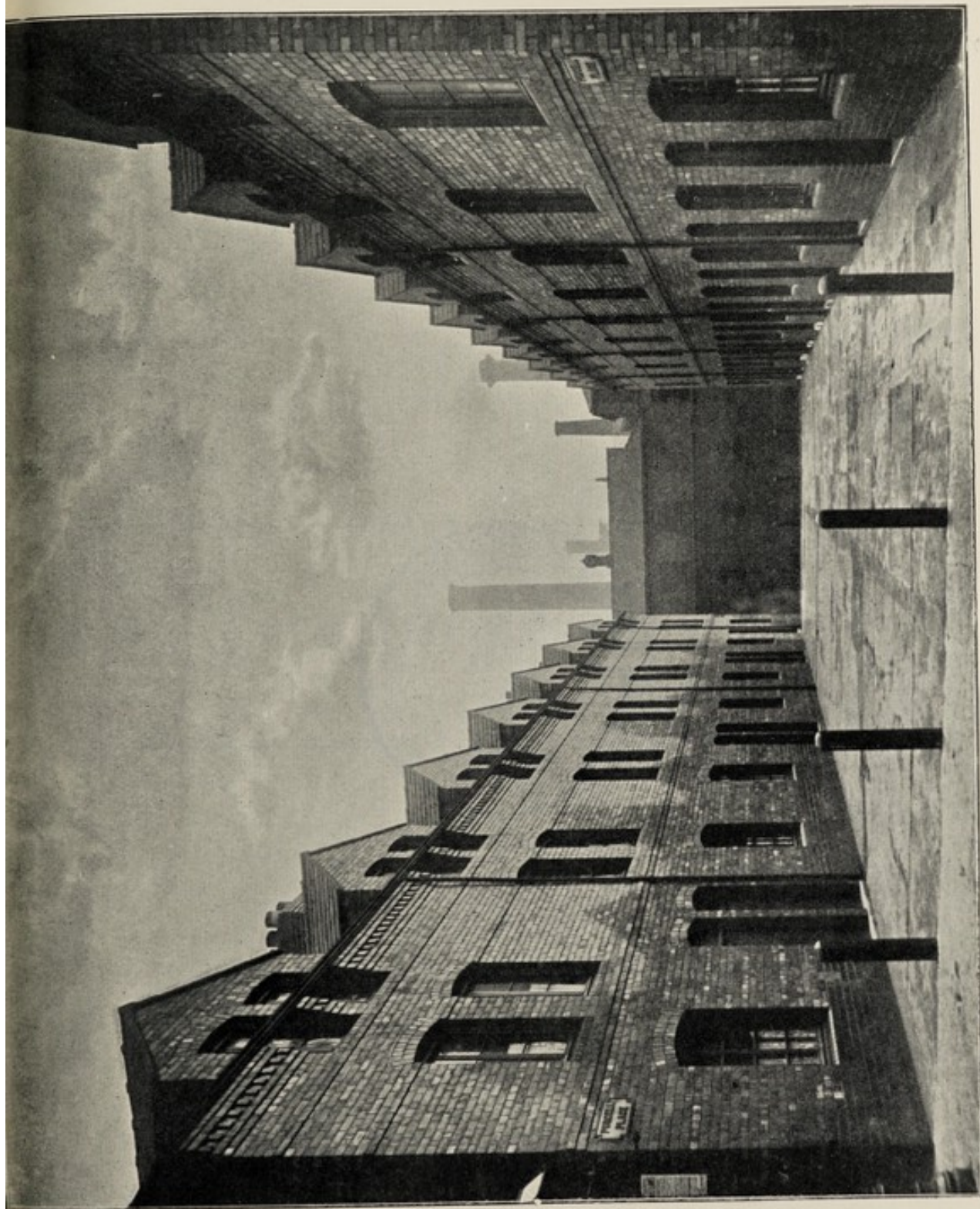
The photograph shows the front of court-houses in Lace Street; the entrance is by the tunnel passage below the lamp. There is no open space at the rear of these houses, which are back to back, with houses facing Lace Street.





Cottages erected by the Corporation on sites cleared of insanitary property.





Cottages erected by the Corporation on sites cleared of insanitary property.



CITY HOSPITALS.

CITY HOSPITALS

CITY HOSPITALS.

HOSPITAL ACCOMMODATION.

During the past year important progress has been made towards providing adequate hospital accommodation for persons suffering from infectious sickness.

A suitable site at Fazakerley, consisting of 113 acres, alluded to in the Annual Report for the year 1897, has, with the approval of the Local Government Board, been purchased for the purpose of erecting a convalescent hospital upon one portion of its area, and a hospital for smallpox at a suitable distance. Plans have been prepared for the erection of smallpox wards for the accommodation of 44 patients, together with the necessary administrative offices, upon a suitable part of the site.

Almost the whole of the site is at present used as agricultural land, and is largely surrounded by land in similar occupation. On part of the land which has been taken was situated the private residence of the vendor, together with certain farm buildings.

Taking a point as nearly as may be at the centre of the site, the spot approximately on which the smallpox hospital will be erected, the houses and inhabitants within a quarter of a mile radius are very few, viz., four houses and nine persons. Extending the radius from the same point to half a mile, the number of dwellings is still exceedingly small, viz., only 78 houses and 386 persons upon the entire area, and the locality is one in which no considerable extension of building for residential purposes is at all probable.

No portion of the smallpox enclosure will be within half a mile of a population of 600 persons.

The great bulk of the land within the half-mile radius is still agricultural, but within this radius would fall a small section of the Everton and Kirkdale Cemetery, and a section of the cutting of the Lancashire and Yorkshire Railway.

The Fazakerley Cottage Homes are upwards of a quarter of a mile distant from the confines of the site which has been purchased.

With regard to the much-needed extension and improvement of the accommodation for patients and attendants at the City Hospital East, plans have been submitted to the Local Government Board for the proposed addition of 88 beds for patients, and for the accommodation of the increased staff consequent upon this extension.

The present number of beds available for the various forms of infectious sickness is as follows :—

| | | | | | |
|---------------------|-----|-----|-----|-----------|-------|
| City Hospital North | ... | ... | ... | 147 | beds. |
| „ South | ... | ... | ... | 88 | „ |
| „ East | ... | ... | ... | 42 | „ |
| „ Parkhill | ... | ... | ... | 166 | „ |
| „ Priory Road | ... | ... | ... | 37 | „ |
| | | | | <hr/> 480 | „ |

These are apportioned as follows :—

| | | | | | | |
|---------------|-----|-----|-----|-----------|-----|-------|
| Smallpox | ... | ... | ... | ... | 37 | beds. |
| Typhus Fever | ... | ... | ... | .. | 20 | „ |
| Typhoid Fever | ... | ... | ... | ... | 75 | „ |
| Scarlet Fever | ... | ... | ... | ... | 288 | „ |
| Diphtheria | ... | ... | .. | ... | 30 | „ |
| Isolation | ... | ... | ... | ... | 30 | „ |
| | | | | <hr/> 480 | „ | |

making a total of 480 beds, about 100 of which are in buildings of a temporary character, which are practically worn out, and at no distant date will require to be taken down.

At the lowest computation, based upon a wide experience and embodied in the recommendations of the Local Government Board, Liverpool requires a minimum of 650 beds for ordinary infectious sickness, and 100 beds for smallpox.

The additions contemplated are urgently needed, and their completion will enable some at least of the present temporary and inconvenient accommodation to be dispensed with; but it merely constitutes an instalment of what is required.

It is not necessary, in the present state of public knowledge, to dwell upon the importance of hospitals as a safeguard against the extension of disease, nor to reiterate the oft-repeated story of the mischief resulting from the want of them. The benefit, however, is not confined to the general public, for it is not less great to the patient, as the percentage of recoveries in most forms of infectious disease, is larger amongst patients treated in hospital than amongst similar cases treated in their own homes. Year by year the appreciation of these facts by the public becomes more apparent, and the demands for admission consequently become more urgent. (See page 36.)

Inconvenience, resulting from the present insufficient number of beds, is always present. Towards the close of last year the Medical Officer reported to the Hospitals Committee the great difficulty experienced from the inability to find accommodation for the patients seeking admission to the hospitals. Many of those for whom accommodation was sought were without proper lodging and accommodation in their own homes; indeed some of these homes had actually been condemned as unfit for human habitation.

Owing to the inadequate accommodation, there has been a constant apprehension of the breakdown of the system of isolation, and it is only with incessant care, and transferring patients from one hospital to another, and carefully selecting the most urgent cases for removal, that this breakdown has been averted. Fortunately, the imported cases of smallpox were few. Had it been otherwise, it would have been necessary to send home again certain patients who were already in hospital, and the isolation of the other forms of infectious sickness would have been seriously interfered with, or prevented altogether. As it is, very grave complaints have arisen from medical men and from the friends and employers of patients, on account of the impossibility of isolating cases of serious infectious sickness. Much inconvenience to business, extension of disease, and loss of life have arisen from want of hospital room in which to isolate the sick. Throughout the year these circumstances have, from time to time, forced themselves upon the attention of the Hospitals Committee, and it will be remembered that, excepting for a very limited number of beds, the Workhouse Hospitals are very rightly closed entirely to infectious sickness, so that the onus of the provision of hospital accommodation rests solely upon the Sanitary Authority.

The general hospitals have admitted a certain number of cases of typhoid fever, but a very pressing urgency has been experienced for the accommodation of diphtheria. The notable increase in diphtheria is, no doubt, entirely owing to the absence of means of isolating early cases. These remain at home or in the school in which they occur, and a grave extension results. Late in the year, in view of the urgent necessity for finding accommodation for scarlet fever, the Port Sanitary Hospital at New Ferry was used for convalescent patients, a proceeding which nothing but extreme urgency could justify.

INFECTIOUS DISEASE.

Table showing the cases of Infectious Disease coming under the notice of the Medical Officer of Health during 1898, including those reported under the Notification Act.

| Year—1898. | Fever. | | | | Small Pox. | Scarlatina. | Measles. | Diphtheria | Membranous Croup. | Puerperal Fever. | Erysipelas. | TOTAL. |
|---------------------|---------|----------|---------|------------|------------|-------------|----------|------------|-------------------|------------------|-------------|--------|
| | Typhus. | Typhoid. | Simple. | Relapsing. | | | | | | | | |
| January .. | 7 | 51 | 1 | 1 | 4 | 211 | 137 | 34 | 6 | 4 | 110 | 566 |
| February | 4 | 40 | 3 | .. | 3 | 163 | 264 | 41 | 5 | 3 | 93 | 619 |
| March .. | 2 | 52 | 7 | .. | 1 | 187 | 272 | 28 | 7 | 5 | 85 | 646 |
| April .. | 10 | 66 | 7 | .. | 2 | 153 | 252 | 40 | 4 | 7 | 107 | 648 |
| May | 17 | 60 | 5 | .. | .. | 210 | 253 | 37 | 3 | 5 | 110 | 700 |
| June .. | 8 | 41 | 6 | .. | 1 | 191 | 398 | 19 | 2 | 3 | 129 | 798 |
| July | 10 | 48 | 3 | .. | 1 | 157 | 134 | 24 | 3 | 3 | 87 | 470 |
| August .. | 3 | 79 | 8 | .. | .. | 146 | 119 | 39 | 2 | 5 | 81 | 482 |
| September | 5 | 104 | 3 | .. | .. | 205 | 123 | 32 | 1 | 5 | 74 | 552 |
| October .. | 15 | 111 | 11 | .. | .. | 274 | 135 | 42 | 4 | 5 | 74 | 671 |
| November | 4 | 117 | 9 | .. | 3 | 275 | 209 | 78 | 4 | 1 | 69 | 769 |
| December | 7 | 94 | 2 | 1 | 2 | 252 | 162 | 89 | 10 | 2 | 94 | 715 |
| TOTAL .. | 92 | 863 | 65 | 2 | 17 | 2,424 | 2,458 | 503 | 51 | 48 | 1,113 | 7,636 |
| Removed to hospital | 84 | 585 | 35 | 1 | 16 | 1,467 | 105 | 187 | 4 | 6 | 269 | 2,759 |

The number of patients removed to hospital includes those taken to General Hospitals as well as those taken to the City Hospitals. (See page 206.)

THE INFECTIOUS DISEASE (NOTIFICATION) ACT.

The numbers of notifications received by the Medical Officer under the above Act, during the past three years were as follows :—

| | | | <u>1896.</u> | | <u>1897.</u> | | <u>1898.</u> |
|-----------|-----|-----|--------------|-----|--------------|-----|--------------|
| January | ... | ... | 466 | ... | 560 | ... | 445 |
| February | .. | ... | 493 | ... | 461 | ... | 363 |
| March | ... | .. | 454 | .. | 538 | ... | 407 |
| April | ... | .. | 484 | .. | 414 | ... | 397 |
| May | ... | .. | 517 | ... | 414 | ... | 451 |
| June | ... | .. | 523 | .. | 380 | ... | 389 |
| July | ... | ... | 517 | .. | 392 | ... | 347 |
| August | ... | ... | 644 | .. | 559 | .. | 383 |
| September | ... | ... | 770 | .. | 626 | ... | 458 |
| October | ... | ... | 933 | .. | 742 | .. | 578 |
| November | ... | ... | 774 | .. | 629 | ... | 588 |
| December | ... | ... | 634 | .. | 519 | ... | 564 |
| | | | <u>7,209</u> | ... | <u>6,234</u> | ... | <u>5,370</u> |

The diseases were specified as follows :—

| | | | <u>1896.</u> | | <u>1897.</u> | | <u>1898.</u> |
|------------------|-----|-----|--------------|-----|--------------|-----|--------------|
| Smallpox | ... | ... | 11 | ... | 7 | ... | 16 |
| Scarlet Fever | ... | ... | 3,610 | ... | 3,042 | ... | 2,422 |
| Typhoid | „ | ... | 1,122 | ... | 1,112 | ... | 955 |
| Typhus | „ | ... | 185 | ... | 110 | ... | 96 |
| Continued | „ | ... | 120 | ... | 80 | ... | 62 |
| Relapsing | „ | ... | 5 | ... | 1 | ... | 2 |
| Fever | ... | ... | 26 | ... | 18 | ... | 14 |
| Puerperal Fever | ... | ... | 67 | ... | 64 | ... | 47 |
| Diphtheria | ... | ... | 492 | ... | 394 | ... | 527 |
| Membranous Croup | ... | ... | 95 | ... | 69 | ... | 62 |
| Erysipelas | ... | ... | 1,476 | ... | 1,337 | ... | 1,167 |
| | | | <u>7,209</u> | ... | <u>6,234</u> | ... | <u>5,370</u> |

NUMBER OF CASES REPORTED AND NUMBER REMOVED TO HOSPITALS, 1889-1898.

| | SMALLPOX. | | SCARLET FEVER. | | TYPHOID. | | TYPHUS. | | MEASLES. | |
|-----------|------------------|-----------------|------------------|-----------------|------------------|-----------------|------------------|-----------------|------------------|-----------------|
| | Number Reported. | Number Removed. | Number Reported. | Number Removed. | Number Reported. | Number Removed. | Number Reported. | Number Removed. | Number Reported. | Number Removed. |
| 1889..... | 9 | 8 | 1,832 | 533 | 670 | 302 | 158 | 124 | 3,175 | 104 |
| 1890..... | 2 | 2 | 3,520 | 938 | 506 | 296 | 103 | 87 | 4,013 | 152 |
| 1891..... | 21 | 21 | 1,176 | 448 | 588 | 350 | 175 | 156 | 2,262 | 160 |
| 1892..... | 177 | 177 | 1,554 | 603 | 699 | 345 | 73 | 70 | 3,376 | 150 |
| 1893..... | 75 | 73 | 3,538 | 1,380 | 1,396 | 728 | 183 | 168 | 2,316 | 94 |
| 1894..... | 229 | 226 | 3,963 | 1,415 | 1,350 | 745 | 325 | 312 | 2,494 | 122 |
| 1895..... | 130 | 127 | 2,710 | 1,039 | 1,306 | 662 | 162 | 158 | 3,462 | 93 |
| 1896.. | 8 | 8 | 3,584 | 1,589 | 1,063 | 539 | 305 | 298 | 2,930 | 138 |
| 1897..... | 6 | 6 | 3,001 | 1,641 | 991 | 559 | 158 | 156 | 4,389 | 94 |
| 1898..... | 17 | 16 | 2,424 | 1,467 | 863 | 585 | 92 | 84 | 2,458 | 105 |

The following tables, prepared by the Medical Staff of each Hospital, show the number of patients, the nature of the illness, and the results, at each of the five City Hospitals during the year 1898 :—

CITY HOSPITAL NORTH, NETHERFIELD ROAD.

Visiting Physician, Dr. ROBERTSON.

Resident Physician, Dr. ROBINSON.

| DISEASES. | Remaining Dec. 31st, 1897. | Admitted During 1898. | Total under Treatment 1898. | Transferred to Parkhill Convalescent. | Transferred to other Hospitals. | Discharged to Homes. | Remaining Dec. 31st, 1898. | Died within 48 hours of Admission. | Total Deaths. | Total Mortality per cent. of Admissions. |
|-----------------------|-------------------------------|-----------------------------|-----------------------------------|---|------------------------------------|-------------------------|-------------------------------|--|---------------|--|
| Scarlet Fever | 71 | 477 | 548 | 243 | 35 | 156 | 81 | 7 | 33 | 6.9 |
| Typhus Fever . . . | 7 | 85 | 92 | — | — | 75 | 6 | 2 | 11 | 12.9 |
| Enteric Fever . . . | 25 | 154 | 179 | — | — | 130 | 30 | 2 | 19 | 12.3 |
| Diphtheria | — | 4 | 4 | — | 2 | 2 | — | — | — | — |
| Other Diseases . . . | 5 | 134 | 139 | — | 9 | 107 | 3 | 4 | 20 | 14.9 |
| Totals | 108 | 854 | 962 | 243 | 46 | 470 | 120 | 15 | 83 | 9.7 |

SCARLET FEVER.

| | AGE PERIODS. | | | | | | | Total. |
|-------------------------|--------------|------|-------|-------|-------|-------|----------------|--------|
| | Under 5 | 5—10 | 10—20 | 20—30 | 30—40 | 40—50 | 50 upwards. | |
| No. of cases | 166 | 200 | 79 | 26 | 6 | — | — | 477 |
| No. of deaths | 26 | 5 | 2 | — | — | — | — | 33 |
| Percentage of deaths | 15.6 | 2.5 | 2.5 | — | — | — | — | 6.9 |

ENTERIC FEVER.

| | AGE PERIODS. | | | | | | | Total. |
|----------------------|--------------|------|-------|-------|-------|-------|------------|--------|
| | Under 5 | 5—10 | 10—20 | 20—30 | 30—40 | 40—50 | 50 upwards | |
| No. of cases | 3 | 37 | 60 | 34 | 15 | 2 | 3 | 154 |
| No. of deaths | — | 1 | 4 | 8 | 4 | — | 2 | 19 |
| Percentage of deaths | — | 2·7 | 6·6 | 23·5 | 26·6 | — | 66·6 | 12·3 |

TYPHUS FEVER.

| | AGE PERIODS. | | | | | | | Total. |
|----------------------|--------------|------|-------|-------|-------|-------|------------|--------|
| | Under 5 | 5—10 | 10—20 | 20—30 | 30—40 | 40—50 | 50 upwards | |
| No. of cases | — | 10 | 33 | 19 | 16 | 5 | 2 | 85 |
| No. of deaths | — | — | 2 | 1 | 4 | 3 | 1 | 11 |
| Percentage of deaths | — | — | 6·6 | 5·2 | 25·0 | 60·0 | 50·0 | 12·9 |

OTHER DISEASES.

| Disease. | Admitted. | Died. |
|--|------------|--------------------------|
| Pyæmia | 1 | 1 |
| Measles | 13 | 1 |
| Febricula | 33 | — |
| Tubercular Diseases | 6 | 5 |
| Pneumonia | 39 | 8 |
| Bronchitis and Broncho Pneumonia | 6 | 2 |
| Pleurisy | 2 | — |
| Pericarditis | 1 | 1 |
| Mitral Stenosis | 1 | 1 |
| Dilated Heart | 1 | 1 |
| Nephritis | 1 | — |
| Meningitis | 3 | — |
| Tonsillitis | 2 | — |
| Cutaneous Diseases | 3 | — |
| Mental Diseases | 2 | — |
| Acute Rheumatism | 1 | — |
| Alcoholism | 1 | — |
| Catarrh | 2 | — |
| Unclassified | 16 | — |
| | <u>134</u> | <u>20=14·9 per cent.</u> |

CITY HOSPITAL SOUTH, GRAFTON STREET.

Visiting Physician, Dr. ROBERTS.

Resident Physician, Dr. BLAKEMAN.

| DISEASES. | Remaining in Hospital 31st Dec, 1897. | Admitted during 1898. | Total under Treatment 1898. | Died during 1898. | Discharged to Houses 1898. | Transferred to Parkhill 1898. | Transferred to New Ferry 1898. | Mortality % of Admissions 1898. | Mortality % under Treatment 1898. | Remaining in Hospital end 1898. | Transferred to other Hospitals 1898. |
|-----------------------|---------------------------------------|-----------------------|-----------------------------|-------------------|----------------------------|-------------------------------|--------------------------------|---------------------------------|-----------------------------------|---------------------------------|--------------------------------------|
| Scarlet Fever..... | 38 | 327 | 365 | 25 | 122 | 148 | 28 | 7.6 | 6.8 | 42 | — |
| * Enteric Fever | 29 | 224 | 253 | 20 | 192 | 6 | — | 8.9 | 7.9 | 32 | 3 |
| Typhus Fever | — | 3 | 3 | 1 | 2 | — | — | 33.3 | — | — | — |
| † Diphtheria | 10 | 101 | 111 | 16 | 62 | 26 | — | 15.8 | 14.4 | 7 | — |
| Measles | — | 4 | 4 | — | — | — | — | — | — | — | 4 |
| Other Diseases | — | 18 | 18 | 11 | 7 | — | — | 61.1 | — | — | — |
| Totals | 77 | 677 | 754 | 73 | 385 | 180 | 28 | 10.8 | 9.6 | 81 | 7 |

* Three cases of Enteric Fever died within 24 hours of admission to hospital.

† Tracheotomy was necessary in 24 cases, and was attended with 11 deaths.

SCARLET FEVER.

| | AGE PERIODS. | | | | | | | |
|----------------------|--------------|------|-------|-------|-------|-------|-------|---------|
| | Under 5 | 5—10 | 10—20 | 20—30 | 30—40 | 40—50 | 50—60 | Totals. |
| No. of cases | 144 | 114 | 48 | 18 | 3 | — | — | 327 |
| No. of deaths | 23 | 2 | — | — | — | — | — | 25 |
| Percentage of deaths | 15.9 | 1.05 | — | — | — | — | — | 7.6 |

ENTERIC FEVER.

| | AGE PERIODS. | | | | | | | |
|----------------------|--------------|------|-------|-------|-------|-------|-------|---------|
| | Under 5 | 5—10 | 10—20 | 20—30 | 30—40 | 40—50 | 50—60 | Totals. |
| No. of cases | 15 | 31 | 87 | 59 | 22 | 7 | 3 | 224 |
| No. of deaths | 1 | — | 7 | 6 | 4 | 2 | — | 20 |
| Percentage of deaths | 6.3 | — | 8.04 | 10.1 | 18.1 | 28.5 | — | 8.9 |

DIPHTHERIA.

| | AGE PERIODS. | | | | | | | Totals. |
|-----------------------|--------------|------|-------|-------|-------|-------|-------|---------|
| | Under 5 | 5—10 | 10—20 | 20—30 | 30—40 | 40—50 | 50—60 | |
| No. of cases | 53 | 26 | 10 | 7 | 5 | .. | .. | 101 |
| No. of deaths | 12 | 3 | 1 | .. | .. | .. | .. | 16 |
| Percentage of deaths. | 22·6 | 11·5 | 10·0 | .. | .. | .. | .. | 15·8 |

| | Cases. | Death. |
|---------------|--------|--------|
| TYPHUS | 3 | 1 |
| MEASLES | 4 | — |

OTHER DISEASES.

| | Cases. | Deaths. |
|--------------------------------|--------|-------------------|
| Pneumonia .. | 4 | 1 |
| Bronchitis .. | 1 | 1 |
| Malaise .. | 2 | — |
| Phthisis .. | 4 | 4 |
| Peritonitis (Tubercular) .. | 2 | 2 |
| Malignant Disease of Rectum .. | 1 | — |
| Meningitis (Tubercular) .. | 2 | 2 |
| Broncho Pneumonia .. | 1 | 1 |
| Ascites .. | 1 | — |
| Total | 18 | 11=61·1 per cent. |

CITY HOSPITAL, PARKHILL.

Visiting Physician, Dr. ROBERTS.

Resident Physician, Dr. BARLOW.

| DISEASES. | Remaining in Hospital on December 31st, 1897 | Patients admitted during 1898. | | | | | Remaining in Hospital on 31st December, 1898. | Total number under treatment during 1898 | Fatal Acute Cases. | | Fatal Transferred Cases. | |
|----------------------|--|--------------------------------|----------------------------|----------------------------|---------------------------|---------------------------------|---|--|--------------------|-------------|--------------------------|-------------|
| | | Acute Cases | From City Hospital, North. | From City Hospital, South. | From City Hospital, East. | From City Hospital, Priory Road | | | Number. | Percentage. | Number. | Percentage. |
| Scarlet Fever | 119 | 284 | 243 | 148 | 6 | 21 | 78 | 821 | *22 | 7.7 | 3 | .7 |
| Smallpox | — | 20 | — | — | — | — | 1 | 20 | 1 | 5.0 | — | — |
| Enteric Fever | 8 | 3 | — | 6 | — | — | — | 17 | — | — | — | — |
| Diphtheria | 6 | 87 | — | 26 | — | — | 6 | 119 | 21 | 24.1 | — | — |
| Typhus Fever | — | 1 | — | — | — | — | — | 1 | 1 | 100 | — | — |
| Measles | — | 7 | — | — | — | — | — | 7 | — | — | — | — |
| Other Diseases | 4 | 11 | — | — | — | — | — | 15 | 3 | 27.3 | — | — |
| Total | 137 | 413 | 243 | 180 | 6 | 21 | 85 | 1000 | 48 | 11.6 | 3 | .6 |

* Of these 22 deaths, 6 occurred among patients admitted in 1897, but who died in 1898.

ACUTE SCARLET FEVER.

| | AGE PERIODS. | | | | | | |
|-------------------------|--------------|------|-------|-------|-------|------------|--------|
| | Under 5 | 5—10 | 10—20 | 20—30 | 30—40 | 40 Upwards | TOTAL. |
| No. of cases | 85 | 123 | 56 | 17 | 2 | 1 | 284 |
| No. of deaths | 16 | 4 | 1 | 1 | — | — | 22 |
| Percentage of deaths .. | 18.8 | 3.2 | 1.7 | 5.8 | — | — | 7.7 |

Of the 6 deaths previously mentioned as occurring among patients admitted in 1897, but who died in 1898, 5 were under 5 years of age, 1 was between 5—10 years.

DIPHTHERIA.

| | AGE PERIODS. | | | | | | TOTAL. |
|----------------------|--------------|------|-------|-------|-------|---------------|--------|
| | Under 5 | 5—10 | 10—20 | 20—30 | 30—40 | 40 Upwards | |
| No. of cases | 35 | 23 | 16 | 8 | 5 | .. | 87 |
| No. of deaths | 16 | 5 | .. | .. | .. | .. | 21 |
| Percentage of deaths | 45·7 | 21·7 | .. | .. | .. | .. | 24·1 |

OTHER ACUTE DISEASES.

| Diseases. | No. of Cases. | No. of Deaths. |
|----------------------|---------------|----------------|
| Varicella | 8 | .. |
| Meningitis | 1 | 1 |
| Pemphigus | 1 | 1 |
| Unclassified | 1 | .. |
| Total | 11 | 2 |

CITY HOSPITAL EAST (MILL LANE).

Visiting Physician, Dr. RICHARDSON.

| DISEASES. | Remaining in Hospital 31st Dec., 1897. | Admitted into Hospital during 1898. | Total under treatment during 1898. | Died during 1898. | Discharged to homes, 1898. | Transferred to Parkhill Con- valescent, 1898. | Transferred to other Hospitals 1898. | Remaining in Hospital, 31st Dec., 1898. | Mortality % of admissions. |
|----------------------|--|---|--|----------------------|-------------------------------|---|--|---|-------------------------------|
| Scarlet Fever | 21 | 181 | 202 | 9 | 164 | 6 | .. | 23 | 4·9 |
| Typhoid Fever | 3 | 53 | 56 | 7 | 40 | .. | .. | 9 | 13·2 |
| Measles | .. | 1 | 1 | .. | 1 | .. | .. | .. | } 21·4 |
| Other Diseases | .. | 13 | 13 | 3 | 9 | .. | 1 | .. | |
| TOTALS | 24 | 248 | 272 | 19 | 214 | 6 | 1 | 32 | 7·6 |

SCARLET FEVER.

| | AGE PERIODS. | | | | | | | TOTAL. |
|-----------------------|--------------|------|-------|-------|-------|-------|------------|--------|
| | Under 5 | 5—10 | 10—20 | 20—30 | 30—40 | 40—50 | 50 Upwards | |
| No. of cases | 53 | 77 | 41 | 8 | 2 | .. | .. | 181 |
| No. of deaths.. . | 8 | .. | .. | .. | 1 | .. | .. | 9 |
| Percentage of deaths. | 15·0 | .. | .. | .. | 50·0 | .. | .. | 4·9 |

Two died within 48 hours of admission.—One of these within 24 hours.

Three of the deaths were a father and two of his children, the father dying in about 18 hours.

TYPHOID FEVER.

| | AGE PERIODS. | | | | | | | TOTAL. |
|-----------------------|--------------|------|-------|-------|-------|-------|------------|--------|
| | Under 5 | 5—10 | 10—20 | 20—30 | 30—40 | 40—50 | 50 Upwards | |
| No. of cases | .. | 10 | 23 | 10 | 6 | 3 | 1 | 53 |
| No. of deaths.. .. | .. | .. | 5 | 1 | .. | 1 | .. | 7 |
| Percentage of deaths. | .. | .. | 21·7 | 10·0 | .. | 33·3 | .. | 13·2 |

One died within 48 hours of admission.

OTHER DISEASES.

| | Cases. | Deaths. |
|---|-----------|-----------------|
| Measles | 1 | — |
| Pneumonia | 2 | 1 |
| Broncho-Pneumonia | 2 | — |
| Bronchitis | 1 | — |
| Acute Tuberculosis | 1 | 1 |
| Hepatitis | 1 | — |
| Gastric Ulcer | 1 | — |
| Rheumatism | 1 | — |
| Tonsillitis | 1 | — |
| Peritonitis | 1 | 1 |
| Capillary Bronchitis and Abscess | 1 | — |
| Heart Disease, Peritonitis and Jaundice | 1 | — |
| Total | <u>14</u> | <u>3 = 21·4</u> |

CITY HOSPITAL, PRIORY ROAD.

Visiting Physician, Dr. ARCHER.

| DISEASES. | Remaining in Hospital, Dec. 31st, 1897. | Admitted during 1898. | Total under treatment 1898. | Died during 1898. | Discharged to homes. | Transferred to Parkhill | Transferred to other Hospitals. | Remaining in Hospital, Dec. 31st, 1898. | Mortality per cent. of admissions. |
|----------------------|---|-----------------------|-----------------------------|-------------------|----------------------|-------------------------|---------------------------------|---|------------------------------------|
| Scarlatina | 21 | 225 | 246 | 12 | 182 | 18 | — | 34 | 5·3 |
| Measles | — | 1 | 1 | — | — | — | 1 | — | — |
| Other Diseases | — | 4 | 4 | 4 | — | — | — | — | 100· |
| TOTALS | 21 | 230 | 251 | 16 | 182 | 18 | 1 | 34 | 6·9 |

SCARLATINA.

| | AGE PERIODS. | | | | | |
|----------------------------|--------------|------|-------|-------|-------|--------|
| | Under 5 | 5—10 | 10—20 | 20—30 | 30—40 | TOTAL. |
| No. of cases | 77 | 94 | 40 | 12 | 2 | 225 |
| No. of deaths | 7 | 5 | — | — | — | 12 |
| Percentage of deaths | 9·09 | 5·3 | — | — | — | 5·3 |

OTHER DISEASES.

| | | | |
|-----------------------------------|---|----|-------|
| Burns (Extensive) | 1 | .. | Died. |
| Nephritis (not Scarlatinal) | 1 | .. | Died. |
| Broncho Pneumonia | 2 | .. | Died. |
| Total | 4 | | |

An important series of investigations in regard to the diagnosis of diphtheria and typhoid fever has been made by Professor Boyce, the investigation of the laboratory frequently proving extremely useful in confirming diagnosis in some doubtful cases.

As it is becoming less difficult to make these examinations, it is likely that this method will be employed more extensively.

With regard to diphtheria, the method employed is to send out prepared and sterilised pieces of cotton wool, with which the medical attendant can readily obtain brushings from the suspected membrane of the throat, and send them to the laboratory. At the laboratory, they are immediately inoculated on to serum, and on the following day the colonies which develop are examined and a report made.

It is very important in every case where the anti-diphtheritic serum is used that a bacteriological diagnosis should be made.

Largely owing to the researches of Dr. Grünbaum, of the Thompson-Yates Laboratories, diagnosis in typhoid fever may be confirmed by the characteristic reaction which the serum of patients suffering from typhoid fever produces upon typhoid bacilli. Capillary sealed tubes are sent out from the Laboratory for collecting the small drop of blood necessary to test the reaction.

It may be mentioned that the Bacteriological Laboratory furnishes every facility to the medical practitioner for making bacteriological investigations, and that a Pathological Diagnosis Society has been formed, the members of which, by the payment of a small annual subscription, have the right of getting specimens examined at the Laboratory. The Society numbers 150 members of the medical profession, and two thousand reports have been

furnished during the year upon suspected cases of diphtheria, typhoid, tubercle, &c. It is hoped that more medical men than at present will take advantage of these facilities.

The Committee have provided at each one of the City Hospitals a supply of Antitoxin, which is given to any medical practitioner making application for it.

It will not be out of place to conclude this report with a further reference to the absolute necessity for a quinquennial census, as well as a thorough revision of the methods of the Registrar-General's Department, if the rates of mortality published by that Department are to be of the least value as an index to relative mortality and sanitary progress.

At present there is the gravest doubt as to the accuracy of those returns. The evidence is overwhelming that in the past they have been absolutely unreliable and entirely misleading, and there is no reason to doubt that these errors have gravely prejudiced the progress of sanitation. It was to the credit of the Department that in years gone by, revisions were made in regard to published returns, and it is no less a matter for regret and surprise that the Department cannot now be stimulated to consider the evidence upon which revision can be based. The compilation of figures upon a guesswork basis is waste of labour and time, but the publication of such figures as facts, by a Government Department, without any word of explanation or warning, must either mislead the public or discredit the Department.

E. W. HOPE,

MEDICAL OFFICER OF HEALTH.

PUBLIC HEALTH DEPARTMENT,

MUNICIPAL OFFICES,

LIVERPOOL, 16th March, 1899.

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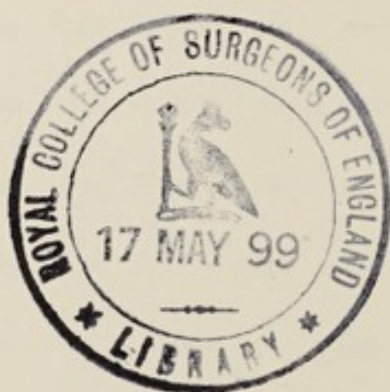
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TABLE OF DEATHS
DURING THE YEAR 1898, IN THE URBAN SANITARY DISTRICT OF LIVERPOOL, CLASSIFIED ACCORDING TO DISEASES, AGES, AND LOCALITIES.

| (I.) NAMES OF LOCALITIES adopted for the purpose of these Statistics: public institutions being shown as separate localities. DISTRICTS AND WARDS. (a.) | | | | | | | | MORTALITY FROM ALL CAUSES, AT SUBJOINED AGES. | | | | | | | | | | | | | | | | | | | | | | MORTALITY FROM SUBJOINED CAUSES, DISTINGUISHING DEATHS OF CHILDREN UNDER FIVE YEARS OF AGE. | | | | | | | | | | | | | | | | | | | | | |
|---|-------|------|------|------|------|------|------|---|---------------|----------------|-----------------|------------------|------------------|-----------------|------|-----------|-------------|-------------|-------------------|---------|---------------------|------------|------------|------------|-------------------------------|-------------|----------|-----------------|--------------------------|---|-----------|----------------------------------|----------------|------------|-----------|---------------------|--------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| | | | | | | | | At all Ages. | Under 1 Year. | 1 and under 5. | 5 and under 15. | 15 and under 25. | 25 and under 60. | 60 and upwards. | (i.) | Smallpox. | Scarlatina. | Diphtheria. | Membranous Croup. | Typhus. | Enteric or Typhoid. | Continued. | Relapsing. | Puerperal. | English Cholera and Infantum. | Erysipelas. | Measles. | Whooping Cough. | Diarrhoea and Dysentery. | Rheumatic Fever. | Phthisis. | Bronchitis, Pneumonia, Pleurisy. | Heart Disease. | Influenza. | Injuries. | All Other Diseases. | Total. | | | | | | | | | | | | | | |
| (b.) | (c.) | (d.) | (e.) | (f.) | (g.) | (h.) | (i.) | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. | 11. | 12. | 13. | 14. | 15. | 16. | 17. | 18. | 19. | 20. | 21. | 22. | | | | | | | | | | | | | | | | | | | | | | |
| Scotland | 1335 | 460 | 351 | 56 | 29 | 322 | 117 | Under 5 | .. | 1 | 2 | 5 | .. | .. | .. | .. | .. | 1 | 1 | 51 | 44 | 177 | .. | 5 | 162 | .. | .. | 26 | 337 | 811 | | | | | | | | | | | | | | | | | | | | | |
| Exchange | 942 | 316 | 189 | 30 | 18 | 265 | 124 | 5 upwards | .. | .. | 4 | .. | .. | 3 | 1 | .. | 4 | .. | .. | 22 | 36 | 71 | .. | 1 | 107 | .. | .. | 31 | 232 | 505 | | | | | | | | | | | | | | | | | | | | | |
| Abercromby | 865 | 245 | 114 | 24 | 21 | 254 | 205 | 5 upwards | .. | 1 | 7 | 3 | .. | .. | .. | .. | 2 | .. | 10 | 23 | 33 | .. | 82 | .. | 2 | 16 | 182 | 359 | 594 | | | | | | | | | | | | | | | | | | | | | | |
| Everton | 2185 | 807 | 392 | 80 | 70 | 510 | 326 | 5 upwards | 1 | .. | 3 | 1 | 2 | 9 | .. | .. | 3 | .. | 37 | 55 | 187 | .. | 5 | 256 | .. | 3 | 27 | 610 | 1199 | | | | | | | | | | | | | | | | | | | | | | |
| Kirkdale | 1113 | 408 | 182 | 45 | 37 | 265 | 176 | 5 upwards | .. | 3 | 4 | 2 | .. | .. | .. | .. | 3 | 3 | 9 | 39 | 110 | .. | 99 | .. | 12 | 306 | 590 | 986 | | | | | | | | | | | | | | | | | | | | | | | |
| West Derby | 1472 | 538 | 228 | 49 | 45 | 385 | 227 | 5 upwards | .. | 4 | 1 | .. | 3 | .. | .. | .. | 8 | 1 | 22 | 46 | 86 | .. | 3 | 146 | .. | 1 | 14 | 427 | 766 | | | | | | | | | | | | | | | | | | | | | | |
| Toxteth | 1876 | 626 | 309 | 80 | 64 | 449 | 348 | 5 upwards | .. | 6 | 20 | 4 | 1 | 3 | .. | .. | 1 | 1 | 46 | 34 | 115 | .. | 3 | 207 | .. | 5 | 29 | 460 | 935 | | | | | | | | | | | | | | | | | | | | | | |
| Walton | 632 | 200 | 99 | 31 | 20 | 161 | 121 | 5 upwards | .. | 4 | 3 | 1 | .. | 6 | .. | .. | 3 | 1 | 18 | 10 | 52 | .. | 49 | .. | 1 | 7 | 150 | 299 | | | | | | | | | | | | | | | | | | | | | | | |
| West Derby (Rural) | 582 | 189 | 55 | 21 | 23 | 159 | 185 | 5 upwards | .. | 3 | 4 | .. | 1 | 10 | 2 | .. | .. | 2 | 7 | .. | 10 | 3 | 110 | 225 | 93 | 24 | 26 | 421 | 941 | | | | | | | | | | | | | | | | | | | | | | |
| Wavertree | 266 | 97 | 33 | 9 | 8 | 66 | 53 | 5 upwards | .. | 1 | .. | .. | .. | 1 | .. | .. | 2 | 1 | .. | 6 | 3 | 14 | 1 | 13 | 28 | 17 | 3 | 6 | 75 | 136 | | | | | | | | | | | | | | | | | | | | | |
| Toxteth (Rural) | 302 | 79 | 40 | 7 | 15 | 86 | 75 | 5 upwards | .. | 2 | 1 | .. | .. | 1 | .. | .. | .. | 4 | 8 | 9 | .. | 2 | 20 | .. | 3 | 1 | 5 | 103 | 183 | | | | | | | | | | | | | | | | | | | | | | |
| (II.) Public } Workhouses & Hospitals.. | 3812 | 196 | 386 | 185 | 238 | 1758 | 1049 | 5 upwards | .. | 85 | 25 | 1 | .. | 3 | .. | .. | .. | 33 | 19 | 20 | .. | 8 | 118 | 3 | .. | 48 | 219 | 582 | | | | | | | | | | | | | | | | | | | | | | | |
| Institutions. } | | | | | | | | 5 upwards | 1 | 24 | 13 | .. | 13 | 76 | .. | .. | 5 | 7 | 4 | 1 | 14 | 4 | 468 | 677 | 330 | 12 | 231 | 1350 | 3230 | | | | | | | | | | | | | | | | | | | | | | |
| Totals | 15380 | 4111 | 2378 | 617 | 588 | 4680 | 3006 | 5 upwards | 2 | 107 | 87 | 21 | 1 | 9 | 4 | .. | 23 | 2 | 7 | 261 | 323 | 898 | 1 | 27 | 1296 | 4 | 18 | 220 | 3188 | 6489 | | | | | | | | | | | | | | | | | | | | | |
| Deaths occurring outside the division or district among persons belonging thereto | .. | .. | .. | .. | .. | .. | .. | Under 5 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | | | | | | | | | | | | | | | | | | | | | |
| Deaths occurring within the division or district among persons not belonging thereto | 527 | 25 | 29 | 13 | 41 | 245 | 174 | 5 upwards | .. | 2 | 1 | .. | .. | 5 | .. | .. | .. | 6 | 2 | 2 | .. | 1 | 13 | .. | 45 | 3 | 24 | 253 | 54 | | | | | | | | | | | | | | | | | | | | | | |



B

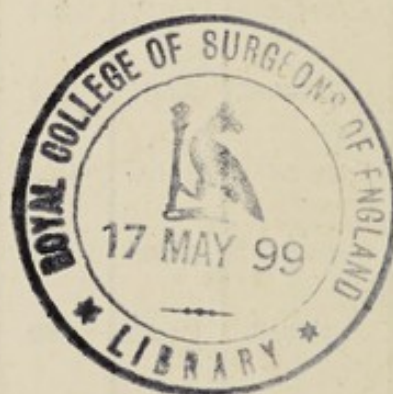
TABLE OF POPULATION, BIRTHS, AND OF NEW CASES OF INFECTIOUS SICKNESS 218

coming to the knowledge of the Medical Officer of Health, during the year 1898, in the Urban Sanitary District of Liverpool; classified according to DISEASES and LOCALITIES.

| NAMES OF LOCALITIES adopted for the purpose of these Statistics; Public Institutions being shown as separate localities. | POPULATION AT ALL AGES. | | Registered Births. | NEW CASES OF SICKNESS IN EACH LOCALITY, COMING TO THE KNOWLEDGE OF THE MEDICAL OFFICER OF HEALTH. | | | | | | | | | | | NUMBER OF SUCH CASES REMOVED FROM THEIR HOMES IN THE SEVERAL LOCALITIES FOR TREATMENT IN ISOLATION HOSPITALS. | | | | | | | | | | | |
|--|-------------------------|---------------|--------------------|---|-----------|-------------|-------------|-------------------|---------|---------------------|------------|------------|------------|----------|---|-----------|-------------|-------------|-------------------|---------|---------------------|------------|------------|------------|----------|-------------|
| | DISTRICTS AND WARDS. | Census, 1891. | | Estimated to Middle of 1898. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| | | | | | Smallpox. | Scarlatina. | Diphtheria. | Membranous Croup. | FEVERS. | | | | | Cholera. | Erysipelas. | Smallpox. | Scarlatina. | Diphtheria. | Membranous Croup. | FEVERS. | | | | | Cholera. | Erysipelas. |
| | | | | | | | | | Typhus. | Enteric or Typhoid. | Continued. | Relapsing. | Puerperal. | | | | | | | Typhus. | Enteric or Typhoid. | Continued. | Relapsing. | Puerperal. | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (a.) | (b.) | (c.) | (d.) | | | | | | | | | | | | | | | | | | | | | | | |
| Scotland | 53713 | 50053 | 2111 | 3 | 164 | 24 | 9 | 25 | 104 | 6 | .. | 7 | .. | 115 | 3 | 122 | 12 | 1 | 25 | 56 | 6 | .. | .. | .. | .. | |
| Exchange | 47738 | 42137 | 1310 | .. | 72 | 15 | 2 | 19 | 77 | 7 | .. | 2 | .. | 143 | .. | 58 | 7 | .. | 19 | 42 | 6 | .. | .. | .. | .. | |
| Abercromby | 55530 | 50642 | 1633 | 3 | 173 | 36 | 3 | 4 | 50 | 6 | .. | 5 | .. | 124 | 3 | 109 | 15 | .. | 4 | 21 | 3 | .. | .. | .. | .. | |
| Everton (H) | 110556 | 111106 | 4304 | 1 | 361 | 50 | 10 | 11 | 142 | 12 | 1 | 10 | .. | 184 | .. | 241 | 24 | .. | 8 | 60 | 6 | 1 | .. | .. | .. | |
| Kirkdale | 66131 | 72598 | 2377 | 3 | 223 | 36 | 7 | 21 | 93 | 11 | .. | 9 | .. | 78 | 3 | 136 | 11 | .. | 19 | 41 | 4 | .. | .. | .. | .. | |
| West Derby | 76971 | 84452 | 3099 | .. | 397 | 57 | 7 | .. | 112 | 4 | 1 | 6 | .. | 116 | .. | 265 | 24 | .. | .. | 48 | .. | .. | .. | .. | .. | |
| Toxteth (H H) | 107341 | 107916 | 3493 | 3 | 415 | 139 | 8 | 4 | 133 | 7 | .. | 2 | .. | 249 | 3 | 231 | 49 | 2 | 1 | 72 | 4 | .. | .. | .. | .. | |
| Walton (H) | 40304 | 56780 | 1639 | .. | 154 | 68 | 3 | 3 | 46 | 1 | .. | 3 | .. | 25 | .. | 68 | 22 | 1 | 3 | 19 | .. | .. | .. | .. | .. | |
| West Derby (Rural) (H) | 36349 | 42141 | 1024 | .. | 225 | 25 | 1 | 1 | 26 | 1 | .. | 2 | .. | 19 | .. | 114 | 6 | .. | 1 | 7 | .. | .. | .. | .. | .. | |
| Wavertree | 13764 | 18117 | 588 | .. | 49 | 8 | .. | 1 | 18 | 3 | .. | 2 | .. | 11 | .. | 23 | 2 | .. | 1 | 4 | .. | .. | .. | .. | .. | |
| Toxteth (Rural) | 21046 | 32703 | 649 | .. | 129 | 18 | 1 | .. | 12 | .. | .. | .. | .. | 14 | .. | 43 | 4 | .. | .. | 2 | .. | .. | .. | .. | .. | |
| Public Institutions. } Workhouses and Hospitals. | .. | .. | .. | .. | 55 | 27 | .. | 3 | 10 | 6 | .. | .. | .. | 35 | .. | 50 | 11 | .. | 3 | 5 | .. | .. | .. | .. | .. | |
| Emigrants, seamen, &c., passing through the city | .. | .. | .. | 4 | 7 | .. | .. | .. | 40 | 1 | .. | .. | .. | .. | 4 | 7 | .. | .. | .. | 34 | 1 | .. | .. | .. | .. | |
| TOTALS | 629443 | 668645 | 22227 | 17 | 2424 | 503 | 51 | 92 | 863 | 65 | 2 | 48 | .. | 1113 | 16 | 1467 | 187 | 4 | 84 | 411 | 30 | 1 | .. | .. | .. | |

Notification of Infectious Disease compulsory in the district since 1st September, 1890.

(H) The localities in which the Isolation Hospitals are situated.



CITY OF LIVERPOOL

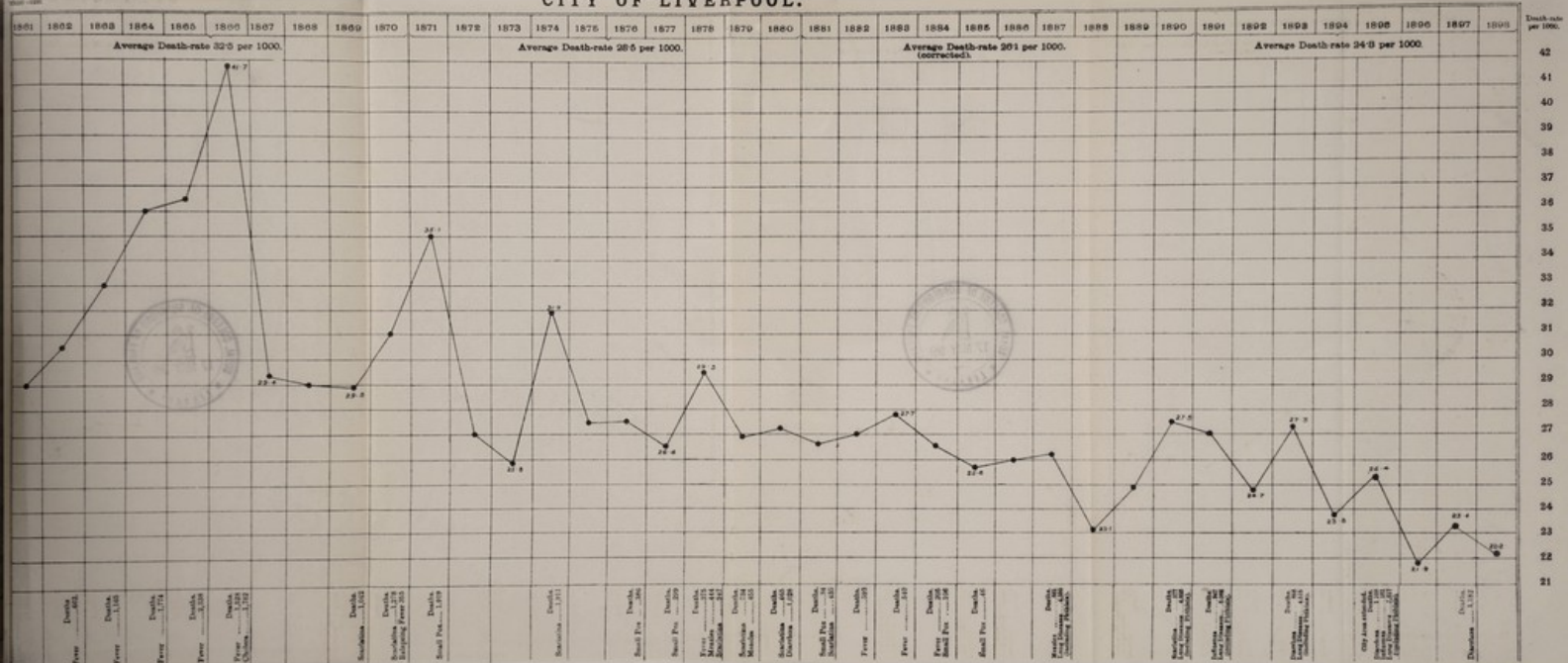
Diagram showing Birth Rate (blue) ... per 1000 of the estimated Population.
 " " Death Rate (black) ... in each of the Districts of the City during 1898.
 " Number of Deaths of Infants under one year out of every 1000 born (green) ...
 " estimated Population per acre, excluding Docks, Quays, &c. (red) ...



Diagram showing Birth Rate (blue) ...
 Death Rate (black) ...
 Number of Deaths of Infants under one year ...
 out of every 1000 born (green) ...
 estimated Population per acre, excluding ...
 docks, quays, &c. (red)

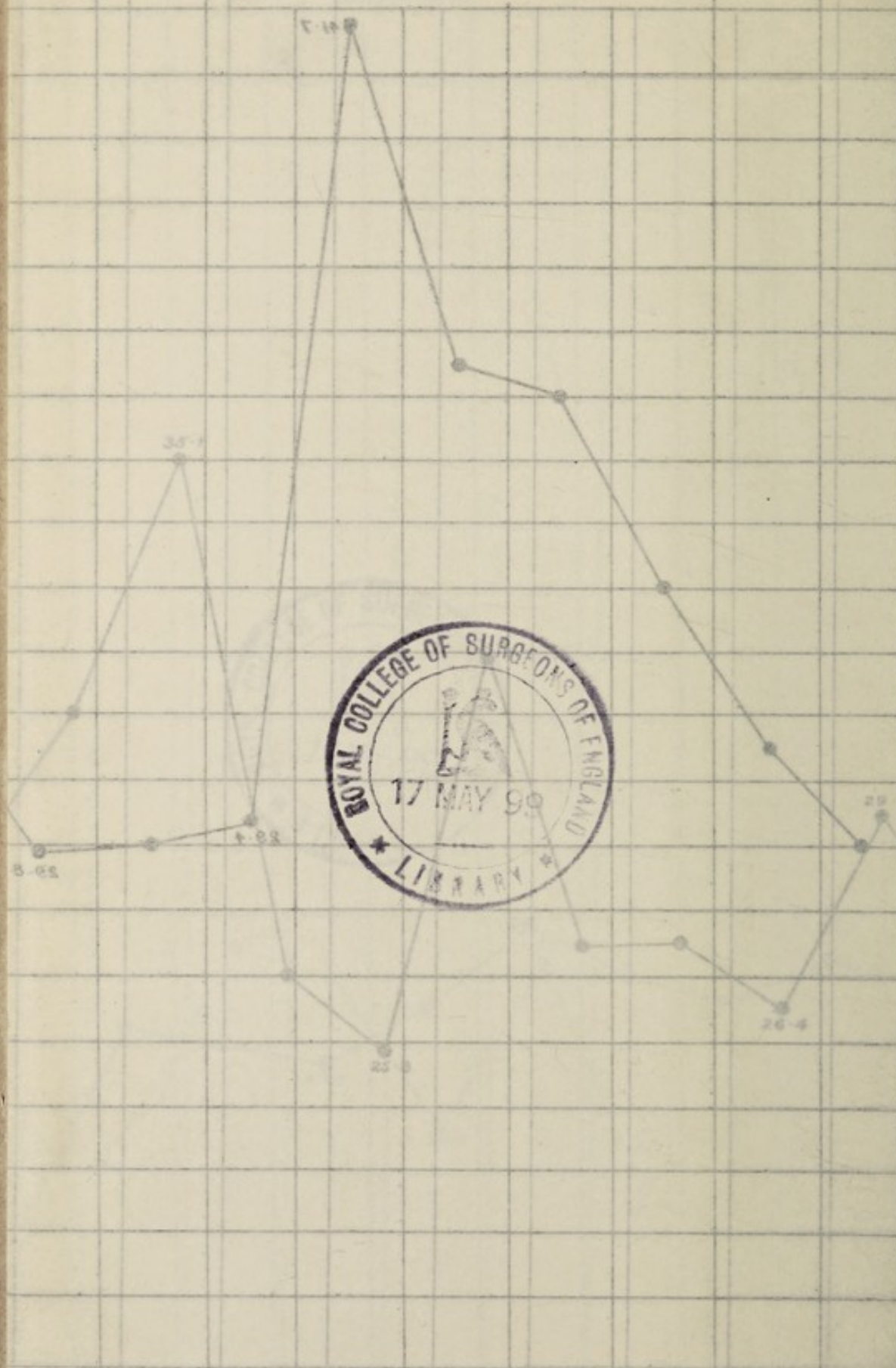


CITY OF LIVERPOOL.



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0001 rep 8.82 e... Avogadro Densitäts 32.5 per 1000.

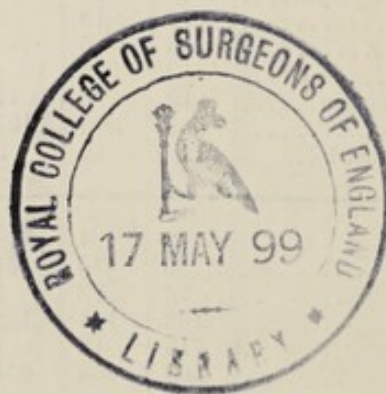


| | | |
|-----------|-------|--------|
| Geophiles | 1,018 | Deaths |
| Small Fox | 1,919 | Deaths |
| Geophiles | 1,193 | Deaths |
| Small Fox | 1,738 | Deaths |
| Geophiles | 1,838 | Deaths |
| Small Fox | 1,738 | Deaths |
| Geophiles | 1,169 | Deaths |
| Small Fox | 1,919 | Deaths |
| Geophiles | 1,169 | Deaths |
| Small Fox | 1,919 | Deaths |

DEATHS REGISTERED IN THE CITY OF LIVERPOOL, DURING THE YEAR ENDING SATURDAY, 31ST DECEMBER, 1898.

| CAUSE OF DEATH. | SEX. | AGE-BELOW. | | | | | | | | | | | | | | | | | | DISTRICTS. | | | | | | | | | | PUBLIC INSTITUTIONS. | | | | | | | | | | City of Liverpool. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------|------|------------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|-----|----|------------|-----|-----|------|------|------|------|-----|-----|-----|----------------------|------|-----|-----|-----|-----|-----|-----|-----|-----|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---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| | | AGE-BELOW. | | | | | | | | | | | | | | | | | | DISTRICTS. | | | | | | | | | | PUBLIC INSTITUTIONS. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ALL CAUSES. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. ALL CAUSES. | 2000 | 7400 | 4111 | 1398 | 307 | 300 | 174 | 400 | 180 | 225 | 311 | 300 | 1097 | 1302 | 1201 | 1330 | 1200 | 320 | 30 | 1300 | 542 | 662 | 2160 | 1313 | 1472 | 1425 | 637 | 662 | 662 | 200 | 1260 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | 394 | |

82



PHILIPS' NEW PLAN OF GREATER LIVERPOOL

Indicating Districts referred to in Report.

SCALE OF ONE MILE

The Map is divided into half-mile squares.



DISTRICTS.

1. SOUTHLAND
2. EXCHANGE
3. ASHDOBBY
4. EVERTON
5. KIRKDALE
6. WEST DERRY
7. TOXTETH
8. WALTON
9. WEST DERRY (RURAL)
10. WAVERLEY
11. TOXTETH (RURAL)

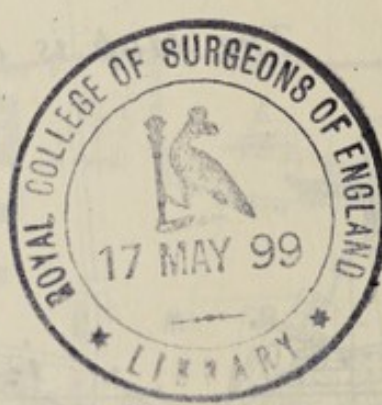
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Indicating Districts refer
SCALE OF ONE



T O W N S

Schaeffgen

PHILIPS' NEW PLAN OF GREATER LIVERPOOL

Indicating Districts referred to in Report.

SCALE OF ONE MILE

The Map is divided into half-mile squares.



DISTRICTS.

1. SCOTLAND
2. EXCHANGE
3. ASKEDOMBY
4. EVERTON
5. WINDLE
6. WEST DERRY
7. FORTYTH
8. WALTON
9. WEST DERRY (RURAL)
10. WASTHREE
11. FORTYTH (RURAL)

R I V E R M E R S E Y

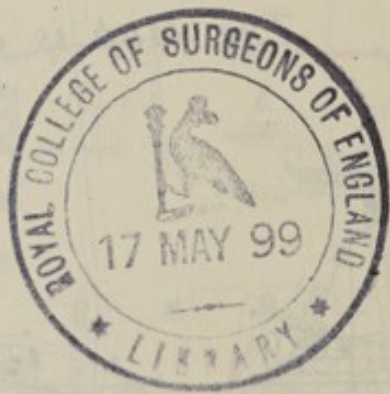
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SCALE OF ONE



T O W N S

Subject to the provisions of the Act of 1888