A statistical inquiry into the causes of death within the Burgh of Govan for 35 years, 1864-1898 / by W.G. Barras.

BURGH OF GOVAN.

A

STATISTICAL INQUIRY

INTO THE

CAUSES OF DEATH

WITHIN THE BURGH OF GOVAN FOR 35 YEARS,

1864-1898:

BY

W. G. BARRAS, M.D.

GLASGOW UNIVERSITY, AND KING'S COLLEGE, LONDON.
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FELLOW ROYAL INSTITUTE OF PUBLIC HEALTH.
MEMBER INCORPORATED SOCIETY OF MEDICAL OFFICERS OF HEALTH.
MEMBER JENNER INSTITUTE OF PREVENTIVE MEDICINE, LONDON.

With an APPENDIX of the DETAILED RETURNS for each Year.

GLASGOW:
ED BY JOHN CRAWFORD, 104 WEST GEORGE STREET.

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To the PROVOST, MAGISTRATES, and

COMMISSIONERS of the BURGH of GOVAN.

GENTLEMEN,

I have much pleasure in presenting to you my Report upon the Mortality Returns of the Burgh for the period of 35 years (1864-1898), in the hope that it may form a useful and valuable addition to the other Municipal Records.

The Figures relative to other Towns and Districts, which have been given in the following pages for the purpose of comparison, are official, being those published annually by Authority of the Registrar-General for Scotland.

I am, GENTLEMEN,

Your obedient Servant,

W. G. BARRAS, M.D.

WESTBOURNE, BELLAHOUSTON,
31st December, 1898.

INTRODUCTORY.

THE following pages have been the outcome of a desire on the part of the writer, to have a continuous record of the mortality returns within the Burgh of Govan since the year 1864, in which it was constituted a Burgh, up to the present year (1898), so that they might be preserved in their entirety for future reference. After a careful search through the old manuscript minute books of the burgh, it was discovered that either owing to the fact that no returns were ever issued in the early years, or that by some means or other they had become lost or destroyed, that up to 1871 inclusive, there were no figures available, whereby the rate of mortality could be compared with later years; consequently it was considered expedient that the Local Authority should be in possession of such a record, and therefore a renewed search has been made through the old registers of deaths, in order to complete the series up to the present time. As a result of this investigation, the following report has been furnished, showing at a glance the causes of death within the Burgh during a period of 35 years, arranged (with but slight variation), according to the classification adopted by the Registrar General in his returns, together with the monthly and annual death rates for each year, the total deaths under 5 and above 70 years of age, their ratio to deaths from all causes, the deaths from Zymotic diseases and the number of cases reported to the Medical Officer of Health, under the "Infectious Disease (Notification) Act, 1889," and the percentage of deaths to cases notified, including the deaths in hospitals, in this way obtaining the correct death-rate from the diseases of the Infectious group. For much of the historical part of the inquiry, I have to express my indebtedness to ANDREW WALLACE, Esq., Inspector of Poor, Govan Parish Council, from whose book, "A History of Glasgow," I have selected many interesting particulars regarding the ancient history of the Burgh.

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APPENDIX.

A STATISTICAL INQUIRY

INTO THE

CAUSES OF DEATH,

WITHIN THE BURGH OF GOVAN FOR 35 YEARS,

1864-1898.

Historical.—The signification of the name, Govan, according to Leslie, is that the word is derived from the excellence of its ale, and is supposed to be a compound of two Saxon words, "god win" (good wine), whilst Chalmers in his *Caledonia* says it comes from "gamhan," which in Gaelic is pronounced *gavan* and signifies a ditch.

The first reference we can find to Govan, is upon the authority of Fordun, in the *Scotichronicon*, where we are informed that Constantine, King of Cornwall, having resigned his crown on becoming a convert to the faith of St. Columba, came to this country from Ireland, and founded a monastery at Govan, in the year 565, of which he was the first Abbot, and where he was buried after suffering martyrdom. This date closely corresponds to that in which St. Mungo erected his bishopric on the classic banks of the Molendinar, around which, in the course of time, has arisen the second city of the Empire.

The Parish Church, which resembles that at Stratford-upon-Avon, the birthplace of Shakespeare, was originally dedicated to Constantine, and both prior and subsequent to the Reformation, it had an eventful religious history, and a succession of eminent divines. The old church, where for many years it was a prominent land-mark by the riverside, has within recent times been taken down and rebuilt in another part of the Burgh, exactly as it was in by-gone days, where it has now become the centre of a flourishing congregation, under the name of the Elder Park Parish, whilst upon the original site has been erected the present beautiful edifice, the result of the unwearied efforts of its late esteemed pastor, the Rev. Dr. John M'Leod.

The next information we have of Govan, is in the year 1136, when on the occasion of the consecration of the Cathedral of St. Mungo, by King David I., His Majesty presented to the bishop, John Achaius, the lands of Partick and the Parish Church of Govan. About 1147, Bishop Herbert, who succeeded John, bestowed the Church of Govan on his chaplain, and erected it into a prebend.

As early as the 16th century, Leslie classes it amongst the largest towns in the kingdom (Leslæi Scot. Descrip., p. 10), and hence it acquired the name by which it was known, until it was created a Police Burgh of "Meikle Govan," meikle being Scotch for the English word *large* or *great.*

At the remote period above referred to, and for centuries afterwards, Glasgow itself was simply a village situated higher up the Clyde, and both owe their prosperity to the coal and ironstone of Lanarkshire, and to the fact of their being situated on the banks of a navigable river.

Walter Beaton, one of the rectors of Govan, obtained the unenviable notoriety of being one of those who in the city of St. Andrews, assisted at the trial and signed the sentence upon Patrick Hamilton, the first Protestant martyr in Scotland. The last popish incumbent of Govan was Stephen Beaton, who was presented to the parsonage and vicarage of the parish in 1561, by the unfortunate Queen Mary. The first minister of Govan, after the Reformation, was Andrew Melville, one of the most celebrated of the early Reformers. He was also Principal of the University of Glasgow (1574-80), and for forty-four years after the Reformation these offices were always held by one and the same person.

All the early history of Govan relates to its ecclesiastical affairs, and it does not appear that it ever attained to much importance as a village, prior to the middle of the sixteenth century. But that it then began to assume a position of note, may be deduced from the fact, that in the year 1595, its lands had been feued to a considerable extent, and had become known as already described by the name of "Meikle Govan," to distinguish it from "Little Govan," situated near the locality which is now known as Dixon's ironworks.

It was then, of course, but a mere rural hamlet of a few hundred inhabitants, who were engaged in agricultural pursuits and gardening, supplying the Glasgow market with fruit and

vegetables. Another of its staple industries was that of salmon fishing, for which it was long famous, and this occupation was continued down to a period within the memory of many still alive, and with whom the writer has had many an interesting conversation about the "good old times." In the first decades of the present century, handloom weaving was the chief industry of the village. The weavers, of whom there were 340 in the year 1839, were a respectable, intelligent class of men, and not a few of their children are now reaping the fruits of their industry and prosperity, and to whom the Burgh's Coat of Arms is very apposite, "Nihil sine labore" (nothing without toil). Such was the condition of Govan up till about the year 1850, when the shipbuilding trade began to revolutionize both the district and the population, with the result that it was constituted a Burgh in 1864, under the provisions of the "General Police and Improvement (Scotland) Act, 1862," and that in the present year (1898), it is the seventh largest town in Scotland, with an estimated population of nearly 73,000 (72,755), distributed over an area of 1,069 acres.

Vital Statistics.—In dealing with the figures relating to the public health of a community, it is absolutely necessary that there should be accurate data upon which to base the conclusions drawn from these figures, and for this purpose we must know (1) the actual or estimated population, (2) the number of births and deaths registered during the year, together with the age and cause of death of each individual.

Methods of Estimating the Population.

I. The actual population is determined by the census, which in this country is taken every ten years, at the end of the first, or beginning of the second quarter of the year.

II. The estimated population for any year between two intervening censuses, may be arrived at in different ways.

(a) The Registrar General in his calculation adopts the use of Logarithms, which, however, are too abstruse to discuss in the present report.

(b) An approximately correct estimate may be arrived at by adding to the population as determined by the last census one-tenth of the increase between that figure and that of the census immediately preceding

it, for each year elapsing from the last enumeration, and adding to that one-quarter of the annual rate of increase, as in all annual returns of births and deaths, the rates are calculated upon the estimated population at the middle of the year, whereas the census deals with the population at the end of the first quarter of the year, as already described. For example—suppose the population at the 1881 census to be 50,000, and 60,000 in 1891, and we wish to obtain the estimated population in 1895 (at the middle of the year), the annual rate of increase between these two figures at successive decades is 1000, therefore, $1000 \times 4 + 250$ (one-quarter of the annual rate of increase), will give the population at the middle of 1895, viz.:—54,250.

(c) In rapidly growing districts the above methods will not hold good, and in such cases the population is estimated by multiplying the number of inhabitants per house (as per the census), by the number of occupied houses, which may be obtained from the Assessment Roll of the Burgh, and adding thereto the actual number of persons as is found to exist in model lodging-houses, and in ships within the harbours.

The "natural increment" of the people is represented by the excess of births over deaths, whilst the "actual increment" is determined by one of the above methods.

Annual Rates.—As a rule, these are expressed in terms per 1000 of the population at the middle of the year. In the case of the Infantile death rate, and that of those who have attained to over 70 years of age, the ratio is more clearly indicated by showing the percentage to the total deaths. For convenience and facility of calculation, it is to be observed that in the following tables the population is given in round numbers, anything under 500 being left out of consideration, whilst over that is reckoned as 1000.

Population of the Burgh.

The following table shows the increase in the population of Govan, since its formation into a Burgh in 1864, compared with the estimate of 1500 in 1775, 2122 in 1836, 2556, 3131, and 7637 at the censuses of 1841, '51, and '61 respectively.

ESTIMATED POPULATION OF BURGH FOR EACH YEAR 1864-1898.

(Calculated to Middle of the Year).

Year.	Est. Pop.	Year.	Est. Pop.
1864,	9,058	1882,	55,417
1865,	9,637	1883,	58,805
1866,	9,913	1884,	58,569
1867,	10,027	1885,	55,463
1868,	11,148	1886,	54,687
1869,	12,528	1887,	54,130
1870,	14,383	1888,	54,657
1871,	18,667	1889,	57,236
1872,	23,313	1890,	61,688
1873,	28,704	1891, (Census 61,364)	62,911
1874,	33,126	1892,	63,370
1875,	36,152	1893,	63,197
1876,	39,852	1894,	63,790
1877,	42,631	1895,	64,922
1878,	45,134	1896,	67,436
1879,	43,153	1897,	69,452
1880,	46,383	1898,	72,755
1881,	49,560		

ASSESSABLE RENTAL.

Assessable Rental,	1864-65,	£40,014	9	4
,,	,, 1871-72,	93,630	17	2
,,	,, 1881-82,	199,876	0	0
,,	,, 1882-83,	209,685	0	0
,,	,, 1883-84,	221,429	0	0
,,	,, 1884-85,	222,278	0	0
,,	,, 1885-86,	213,815	0	0
,,	,, 1886-87,	209,360	0	0
,,	,, 1887-88,	206,882	0	0
,,	,, 1888-89,	209,041	0	0
,,	,, 1889-90,	219,548	0	0
,,	,, 1890-91,	231,605	0	0
,,	,, 1891-92,	236,555	0	0
,,	,, 1892-93,	236,580	0	0
,,	,, 1893-94,	239,453	0	0
,,	,, 1894-95,	245,767	0	0
,,	,, 1895-96,	257,362	0	0
,,	,, 1896-97,	271,588	0	0
,,	,, 1897-98,	286,160	15	0
,,	,, 1898-99,	314,000	0	0

N.B.—Govan, in respect of Population, is at present the *SEVENTH*, and in respect of Rental, the *EIGHTH* Burgh (Royal, Parliamentary, or otherwise) in Scotland.

Classification of the Causes of Death.—The method selected in the following returns is that which is adopted by the Registrar General in his detailed reports, and wherein the causes of death are divided into eight distinct groups.

I. The first division or class, embraces what are known as the **Specific Febrile, or Zymotic Diseases,** under which heading are embraced those communicable, or infectious and contagious diseases, which occur in the form of epidemics; whilst the term Specific, as applied to them, expresses the fact of their having a specific origin, *i.e.*, arising from a pre-existing case, by means of a specific virus or germ, such germs being known by the name of Bacteria. These diseases may be communicated from one individual to another, either by actual contact (contagious), or through the agency of certain media (infectious), such as air, water, milk, &c. This class is sub-divided into six groups, as follows:—

(1) Miasmatic—these are better known as the principal Zymotic or infectious diseases, and are arranged according as to whether or not they are notifiable, under the "Infectious Disease (Notification) Act, 1889."

(2) Diarrhœal—Diarrhœa and Dysentery.

(3) Malarial—Ague and Remittent Fever.

(4) Venereal.

(5) Septic—Blood-poisoning.

(6) Zoogenous—diseases communicable from the lower animals to man, viz.:—Glanders or Farcy, Anthrax, Wool-sorters' Disease or Splenic Fever, Hydrophobia, and Cow Pox.

II. **Parasitic.**—These diseases may be due either to vegetable or animal parasites, the former, however, in this country being the more common, especially the disease known as Thrush.

III. **Dietetic.**—Embracing Intemperance (Chronic Alcoholism and Delirium Tremens), Scurvy, Starvation, Inanition, and want of Breast-milk.

IV. **Constitutional.**—This class includes all forms of Tubercular or Wasting diseases, chief amongst which is that known as Phthisis Pulmonalis, popularly called Consumption, and generally referred to the lungs. This group alone, accounts for from one-seventh to one-eighth of the total deaths registered yearly in the United Kingdom.

In addition to the various forms of Tuberculosis, there are also included in this class, Gout, Rheumatism, Rheumatic Fever, Cancer, Rickets, Anæmia, Chlorosis, Leucocythæmia, and Diabetes, &c.

V. **Developmental.**—Under which are arranged Birth Debility, Malformations (Congenital), and Old Age.

VI. **Local.**—Including deaths from the organs of Special Sense, and the different systems of the body, viz.:—Nervous, Circulatory, Respiratory, Digestive, Lymphatic, Urinary, Reproductive, and Integumentary, as well as of the organs of Locomotion.

VII. **Violence.**—Accident, Negligence, Homicide, and Suicide.

VIII. **Ill-defined and not Specified Causes.**—Including Dropsy, Debility, Atrophy, Tumour, Abscess, Hæmorrhage, Sudden Deaths (cause unascertained), and all other ill-defined causes.

Total Deaths.

The aggregate number of deaths within the Burgh for the 35 years (1864-1898), from all causes, and at all ages, is 31,640, giving an average of 904 per annum, with an average annual death rate of 22·51 per 1000 of the population.

The highest annual rate occurred in 1864, when it was 33·22; the lowest in 1894, when it fell to 15·46. The highest monthly rate was 53·33, in March, 1864; the lowest, 8·95, in September, 1894.

During this period, it will be seen that September has the lowest average rate, and March the highest.

COMPARATIVE MONTHLY RETURNS.

Average Death Rate per 1000.

September	18·54
August	20·89
June	20·96
October	21·01
February	22·32
July	22·45
November	22·95
December	23·59
April	23·91
May	23·92
January	25·34
March	26·15

In order to show more clearly the improvement in the Public Health of the Burgh during this period, the following table has been drawn up, showing the quinquennial averages, as in this manner the difference is more obvious, than by comparing each year individually with its predecessor, or the one immediately following.

TABLE showing AVERAGE DEATH RATES per 1000 from ALL CAUSES, and from NOTIFIABLE INFECTIOUS DISEASES—1864-1898.—Quinquennial Periods.

	1864 to 1868	1869 to 1873	1874 to 1878	1879 to 1883	1884 to 1888	1889 to 1893	1894 to 1898
Average Annual Death Rate. All Causes.	27·86	25·68	25·97	22·73	19·22	18·93	16·97
Average Annual Death Rate. Infectious Diseases (Notifiable).	4·57	3·79	3·35	2·51	1·53	2·19	1·01

From the above it will be seen that there has been a marked decrease in the death rate of the latter periods of five years, as compared with the earlier cycles, both in the deaths from all causes and from those of the Zymotic group. The difference between the averages of the first and last quinqennium represents the saving of 803 lives per annum, with the present population of 73,000. Contrasting the first fifteen years (1864-1878), with the latter (1884-1898), the actual saving of lives amounts to 584 per annum. Whilst the first year in the history of the Burgh (1864), had a death rate of 33·22, that of the year just ended (1898) was only 16·08, or less than one-half.

The following chart clearly shows the improvement referred to, whilst the accompanying table fixes the monthly and annual death rates for each of the 35 years.

DEATH RATE per 1000 of the POPULATION for 10 Years—1889-1898; showing the COMPARISON between the Rates for BURGH OF GOVAN, ALL SCOTLAND, and the EIGHT PRINCIPAL TOWNS.

	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898	10 Yrs. Av.
Govan - -	17·3	19·6	19·1	17·1	21·3	15·4	17·7	16·9	18·6	16·0	17·9
All Scotland -	18·4	19·7	20·7	18·6	19·5	17·2	19·7	16·9	18·7	18·4	18·7
Glasgow -	23·6	23·8	25·3	22·8	23·3	19·9	23·5	20·4	22·0	21·2	22·5
Edinburgh -	18·8	20·9	21·6	19·4	19·7	17·5	20·8	16·9	21·3	19·6	19·6
Dundee -	19·5	23·8	22·9	19·0	22·2	18·9	21·2	19·2	20·7	21·0	20·8
Aberdeen -	19·2	21·6	19·3	20·5	18·5	18·6	21·1	18·2	17·9	19·1	19·4
Leith - -	20·4	21·7	20·2	20·9	19·1	16·8	20·4	16·0	20·3	17·9	19·3
Paisley -	21·1	20·7	26·7	18·6	22·0	17·9	21·6	18·5	19·8	21·0	20·7
Greenock -	21·1	22·3	22·6	19·7	20·9	19·2	23·0	17·8	22·2	21·4	21·0
Perth - -	19·1	22·2	20·7	19·6	22·0	19·0	20·8	19·4	21·9	20·5	20·5

The above Table shows in a striking manner the very favourable position which the Burgh occupies with reference to its Death Rate, as taking the average for the 10 years, from 1889 to 1898 inclusive, Govan has a Death Rate lower than that for all Scotland, and also as compared with that of the eight principal towns.

Considering the occupation of its inhabitants, and the conditions under which many of them exist, such a rate must be highly gratifying to the community, and reflects the greatest credit upon the efforts of the Public Health Department in their endeavours to improve the health, and prolong the lives of the people.

DEAHTS UNDER FIVE YEARS OF AGE.

The Total Deaths under Five Years of age amount to 16,909, equal to a rate of 53·25 per cent. of the whole, and represent a rate of 12·11 per 1000 of the population; with the exception of the years 1870, 1888, 1892, 1894, and 1895, these deaths accounted for more than one-half of the total, the highest rate occurring in 1878, when it was 61·69 per cent.

DEATHS OVER SEVENTY YEARS OF AGE.

These account for 1628; equal to a rate of 5·14 per cent. of the total, and 1·20 per 1000 of the population. The average age at death was 76·92 years, and during the 35 years only two deaths of centenarians have been registered, both females; one in December, 1869, aged 107 years; the other in September, 1872, aged 100 years. In other words, out of every 100 deaths, five attain or exceed the allotted span of three score years and ten.

TABLE II.—Showing Annual Number of Deaths under Five Years of Age, Rate per 1000 Living, and Percentage to Total Deaths—1864-1898.

Year.	Total Deaths under Five Years.	Rate per 1000 Living.	Percentage to Total Deaths.
1864	158	17·55	52·84
1865	148	14·80	51·20
1866	135	13·50	55·10
1867	158	15·80	54·10
1868	141	12·81	52·80
1869	172	13·23	51·96
1870	173	12·35	47·13
1871	268	14·10	54·03
1872	326	14·17	54·78
1873	415	14·31	57·79
1874	589	17·84	57·51
1875	583	16·19	57·60
1876	502	12·55	54·03
1877	612	14·23	58·28
1878	642	14·26	61·69
1879	526	12·23	54·67
1880	575	12·50	54·91
1881	655	13·51	54·67
1882	671	12·78	55·68
1883	737	12·93	54·87
1884	606	10·27	52·10
1885	609	10·68	53·00
1886	548	9·96	51·02
1887	585	10·73	53·27
1888	411	7·54	46·59
1889	507	9·05	51·16
1890	634	10·30	52·00
1891	609	9·66	50·53
1892	532	8·57	49·25
1893	809	12·84	60·01
1894	450	7·08	45·45
1895	529	8·20	45·76
1896	568	8·60	50·13
1897	668	9·82	51·90
1898	658	9·01	56·04
Total	16,909	12·11	53·25

TABLE III.—Showing Annual Number of Deaths above 70 Years of Age, and Average Age at Death; Rate per 1000 Living, and Percentage to Total Deaths—1864-1898.

Year.	Deaths above 70 Years.	Average Age at Death.	Rate per 1000 Living.	Percentage to Total Deaths.
1864	17	75·88	1·98	5·68
1865	17	78·11	1·70	5·84
1866	18	77·05	1·80	7·34
1867	20	78·25	2·00	6·84
1868	23	77·78	2·09	8·61
1869	18	78·77	1·38	5·43
1870	22	75·50	1·57	5·99
1871	29	77·06	1·52	5·84
1872	32	77·87	1·39	5·37
1873	36	76·44	1·24	5·01
1874	40	76·37	1·21	3·90
1875	40	77·12	1·11	3·95
1876	51	76·47	1·27	5·48
1877	44	76·11	1·02	4·19
1878	39	77·28	0·86	3·75
1879	46	77·71	1·07	4·78
1880	55	76·16	1·19	5·25
1881	54	77·09	1·08	4·59
1882	30	79·60	0·54	2·48
1883	48	76·27	0·81	3·57
1884	43	76·83	0·72	3·69
1885	56	76·91	1·01	4·95
1886	58	77·79	1·05	5·40
1887	56	79·01	1·03	5·10
1888	50	75·36	0·90	5·66
1889	59	76·11	1·03	5·95
1890	75	75·98	1·20	6·15
1891	76	76·39	1·20	6·30
1892	71	76·09	1·12	6·57
1893	68	75·19	1·07	5·04
1894	57	76·94	0·89	5·75
1895	82	76·47	1·26	7·17
1896	63	76·46	0·94	5·56
1897	73	77·71	1·05	5·67
1898	62	76·32	0·84	5·28
Total	1628	76·92	1·20	5·14

DEATHS FROM THE VARIOUS GROUPS OF DISEASES.

I.—Specific Febrile, or Zymotic Diseases.

As already explained, this group includes those communicable or infectious and contagious diseases which occur in epidemics, and may be communicated from one individual to another, either by actual contact (contagious), or through the agency of certain media (infectious), such as air, water, milk, &c.

(a) **Miasmatic.**—The principal Zymotic diseases are those which belong to the Miasmatic or Infectious group, and these again have been sub-divided in the following returns into two classes, Notifiable and Non-notifiable, according as to whether or not they are included in "The Infectious Disease (Notification) Act, 1889."

The total deaths during the period of 35 years from Miasmatic affections number 4857, being equal to 15·3 per cent. of the total deaths from all causes. Those from the Notifiable diseases amount to 3295, or 10·4 per cent.; from the Non-notifiable 1562, or 4·9 per cent.

Detailed Returns of Notifiable Diseases—1864-1898.

Disease.	Total Deaths.	Percentage to Total Deaths.
Small Pox	48	·15
Measles	1,200	3·79
Scarlet Fever	726	2·29
Diphtheria and Membranous Croup	625	1·97
Erysipelas	112	·35
Puerperal Fever	67	·21
Typhus Fever	115	·36
Enteric Fever	353	1·11
Continued Fever	30	·10
Relapsing Fever	10	·03
Cholera	9	·03
Total	3,295	10·4

Small Pox.—There have been 48 deaths from Small Pox since 1864, equal to ·15 per cent. of the total. Excluding two deaths in the hospital which is now outside the Burgh, there has been no death from Small Pox within the Burgh since February, 1883. It is satisfactory to note that there has been no case reported since June, 1895.

Measles has accounted for 1200 (3·79 per cent.) deaths, chiefly due to pulmonary complications amongst children of the poorer class, amongst whom it is regarded as a disease of but little moment. In the case, however, of well-nourished children, in healthy homes, the mortality is practically *nil.* The disease is most prevalent in winter, and in large towns epidemics occur every three or four years, coincident with the appearance of a fresh crop of susceptible infants. The mortality is greatest under three years of age, and is intensified by overcrowding and general insanitary conditions. The infection is given off in the breath and from the skin of the sick, and may be communicated either through the air or by means of clothing, &c. Owing to the fact that it is highly infectious before the characteristic rash appears, *i.e.*, in the catarrhal stage, it is much more difficult to prevent the spread of this disease than is the case with the other Zymotic affections.

Scarlet Fever, like Measles, is essentially a disease of childhood, and is most fatal during the third year of life. The total deaths amounted to 726 (2·29 per cent.), the majority taking place in October and November. The infection, as in Measles, is given off in the breath and from the skin of the patient, but is most active in the stage of desquamation. It may be conveyed through the medium of the air, and clings with great tenacity to bedding, clothing, furniture, books, &c., and the virus may remain dormant for a lengthened period. The milk supply is a very important factor in the spreading of Scarlet Fever, and this may occur in different ways. For example, the cows may have been milked by a person who has had a slight attack of the disease, or who may have been in attendance upon a case of sickness in the farm, dairy, or elsewhere, which in the light of subsequent events was proved to have been a mild, and perhaps unrecognised form of the disease in question. The milk, however, may derive its infective property from having been stored in a room or cellar, in which clothing, &c., from the sick has been placed. In some recent epidemics, as at Hendon and Wimbledon, investigations

have shown that cows are liable to a disease, which is either identical with, or resembles very closely, human Scarlet Fever, and that the milk from these animals produced the outbreak amongst those consuming it.

As showing the important part which milk plays in the spread of infectious diseases, the late Mr. Ernest Hart, in a paper read before the International Medical Congress, in 1881, gave an account of 71 epidemics due to infected milk, 50 of Enteric Fever, 14 of Scarlet, and 7 of Diphtheria; the number of cases traceable to each being 3500, 800, and 500 respectively. Since that date many other epidemics caused through the agency of the milk-supply have been recorded.

Fevers (excluding Scarlet Fever, which is returned separately), accounted for 498 deaths (1·57 per cent.), consisting of—

Enteric Fever - -	353 = 1·11	per cent.
Typhus Fever - -	115 = ·36	,,
Continued Fever - -	30 = ·10	,,
	498 = 1·57	,,

The virus of Enteric Fever, like that of many other infectious diseases, retains its virulent property for a long time in a latent form, and as it can be easily roused into activity under certain insanitary conditions and circumstances, its origin like that of Diphtheria is often shrouded in the deepest mystery, whilst the poison may exert its baneful effects at a long distance from its original source.

The specific organism which is concerned in the causation of the disease, is contained in the discharges from the bowel of the patient. No age is exempt from this disease, which is the most insidious and treacherous of the Zymotic group, but that between 15 and 25 years is more prone to it than any other. It is also worthy of remark, that whilst the poorer classes are perhaps less liable to attack, and are more likely to make a rapid and satisfactory recovery when placed under proper sanitary arrangements, those in better circumstances are more apt to take it in a severe and fatal form. Although in many cases the true nature of the disease may be overlooked, either from the patient having had it in a modified or abortive manner, or from some predominant complication overshadowing the primary illness, the average mortality in typical cases varies from 15 to 25 per cent. The methods of infection in many cases are entirely unaccountable,

yet the fact remains that there must of necessity be in all cases the presence of the specific virus, either in the air, water, milk, or other articles of food; as decomposing organic matter, and sewer-air without the specific virus, although producing other forms of illness and indisposition, cannot produce Enteric Fever. The specific contagion may be inhaled or swallowed in the form of the dried fæcal matter (analogous to the dried sputum in cases of Phthisis), especially in rural districts, where the discharges are thrown into privies and middens without previous disinfection, or from the soakage of the polluted excrement into the wells from which the water-supply is derived. In towns, sewer-air may be drawn into the water pipes where the W.C's. communicate directly with the main, and where there is no intervening cistern. Badly-trapped water-closets, unventilated drains and sewers, the over-flow pipes from cisterns, and waste-pipes from baths and wash-hand basins, leading directly into the soil-pipe, which soil-pipe is unfortunately in too many instances carried through and underneath the house, instead of being at once carried to the outer walls of the dwelling, are other fertile sources of infection from Enteric or Typhoid Fever. Milk also may be the medium of contagion in many cases, either from having been kept in vessels washed with tainted water, or deliberately adulterated with water containing the specific poison, or from exposure to effluvia from faulty drains, cesspools, or imperfectly ventilated drains or sewers.

Typhus Fever, which is also known as pestilential, ship, or gaol fever, is intimately associated with poverty and overcrowding, especially so in the winter, and at times of trade depression. As all cases reported are immediately removed to hospital, and as the germs of the disease are rapidly destroyed by cleanliness, sunlight, and fresh air, the chances of an outbreak of this disease are reduced to a minimum.

Continued Fever is the term applied to all other forms of Febrile disease, which do not answer to the characteristics of either of the above types.

(b) **The Non-notifiable (Miasmatic) Diseases** accounted for 1562 deaths (4·93 per cent.), of which no less than 1523 (4·81 per cent.) were due to Whooping Cough. 30 occurred from Influenza, 6 from Chicken Pox, 1 from Cerebro-spinal Fever, 1 from Mumps, and 1 from Leprosy in November, 1885.

TABLE IV.—Showing Rate per 1000 of Population, and Annual Number of Deaths from Whooping Cough.

Year.	Number of Deaths.	Rate per 1000.
1864	3	·33
1865	9	·90
1866	8	·80
1867	29	2·90
1868	9	·81
1869	12	·85
1870	14	1·00
1871	7	3·68
1872	17	·73
1873	18	·62
1874	28	·84
1875	25	·71
1876	18	·45
1877	33	·76
1878	89	1·97
1879	59	1·37
1880	75	1·67
1881	27	·54
1882	87	1·58
1883	85	1·44
1884	52	·88
1885	49	·89
1886	89	1·61
1887	79	1·46
1888	33	·60
1889	38	·66
1890	70	1·12
1891	66	1·04
1892	30	·47
1893	69	1·09
1894	48	·75
1895	38	·60
1896	63	·92
1897	80	1·15
1898	67	·91
Total	* 1,523	1·11

* 4·81 per cent. of Total Deaths.

TABLE V.—Showing Number of Deaths from Notifiable Infectious Diseases in each Month of the 35 Years—1864-1898.

Year.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly Totals.	Rate per 1000.
1864	9	5	6	3	2	3	3	2	4	5	4	6	52	5·77
1865	9	8	9	2	7	6	4	1	2	3	5	...	56	5·60
1866	1	3	3	2	...	2	1	2	7	8	9	3	41	4·10
1867	5	5	2	3	...	2	2	1	3	3	5	4	35	3·50
1868	4	1	3	2	3	1	...	2	4	7	9	7	43	3·91
1869	4	4	4	4	3	6	3	6	2	4	3	6	49	3·76
1870	5	4	8	2	2	...	6	6	5	3	9	10	60	4·28
1871	8	7	7	8	5	9	7	5	5	7	4	10	82	4·31
1872	10	6	6	8	4	3	7	6	2	1	14	11	78	3·39
1873	10	1	8	4	7	9	9	6	6	7	17	10	94	3·24
1874	11	8	13	13	13	11	6	9	36	34	34	27	215	6·51
1875	12	12	17	21	25	8	3	6	8	4	7	3	126	3·50
1876	8	3	2	1	6	1	14	7	12	9	13	8	84	2·10
1877	19	19	17	11	24	14	8	3	5	7	4	3	134	3·11
1878	9	6	3	8	...	2	9	9	4	7	2	11	70	1·55
1879	12	13	20	12	8	7	...	1	2	6	4	4	89	2·07
1880	1	4	11	8	3	7	9	4	7	5	15	4	78	1·69
1881	11	2	3	9	5	14	19	19	14	20	14	15	145	2·98
1882	13	12	20	9	4	5	4	9	5	11	19	18	129	2·45
1883	19	8	15	30	44	14	4	6	13	19	17	4	193	3·38
1884	10	8	9	7	10	...	1	6	9	9	6	13	88	1·49
1885	9	7	19	14	17	7	4	6	6	6	7	8	110	1·93
1886	6	5	4	1	2	6	3	4	4	7	2	9	53	0·94
1887	5	12	13	6	20	7	14	4	6	12	10	4	113	2·07
1888	6	3	9	5	2	...	11	5	...	4	6	16	67	1·22
1889	16	10	19	18	18	5	5	5	3	5	9	6	119	2·12
1890	6	3	14	13	35	18	20	7	9	5	3	8	141	2·29
1891	7	6	3	4	10	23	12	9	4	11	8	13	110	1·74
1892	6	4	4	5	7	1	7	7	2	3	4	10	60	1·03
1893	25	21	55	49	29	18	7	1	12	8	6	9	240	3·80
1894	9	3	4	3	9	5	1	4	3	1	2	8	52	0·81
1895	3	8	4	4	7	3	3	3	3	1	3	2	44	0·68
1896	5	3	2	6	5	16	14	10	4	5	1	5	76	1·15
1897	4	3	3	4	5	6	9	3	3	6	10	31	87	1·28
1898	21	7	12	6	6	8	3	6	3	2	6	2	82	1·12
Monthly Totals.	318	234	351	305	347	247	232	190	217	255	291	308	*3,295	2·71

* 10·4 per cent. of Total Deaths.

TABLE VI.—Showing Deaths from Measles in each Month of the 35 years—1864-1898.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly Totals.
1864	...	...	...	...	...	...	...	...	...	...	...	...	...
1865	2	4	2	...	3	2	1	...	...	...	...	...	14
1866	...	1	...	...	...	1	...	...	3	2	1	...	8
1867	...	...	...	...	...	...	...	...	1	...	1	1	3
1868	1	1	...	1	1	...	...	...	1	4	6	1	16
1869	1	1	1	...	1	4	1	3	...	1	...	...	13
1870	...	...	...	...	...	...	...	...	...	...	...	1	1
1871	...	...	...	...	...	5	4	3	4	6	3	6	31
1872	...	...	1	...	...	...	...	...	...	...	1	1	3
1873	...	...	...	1	3	3	1	3	...	1	2	5	19
1874	2	1	2	...	1	...	...	1	...	...	...	...	7
1875	...	1	7	7	6	2	...	...	...	...	...	...	23
1876	...	...	...	...	...	...	...	...	2	1	1	...	4
1877	7	8	8	9	21	9	5	...	...	1	...	...	68
1878	1	...	...	1	...	...	7	5	...	2	...	2	18
1879	10	7	13	8	7	3	...	...	...	1	1	...	50
1880	...	...	5	3	...	2	6	2	...	1	1	1	21
1881	3	...	2	1	3	8	9	8	3	2	1	2	42
1882	1	...	5	...	1	...	...	2	...	...	6	9	24
1883	10	2	5	24	41	14	2	...	1	...	1	...	100
1884	3	1	1	...	4	...	1	...	1	1	4	8	24
1885	6	6	13	13	13	4	2	1	2	...	...	1	61
1886	...	...	...	...	...	...	...	...	...	...	...	...	...
1887	...	9	12	3	16	6	5	1	...	...	...	1	53
1888	...	2	1	1	...	...	1	...	...	...	2	5	12
1889	10	7	16	16	17	1	2	3	...	...	...	...	72
1890	2	...	7	9	29	16	14	3	1	1	...	...	82
1891	1	...	1	1	8	20	10	6	1	2	3	3	56
1892	3	2	2	2	1	...	4	2	...	1	2	5	24
1893	17	18	51	44	25	16	3	...	2	...	...	1	177
1894	1	...	...	2	4	1	...	...	...	...	...	3	11
1895	...	3	3	2	4	2	...	...	...	...	...	1	15
1896	...	...	...	5	5	14	13	6	1	4	1	4	53
1897	1	2	1	2	1	5	6	...	...	2	5	26	51
1898	18	2	4	5	6	4	2	1	...	...	2	...	44
Monthly Totals.	100	78	163	160	221	142	99	50	23	33	44	87	*1200

* 3·79 per cent. of Total Deaths.

TABLE VII.—Showing Deaths from Scarlet Fever in each Month of the 35 Years—1864-1898.

Year.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly Totals
1864	2	...	...	2	...	2	...	...	...	...	...	...	6
1865	...	...	1	...	...	...	...	...	...	1	3	...	5
1866	...	...	1	1	...	...	...	...	...	3	4	2	11
1867	...	2	2	...	...	2	...	1	...	1	2	1	11
1868	1	...	...	...	...	...	...	...	...	1	3	2	7
1869	...	2	1	2	...	...	1	...	...	3	1	4	14
1870	3	2	5	...	...	...	3	1	2	2	...	1	19
1871	1	2	1	1	...	1	...	1	...	...	...	1	8
1872	6	3	3	3	2	...	4	2	2	...	5	5	35
1873	2	...	3	2	1	4	2	1	5	2	7	1	30
1874	...	1	1	5	8	3	2	4	33	31	34	23	145
1875	9	9	8	8	18	1	1	2	3	1	2	1	63
1876	1	...	...	...	3	...	11	4	7	5	8	7	46
1877	6	4	3	...	...	...	2	1	...	...	1	1	18
1878	...	3	...	...	...	...	...	...	...	...	1	6	10
1879	...	2	3	...	...	...	...	...	...	2	1	...	8
1880	1	2	3	4	1	3	...	...	3	2	9	1	29
1881	1	...	...	1	...	3	...	8	6	3	3	2	27
1882	1	...	1	3	...	1	1	2	2	1	1	1	14
1883	5	1	4	6	2	...	1	2	6	11	10	3	51
1884	3	5	4	3	1	...	...	3	...	3	...	...	22
1885	...	1	2	...	...	1	2	2	2	1	3	5	19
1886	4	4	1	1	1	3	2	1	1	1	...	3	22
1887	2	1	...	...	...	1	3	1	3	8	4	1	24
1888	2	1	4	...	...	...	2	1	...	1	...	4	15
1889	3	...	1	...	1	...	...	...	1	...	...	...	6
1890	1	...	...	3	2	...	2	...	2	...	...	1	11
1891	2	...	...	...	...	...	...	...	...	...	...	2	4
1892	...	...	...	1	...	...	...	...	1	...	...	1	3
1893	...	2	...	2	1	...	...	...	1	2	...	2	10
1894	2	1	...	...	...	1	...	...	...	1	1	...	6
1895	2	1	...	...	1	...	...	1	...	...	...	1	6
1896	1	...	...	1	...	1	...	2	1	...	...	...	6
1897	...	...	...	2	...	...	...	...	...	1	1	2	6
1898	2	1	3	...	...	3	...	...	...	...	...	...	9
Monthly Totals.	63	50	55	51	42	30	39	40	81	87	104	84	*726

* 2·29 per cent. of Total Deaths.

TABLE VIII.—Showing Number of Deaths from Fevers—Typhus, Enteric, and Continued—in each Month of the 35 Years—1864-1898.

Year.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly Totals
1864	3	1	1	...	1	...	1	2	1	2	3	3	18
1865	4	3	4	1	4	4	1	...	1	...	1	...	23
1866	1	2	2	1	...	1	1	1	2	...	1	1	13
1867	2	3	...	2	...	...	...	...	2	2	1	1	13
1868	1	...	2	...	1	1	...	1	2	...	...	2	10
1869	1	1	1	1	2	...	1	2	1	...	1	1	12
1870	1	2	3	2	2	...	2	2	1	1	5	2	23
1871	1	1	...	3	1	2	1	...	1	...	...	3	13
1872	2	3	1	3	...	...	1	1	...	1	3	3	18
1873	2	...	3	1	2	1	3	1	...	1	4	1	19
1874	...	1	6	3	2	3	3	2	...	1	...	...	21
1875	1	1	...	5	...	3	...	...	5	3	3	1	22
1876	2	2	2	1	1	1	3	2	2	3	1	...	20
1877	3	4	2	2	2	2	...	...	1	2	1	...	19
1878	2	...	1	2	...	1	2	2	2	1	...	2	15
1879	...	1	1	2	...	4	...	...	1	1	...	1	11
1880	...	...	...	1	2	...	2	...	1	2	2	1	11
1881	3	1	1	5	2	3	7	1	1	7	2	4	37
1882	5	8	8	4	3	2	1	2	1	1	6	2	43
1883	1	2	3	...	...	...	...	1	4	2	2	...	15
1884	...	2	4	...	1	...	...	...	2	2	1	2	14
1885	...	...	1	...	2	2	...	2	...	3	1	...	11
1886	...	1	1	...	...	...	...	...	1	1	1	1	6
1887	...	1	...	...	2	...	3	1	1	2	2	...	12
1888	...	...	...	1	1	...	1	...	...	1	1	2	7
1889	1	1	...	...	...	1	1	1	...	1	1	1	8
1890	...	...	4	...	1	1	...	1	1	3	...	2	13
1891	2	1	...	...	...	1	...	...	...	3	2	1	10
1892	1	...	1	1	...	...	1	1	1	...	...	...	6
1893	2	...	...	...	1	...	1	...	3	...	...	...	7
1894	...	...	1	...	1	...	...	...	1	...	...	...	3
1895	...	...	...	...	...	...	...	...	...	...	...	...	...
1896	1	...	...	...	...	...	...	...	...	...	...	...	1
1897	1	...	...	...	2	1	3	...	2	...	3	1	13
1898	...	2	2	...	...	...	...	2	1	1	2	1	11
Monthly Totals.	43	44	55	41	36	34	39	28	42	47	50	39	498

Note.—Total Deaths from Fevers for 35 Years, 498; consisting of—

Enteric,	353 = 1·11	per cent.	of	Total Deaths.
Typhus,	115 = 0·36	,,	,,	,,
Continued,	30 = 0·10	,,	,,	,,
	498 = 1·57	,,	,,	,,

Diphtheria (Membranous Croup).—The deaths registered from this affection were 625 (1·97 per cent.). Diphtheria is a disease which affects all countries, all seasons, and all ages, but occurs most frequently in young children, especially between the ages of three and six years. There appears to be a marked susceptibility to this disease in the case of certain families and individuals. It attacks those who appear to be in the best of health, whilst the weakly often escape; the wealthy and clean, as well as the poor and uncared for. Being a highly infectious and contagious disease, when once introduced into a household, especially in a slight and perhaps unrecognised form, it not infrequently carries off every child in the family. The contagion is given off by the breath, and in the secretions and discharges from the mouth and throat, and although not carried far through the air, clings with great tenacity to clothing and other articles. In this way the infection may be conveyed through the medium of sewer-gas, thus gaining access to the respired air, and contaminating milk and water exposed to the gaseous emanations, especially so in case of drinking-water stored in cisterns, and milk which is kept in pantries exposed to sewer-air.

Besides being air-borne, it frequently arises by direct contact, through the virus being coughed into the face of the attendant, by means of the saliva and discharges from the throat containing the diphtheritic poison. In this way the nurse often contracts it from her charge, the mother from her offspring, and the doctor from his patient. In some cases, otherwise unaccountable outbreaks of Diphtheria have been associated with certain insanitary conditions, such as dampness of the soil or dwelling, and the effluvia from decomposing organic matter, conditions which are probably conducive to the growth and development of the poison, as when these were remedied the epidemic ceased. There is also no doubt but that the question of school attendance is an important factor in the spread of the disease, as a child suffering from a mild attack may be permitted to attend school, at the same time propagating the disease in a virulent form.

In many returns of other towns, the Zymotic death-rate deals with the mortality from the seven principal Zymotic diseases, and for the sake of comparison, both with these and with the returns of the Registrar General, the following table (No. IX.), has been compiled, dealing with the deaths in the Burgh for the period of 35 years, from these diseases, viz. :—

1. Small Pox.
2. Measles.
3. Scarlet Fever.
4. Diphtheria and Membranous Croup.
5. Fevers.
6. Whooping Cough.
7. Diarrhœa and Dysentery

(See Tables IX. and X.)

2.—Diarrhœal Diseases.

These account for 807 deaths (2·55 per cent.), consisting of 772 from Diarrhœa and 35 from Dysentery. Although a symptom of many diseases, Diarrhœa in the sense in which it is here considered, implies those cases having their origin in tainted food and impure air and water, from contamination with the bacterial agents of putrefaction, which, as is well-known, is more rapid and intense under the influence of a high temperature.

The rate of mortality rises and falls with the temperature of the earth, attaining its maximum when the subsoil temperature approaches that of 56° Fahr. four feet below the surface. The soils conducive to a high mortality from Diarrhœa are those in which the particles are pervious to air and water (such as sand and gravel), and containing organic matter from privies, cesspools, and drains.

Table XI. shows the annual number of deaths from Diarrhœal diseases, and rate per 1000 of the population.

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TION) ACT, 1889," since its adoption in the Burgh, from March, 1890.
ED.

1896.		1897.			1898.			Totals for 9 Years.		
Deaths.	Percentage.	Notifications.	Deaths.	Percentage.	Notifications.	Deaths.	Percentage.	Notifications.	Deaths.	Percentage of Deaths to Notifications.
...	...	...	...	...	...	...	...	34	2	5·88
62	4·6	1267	54	4·2	738	54	7·3	8607	500	5·81
15	4·5	318	17	5·3	494	24	4·8	2984	147	4·93
8	22·2	40	12	30·0	55	15	27·2	521	160	30·71
7	70·0	12	6	50·0	8	3	37·5	146	81	55·48
2	1·9	85	2	2·3	114	5	4·3	1069	39	3·64
4	57·1	4	3	75·0	6	3	50·0	56	27	48·21
3	37·5	6	2	33·3	68	19	27·9	159	37	23·27
6	10·1	91	23	25·2	127	22	17·3	1007	148	14·69
1	9·0	1	...	...	...	...	...	51	2	3·92
...	...	...	...	...	...	...	...	1	1	100·0
...	...	...	...	...	...	...	...	1	...	0·0
...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	3	...	0·0
...	...	‡ 1	...	...	...	...	...	1	...	0·0
108	5·74	1825	119	6·52	1610	145	9·00	14,640	1144	7·81

‡ Not Notifiable.

TABLE XI.—Showing Rate per 1000 of the Population and Annual Number of Deaths from Diarrhœa and Dysentery.

Year.	Number of Deaths.	Rate per 1000.
1864	6	·77
1865	6	·60
1866	6	·60
1867	12	1·20
1868	11	1·00
1869	7	·61
1870	10	·78
1871	10	·57
1872	17	·78
1873	30	1·03
1874	20	·60
1875	36	1·05
1876	37	·92
1877	17	·41
1878	30	·77
1879	10	·23
1880	32	·71
1881	14	·32
1882	39	·74
1883	22	·42
1884	37	·62
1885	25	·47
1886	21	·40
1887	22	·44
1888	11	·20
1889	16	·33
1890	18	·30
1891	29	·46
1892	16	·27
1893	36	·60
1894	8	·12
1895	20	·33
1896	24	·35
1897	33	·47
1898	84	1·15
	*807	·59

* 2·55 per cent. of Total Deaths.

The remaining Zymotic diseases account for 123 deaths (·3 per cent.) and are principally due to Blood-poisoning.

II.—Parasitic Diseases.

The six deaths registered were due to Thrush, a disease caused by a vegetable growth, known as the Oïdium Albicans, which produces in fatal cases severe gastro-intestinal irritation, and death from exhaustion.

III.—Dietetic Diseases.

These caused 77 deaths (·2 per cent.), 15 from Starvation and want of breast milk, 2 from Scurvy, and 60 directly due to Alcoholism.

IV.—Constitutional Diseases.

From this group there were registered 5626 deaths, or 17·7 per cent., of which 4990 were due to Consumption and other forms of Tubercular affections, which is equal to a rate of 15·7 per cent., or more than one-seventh of the total deaths; 461 were attributable to Cancer (1·4 per cent.), 69 to Gout, Rheumatism, &c. (·2 per cent.), and other Constitutional diseases 106 (·3 per cent.)

Deaths from Tubercular Diseases.—As already mentioned, this class alone accounts for from one-seventh to one-eighth of the total deaths registered yearly in Great Britain and Ireland. The most important of this group is Phthisis, or Tuberculosis of the lungs, but it also includes all other forms of Tubercular or wasting diseases occurring in other parts of the body, and it is in this sense in which we shall now consider them. That Tubercular disease in its various aspects is due to a specific germ or virus, is now acknowledged by most authorities, consequent upon the discovery of the Tubercle Bacillus by Professor Koch, in 1882. Like the germs of other Zymotic diseases it fulfils all the conditions applicable to specific micro-organisms, in reproducing the disease in question. That it is also a disease of the lower animals and communicable from them to man, through the milk and flesh of diseased animals, and from one person to another, there is now no doubt whatever. One of the chief factors in its prevalent nature, is due to the expectoration (in which the virus is contained), from persons affected with the disease becoming dried up, carried through the air, and being inhaled by a

healthy person, who, if their vitality be lowered in any way, or through some constitutional idiosyncracy or predisposition, becomes a fresh centre of infection, in whom the virus will soon work its deadly effects.

It is to be hoped that before long Tuberculosis and especially Phthisis will be included in the list of infectious diseases, so that all precautions may be taken to prevent its spreading, as has already been the case with the eruptive fevers, and with which it is strictly analogous.

The tubercular virus only grows and multiplies in the bodies of man and living animals, producing as a result of their vital activity, an intensely active poison, which is the more direct agent in bringing about the morbid changes in living structures. Although introduced into the body, it does not remain there, but is thrown off in discharges, *e.g.*, in the sputum, which when it is inhaled in the form of dust by a susceptible person, again reproduces itself.

The virus may retain its power of infection outside the living body for a considerable time, but it has been found by competent observers that the free access of fresh air and sunlight combined, eventually destroy the Bacillus, and this is one of many reasons why the building of back-to-back houses should be condemned as it is under such conditions of living that Tubercular diseases are most rife. It has been shown by Savitky, that phthisical expectoration exposed "at the ordinary room temperature, and generally under all common life conditions," retains its infectiousness not longer than two-and-a-half months.

In the proceedings of the Royal Society, Dr. Ransome, by experimental observation, has shown that fresh air and light, and a dry sandy soil, have a distinct influence in arresting the virulence of the Tubercle Bacillus—that darkness somewhat interferes with this disinfectant action, but that the mere exposure to light in otherwise bad sanitary conditions, does not destroy the virus.

In attempting to show that Tuberculosis, like the Zymotic group, is undoubtedly infectious, it may be well to enunciate the well-accepted fact, that all these diseases depend upon a specific, particulate, and living virus; particulate, because it can be filtered out of the blood; living, because it has the power of indefinite self-multiplication within the blood; and specific, because it always reproduces the same disease.

Again, like other Zymotics, it is most prevalent under such conditions as dirt, filth, damp, overcrowding, and impure air.

In dealing with the returns of deaths from Tubercular diseases, it must be borne in mind that the figures cannot be depended upon as giving the accurate number of persons dying from these, as in many cases the cause of death is ascribed to some complication such as hœmorrhage, or the supervention of another disease, and also from the tendency to conceal the real cause from the friends and relatives of the deceased, so that the numbers given are rather less than what is actually the case. From the records of post-mortem examinations at various Children's Hospitals, it has been found that one-third of the total deaths under 10 years of age are due to some form of Tuberculosis. The chief predisposing causes to these diseases, are the usual conditions associated with bad sanitary environments, *e.g.*, impure air from insufficient ventilation and defective lighting, contamination of the air of dwelling-houses and factories, and from the dust and vapours of certain trades, scanty and improper dietaries, filthy surroundings, bee-hive like dwellings, and dampness of the soil and house are leading factors in their causation.

As regards the communication of Tuberculosis from the lower animals to man, and that the two diseases are identical, no one now disputes. In *Public Health*, for September, 1891, M. Chaveau has demonstrated this identity, and has shown that human Tuberculosis could be imparted to other animals and that the same condition was produced where Bovine Tuberculosis was inoculated. Again, Professor M'Fadyean, the eminent Veterinary Surgeon, has proved by direct observation and experiment that the Tubercle Bacilli come from the milk-glands of cows, and as this is the staple article of diet of infants and young children, we are necessarily not surprised at the great number of wasting diseases amongst such, in the absence of any hereditary or other known cause, and this gives us a forcible argument for condemning the carcases of all animals affected with Tuberculosis. According to Aveling, one in six carcases of beef are tuberculous, and about 5 per cent. of the latter are generally condemned.

According to the report of the Departmental Committee of the Privy Council, it was held that "the disease may affect the flesh, and that the ordinary methods of cooking are often insufficient to destroy the Bacilli buried in the interior of the

limbs," and that "although the Bacilli may be found but rarely in the flesh, still, the chance of their being present, either there or in the blood, is too probable to even allow the flesh of a tubercular animal being used for food under any circumstances, either for man or the lower animals."

At the International Congress on Tuberculosis, held in Paris a few years ago, which consisted of eighty members, all but three were of the unanimous opinion, and a motion to this effect was accordingly carried, that in view of the fact of the identity of the virus in human and bovine Tuberculosis, and the possibility, nay, the high probability, of the disease being communicated through tainted meat and milk, that the total destruction of all tubercular animals was absolutely necessary, no matter to what extent the specific lesions in these animals existed.

In the Parliamentary Report upon Pleuro-Pneumonia and Tuberculosis, the order of liability to Tuberculosis amongst the lower animals was: milch cows, fowls, rodents, pigs, goats, sheep, and horses.

Professor M'Fadyean, at the meeting of the Sanitary Association of Scotland, in 1891, stated that at his post-mortem examinations of milk cows, he found 23 per cent. to be suffering from Tubercular disease. The relationship between dampness of the soil, and the production of Phthisis, as cause and effect, has been conclusively proved by the investigations of Dr. Buchanan, who in his report "On the distribution of Phthisis as affected by dampness of soil," has shown that where drying of the subsoil had been carried out by the construction of drains and sewers, the mortality had decreased from about 50 per cent. downwards.

TABLE XII.—Showing the Average Mortality and Death Rates in the Counties of Scotland for the Septennial period, 1882-88.

	All Causes. Rate per 1,000 Living.	Zymotic Deaths. Rate per 100 Deaths.	Tubercular Diseases. Rate per 100 Deaths.
Scotland - -	19·28	13·16	14·48
Selkirk - - -	15·90	13·13	18·36
Orkney - - -	14·45	5·74	11·78
Shetland - - -	16·47	6·11	12·91
Caithness - -	16·51	8·21	11·00
Peebles - - -	14·14	9·54	13·23
Berwick - - -	15·10	9·57	11·11
Ross and Cromarty -	15·35	10·51	9·88
Inverness - -	16·64	9·54	9·47
Kincardine - -	15·04	10·46	11·24
Sutherland - -	15·87	7·50	12·11
Argyle - - -	16·88	7·67	12·54
Elgin - - -	17·04	9·57	12·94
Kinross - - -	17·00	6·31	10·20
Banff - - -	16·41	11·36	11·26
Clackmannan - -	17·60	13·78	15·84
Haddington - -	15·82	9·40	12·06
Roxburgh - -	17·45	10·84	13·71
Wigtown - -	17·87	7·47	15·17
Fife - - -	17·37	10·84	12·76
Nairn - - -	16·51	8·10	9·51
Kirkcudbright -	17·57	7·80	16·51
Aberdeen - -	16·68	12·44	12·37
Linlithgow - -	18·94	16·17	13·30
Dumfries - -	19·08	10·07	14·74
Perth - - -	17·33	8·46	12·23
Stirling - - -	17·98	13·33	14·11
Bute - - -	20·38	10·73	15·64
Dumbarton - -	17·93	14·66	14·94
Ayr - - -	19·05	13·10	16·23
Forfar - - -	19·34	12·01	14·64
Edinburgh - -	19·25	13·31	14·63
Renfrew - - -	21·74	16·40	15·47
Lanark - - -	22·41	16·84	16·01

[From Mr. Fyfe's article in *Sanitary Journal*, January, 1892.]

From the foregoing table it will be observed that for all Scotland, 14·48 per cent., or rather more than one-seventh of the total deaths were due to Tuberculosis.

The same ratio, practically, will be found to exist by comparing the figures for any year, or series of years, as well as for any part of the country, as for the whole. To give another instance of their prevalent character, we may cite the figures of the eight principal towns of Scotland for 1898. During that year there were registered in Glasgow, Edinburgh, Dundee, Aberdeen, Leith, Paisley, Greenock, and Perth, 32,153 deaths, of which 4349 were due to Tubercular affections, consisting of

Phthisis (Consumption of the Lungs) - -	2985
Tubercular Meningitis (Consumption of the Brain)	607
Tabes Mesenterica (Consumption of the Bowels)	432
Other Tubercular Diseases - - - -	325
Total - - - - - -	4349

or a rate of 13·52 per cent. of the total deaths.

Since the beginning of the Registration Act in 1855, whilst the annual death rate and the deaths from the principal Zymotic diseases have shown a marked decrease, those from Tuberculosis have remained almost at the same level.

This question has been very ably worked out by Mr. Fyfe, Chief Sanitary Inspector for Glasgow, in an article which appeared in the *Sanitary Journal*, for January, 1892. In this paper, the total deaths for all Scotland during the first septennial period of 1855-61 are compared with those of 1882-88, showing a difference in favour of the latter, of 14·43 per 10,000 of the population, which is equivalent to a saving of 5561 lives in each year, or a total of 38,927 during the period of seven years.

For the same years there is a difference of 8·12 per cent. in the deaths from Zymotic diseases, whilst the rate for Tubercular affections show a decrease of only 1·66 per cent!

Figures such as these conclusively prove that the measures adopted by the Sanitary authorities in coping with diseases of the Zymotic group, have been almost entirely overlooked, or lost sight of, so far as regards the prevention of Tubercular disease, and until Phthisis is included under the "Infectious Disease (Notification) Act," and regarded in the same light as the other Zymotic diseases, no diminution can be looked for in the death-rate from these affections. As regards the isolation and treatment

of such cases, Sanatoria, instead of the ordinary fever hospitals, would require to be maintained at the expense of the State, as the question of prevention and mitigation of these diseases is essentially a national one, and demands as much attention by the Government as that which is given to any other department of the State.

Before concluding this part of our inquiry, it may be well to mention those measures which are now known to be unfavourable to the propagation of Consumption, and for this purpose, those which have been drawn up by Dr. J. B. Russell (late Medical Officer of Health, Glasgow, now of the Local Government Board, Edinburgh), and adopted by the Health Committee of Glasgow, may be given as expressing in a popular way all the chief facts associated with the origin and spread of the disease in question.

THE

PREVENTION OF CONSUMPTION.

The Committee on Health of Glasgow hope that all citizens will read this Paper carefully, and observe the instructions which it contains, and any others given by the Medical Attendant having the same end in view.

Consumption is an acquired, not a hereditary, disease.

What a child may inherit is not the seed, but the "good ground" in which the seed will grow readily.

This is known as a "hereditary predisposition to Consumption." Special care ought to be taken to protect persons possessing it from any chance of catching the disease.

Colds, sore throats, infectious diseases (especially Measles, Whooping-cough, Scarlet and Enteric Fevers), intemperance, overcrowding, darkness, dampness, stale air—in short, whatever lowers health produces a predisposition to Consumption altogether apart from pedigree.

Consumption of the Lungs is only one of many forms of disease caused by a minute living creature (germ or microbe)—the bacillus of tubercle. Every case of Consumption has received this bacillus, either from man or beast (milk, flesh), and may pass it on to man or beast.

Good health, local and general, is like a coat of mail against the attacks of the bacillus of tubercle.

Every person suffering from Consumption suffers from a disease which may be communicated to other persons. This takes place through the spit, which contains bacilli.

So long as the spit is moist it can do no harm unless under such circumstances as are dealt with in Rules 6 and 7.

The spit is gravely dangerous only when allowed to dry, become dust, and so infect the air we breathe.

The surest way to form infectious dust is to spit in a handkerchief and put it in the pocket or beneath the pillow, or to spit upon the floor.

The same result follows if spit is smeared over bed-clothes, night-dresses, &c., or in the case of men, over moustache or beard.

Practically, then, a case of Consumption may be made perfectly harmless by preventing the spit from becoming dust.

1. *Indoors.*—The greatest care is necessary. Dust in closed places is the dust which infects. Use a spittoon containing a little water (not sand or sawdust), or spit into a rag or piece of paper, to be burned at once or thrown into the W.C.

2. *Out-of-doors.*—Dust is not so readily formed in our damp climate, and it is disinfected by sunshine and fresh air. It is therefore better to spit on the ground than into a handkerchief or into anything which is to be put into one's pocket except a special spit-bottle, such as may be had for a small sum. Failing this, spit over a street gulley or into the gutter, never on the pavement, and never in a tram-car, 'bus, cab, or railway carriage. Never swallow the spit, it may infect the bowels.

3. If a handkerchief or other article is soiled with tuberculous spit, keep it wet until it can be boiled and washed.

4. Empty the contents of spittoon down the W.C., and clean the spittoon with boiling water. A little carbolic acid will keep the flies away; these carry off infective matter.

5. In cleaning rooms occupied by consumptives, capture the dust with damp dusters, and tea leaves or damp sawdust used in sweeping. Do not chase it about or stir it up. Boil the dusters; burn the sawdust and tea leaves.

6. No spoon, cup, or other article which has been applied to the mouth of a consumptive ought to be used by a healthy person until it has been carefully washed. The remains of food left by a consumptive ought not to be used by the healthy.

7. No consumptive ought to kiss or be kissed, except on the cheek or brow.

8. No consumptive mother should give suck.

9. Consumptive persons ought to have a bed to themselves.

10. Sunlight and fresh air are never-failing disinfectants. Use them freely.

N.B.—*Consumption is not communicable by the breath or perspiration. If these precautions are attended to, there is no danger to the healthy in the ordinary intercourse of the family or society.*

DISINFECTION.

It is necessary that washing and disinfection should be effectively carried out after every death from Consumption.

The services of the Sanitary Department are at the disposal of the ratepayers for this purpose. Immediate notice of such an event ought to be sent to the Medical Officers of Health.

During the currency of cases of tuberculous disease in which there is a discharge, the Medical Officers will give any assistance in the way of washing and disinfection which may seem expedient in the public interest.

TABLE XIII.—Showing Annual Number of Deaths from Tubercular Diseases and Percentage to Total Deaths.

Year.	Number of Deaths.	Percentage.
1864	65	21·7
1865	71	24·4
1866	58	23·6
1867	67	23·3
1868	68	25·4
1869	72	21·7
1870	72	19·6
1871	119	23·9
1872	84	14·1
1873	103	14·3
1874	114	11·1
1875	153	15·1
1876	158	16·0
1877	175	16·6
1878	179	17·2
1879	195	22·7
1880	202	19·3
1881	195	16·2
1882	202	16·7
1883	219	15·5
1884	228	19·6
1885	215	19·0
1886	190	17·6
1887	199	18·1
1888	148	16·7
1889	141	14·2
1890	137	11·2
1891	131	10·8
1892	129	11·9
1893	142	10·5
1894	162	16·3
1895	162	14·0
1896	144	12·7
1897	156	12·2
1898	135	11·4
Total Deaths.	4990	= 15·7 per cent. of Total Deaths.

V.—Developmental Diseases.

These caused 2872 deaths (9·0 per cent.), of which 2050 were ascribed to Birth Debility (6·4 per cent.), Malformations, 71 (·2 per cent.), and Old Age, 751 (2·3 per cent.)

VI.—Local Diseases.

Under this group are included 15,187 deaths (48·0 per cent.), of which nearly one-half were due to diseases of the Respiratory Organs, viz.: 7306 (23·0 per cent.), Nervous Affections caused 4381 deaths (13·8 per cent.), Diseases of the Heart and Circulation 1309 (4·1 per cent.), and of the Digestive System 1442 (4·5 per cent.), other local diseases accounted for 749 (2·3 per cent.)

VII.—Violence

Caused 808 deaths (2·5 per cent.)

VIII.—All other Causes.

Unascertained or Undefined, accounted for 1277 deaths (4·0 per cent.)

The following table gives a synopsis of the foregoing figures—

TABLE XIV.—Resume of the Mortality Returns, 1864-1898, showing the Number of Deaths from the various Groups of Diseases, and their Percentage to the Total Deaths.

I.—SPECIFIC FEBRILE OR ZYMOTIC.	Number of Deaths.	Per Cent. of Total.	Total Deaths of Groups.	Rate per Cent. of Total Deaths.
(*a*) Miasmatic.				
(1) Notifiable—				
Small Pox	48	·15		
Measles	1200	3·79		
Scarlet Fever	726	2·29		
Diphtheria and Membranous Croup	625	1·97		
Erysipelas	112	·35		
Puerperal Fever	67	·21	= 3295	10·41
Typhus Fever	115	·36		
Enteric Fever	353	1·11		
Continued Fever	30	·10		
Relapsing Fever	10	·03		
Cholera	9	·03		
(2) Non-Notifiable—				
Whooping Cough	1523	4·81		
Influenza	30	·09		
Mumps	1	·003	= 1562	4·93
Chicken Pox	6	·018		
Others	2	·005		
(*b*) Diarrhœal—				
Diarrhœa	772	2·44	= 807	2·55
Dysentery	35	·11		
(*c*) Malarial	6	·018		
(*d*) Venereal	71	·22	= 123	·38
(*e*) Septic	45	·14		
(*f*) Zoogenous (Hydrophobia)	1	·003		
Total Zymotic Deaths			5787	18·29
II.—PARASITIC (Vegetable)			6	·01
III.—DIETETIC—				
Starvation, &c.	15	·04		
Scurvy	2	·006	= 77	·24
Alcoholism	60	·18		
IV.—CONSTITUTIONAL—				
Gout, Rheumatism, &c.	69	·21		
Cancer	461	1·45	= 5626	17·78
Phthisis, &c.	4990	15·77		
Others	106	·33		
V.—DEVELOPMENTAL—				
Birth Debility	2050	6·47		
Malformations	71	·22	= 2872	9·07
Old Age	751	2·37		
VI.—LOCAL—				
Special Senses	8	·02		
Nervous System	4381	13·84		
Circulatory ,,	1309	4·13		
Respiratory ,,	7306	23·09		
Digestive ,,	1442	4·55	= 15,187	48·00
Urinary ,,	351	1·10		
Lymphatic ,,	1	·003		
Reproductive System	255	·80		
Bones and Joints	108	·34		
Skin	26	·08		
VII.—VIOLENCE			808	2·55
VIII.—ALL OTHER CAUSES			1277	4·03
Total			31,640	100·00 (Approx.)

TABLE XV.—Showing the Number of Births within the Burgh for the last seven years—1892-1898.

Year.	Total Births.	Males.	Females.	Rate per 1000 Population.	Illegitimate Births.	Percentage to Total Births.	Excess of Births over Deaths.
1892	2295	1185	1110	36·42	111	4·8	1215
1893	2314	1167	1147	36·73	103	4·4	966
1894	2237	1130	1107	34·95	116	5·1	1247
1895	2312	1238	1074	35·56	97	4·1	1156
1896	2437	1275	1162	36·37	105	4·3	1304
1897	2491	1296	1195	36·10	98	3·9	1204
1898	2608	1292	1316	35·72	83	3·1	1434
Totals	16694	8583	8111	7 Years Average. 35·97	713	7 Years Average. 4·2	8526

Comparison of the Birth Rate of Govan with that of Scotland and the Eight Principal Towns for 1898.

	Rate per 1000.
Govan	35·7
All Scotland	30·8
Glasgow	33·5
Edinburgh	27·4
Dundee	30·1
Aberdeen	33·2
Leith	33·2
Paisley	31·7
Greenock	35·2
Perth	26·4

TABLE XVI.—Comparison of the Illegitimate Birth Rate (Percentage of Illegitimate to Total Births), in the Burgh of Govan, with that for Scotland as a whole, its Districts, Divisions, Counties, and Principal Towns for 1898.

Govan	3·1
Scotland	6·8
Registration Districts:—	
Principal Town	6·4
Large Town	5·4
Small Town	6·7
Mainland—Rural	8·9
Insular—Rural	5·0
Divisions:—	
Northern	7·9
North-Western	6·0
North-Eastern	12·0
East Midland	7·2
West Midland	5·0
South-Western	5·6
South-Eastern	6·6
Southern	11·3
Counties:—	
Shetland	4·0
Orkney	5·6
Caithness	13·2
Sutherland	5·2
Ross and Cromarty	5·1
Inverness	6·7
Nairn	11·0
Elgin	12·0
Banff	13·3
Aberdeen	11·8
Kincardine	11·8
Counties, *Cont.*—	
Forfar	8·5
Perth	8·5
Fife	5·1
Kinross	5·5
Clackmannan	5·0
Stirling	5·3
Dumbarton	3·5
Argyll	7·4
Bute	4·1
Renfrew	4·7
Ayr	6·2
Lanark	5·6
Linlithgow	4·8
Edinburgh	6·5
Haddington	7·9
Berwick	8·9
Peebles	11·1
Selkirk	6·5
Roxburgh	9·3
Dumfries	10·8
Kirkcudbright	10·0
Wigtown	15·8
Principal Towns:—	
Glasgow	6·4
Edinburgh	7·4
Dundee	9·2
Aberdeen	8·7
Leith	4·9
Paisley	5·9
Greenock	5·2
Perth	7·3

From the foregoing tables it will be observed that the Burgh of Govan, for the year 1898, occupies the unique position of having a *higher birth-rate* and a *lower death-rate* than that of Scotland as a whole, and its eight principal towns; whilst its *rate of illegitimacy is lower* than that of the average for the whole country, and lower than that of any of its principal towns, its registration districts, divisions, or counties.

APPENDIX.

also, the DEATHS from ZYMOTIC DISEASES,

V. Developmental.		VI.—Local.												VII.—Violence.	VIII.—All other Causes not Specified, Ill Defined, and Unknown.	Total Deaths.	Death Rate per 1,000 Living.
Malforma ons.	Old Age.	Special Senses.	Nervous System.	Circulatory System.	Respiratory System.	Digestive System.	Lymphatic System.	Urinary System.	Reproductive System.			Bones and Joints.	Skin.				
									Male	Female.	Parturition.						
2	4	...	46	11	47	10	...	1	...	...	1	3	1	13	13	299	33·22
1	4	...	33	7	43	12	...	2	...	1	...	1	...	12	11	291	29·10
1	7	1	40	5	28	8	...	2	...	...	3	2	...	11	10	245	24·50
...	10	...	49	4	35	16	...	1	...	...	...	1	...	6	11	292	29 20
...	13	...	26	4	42	14	...	2	...	1	2	...	...	6	12	267	24·27
...	13	...	51	7	51	16	1	1	...	2	...	...	1	12	16	331	25·46
1	11	...	50	15	42	16	...	5	...	3	...	3	...	17	18	367	26·21
...	15	...	64	14	100	20	...	...	...	3	3	2	2	11	13	496	26·10
...	16	...	104	5	102	29	...	6	...	...	1	...	...	18	81	595	25·87
1	17	...	98	17	155	40	...	4	...	5	2	2	1	21	47	718	24 75
2	24	...	135	18	200	42	...	1	...	7	5	2	...	20	120	1024	31·03
1	21	...	136	13	238	31	...	3	...	4	3	2	1	23	125	1012	28·11
6	20	...	151	22	186	34	...	11	1	1	3	1	...	20	109	929	23·22
3	24	...	160	39	259	53	...	6	...	1	5	1	...	24	28	1050	24·41
3	14	...	152	43	232	50	...	13	...	2	4	7	1	26	28	1039	23·08
6	20	...	131	40	214	47	...	6	...	2	8	3	1	30	34	962	22·37
1	23	1	134	39	237	48	...	8	...	1	4	6	2	26	33	1047	22·76
4	21	1	152	45	338	45	...	9	...	2	5	3	...	38	47	1198	23·96
1	19	...	166	42	261	58	...	8	...	...	9	5	...	44	29	1205	21·81
2	26	1	189	55	257	54	...	21	...	6	14	8	...	34	44	1343	22·76
2	26	1	161	39	253	50	...	17	1	1	11	6	2	27	36	1163	19·70
5	17	...	136	43	293	57	...	13	1	4	5	8	...	20	34	1130	20·54
4	26	...	152	45	278	52	...	17	2	3	7	7	1	27	27	1074	19·52
2	29	...	128	46	244	39	...	12	...	1	11	10	1	27	42	1098	20·33
1	19	...	136	56	192	47	...	10	...	7	5	6	1	20	25	882	16·03
..	28	...	135	41	215	57	...	12	1	8	7	7	2	30	30	991	17·38
3	33	...	184	73	316	53	...	21	...	4	5	1	...	31	22	1219	19·66
2	35	...	168	61	342	42	...	9	...	2	6	2	2	25	34	1205	19·11
...	24	...	183	66	283	68	...	24	...	2	5	3	1	22	26	1080	17·14
4	31	...	159	48	328	55	...	16	1	2	7	1	...	25	44	1348	21·39
2	23	...	142	64	249	50	...	21	...	1	3	2	1	25	33	990	15·46
...	40	1	162	69	349	63	...	13	...	2	2	...	1	28	25	1156	17·78
1	34	...	161	77	273	55	...	28	...	...	9	...	...	27	22	1133	16·91
...	36	...	166	71	339	67	...	15	1	...	9	1	1	25	28	1287	18·65
10	28	2	141	65	285	44	...	13	1	3	1	2	3	37	20	1174	16·08
71	751	8	4381	1309	7306	1442	1	351	9	81	165	108	26	808	1277	31640	22·51

	Constitutional.		Developmental.			
	Phthisis and Wasting Diseases.	Others, *e.g.*, Diabetes, Rickets, Leucocythæmia.	Birth Debility.	Malformations.	Old Age.	Special Senses.
Janua	5	...	1	1	...	...
Febru	1	...	3	...	...	...
Marc	12	...	...	...	2	...
April	13	...	2	...	...	..
May	5	...	1	...	...	..
June	6	...	1	1	...	..
July	6	...	...	...	1	..
Augu	4	...	3	...	1	..
Septe	3	...	2	...	...	..
Octol	1	...	1	...	...	..
Nove	4	...	1	...	...	..
Dece	5	...	1	...	...	..
	65	...	16	2	4	..

	Constitutional.		Developmental.			
	Phthisis and Wasting Diseases.	Others, *e.g.*, Diabetes, Rickets, Leucocythæmia.	Birth Debility.	Malformations.	Old Age.	Special Senses.
Janua	8	...	2	...	...	..
Febru	4	...	1	...	...	..
Marc	7	...	5	...	...	..
April	6	...	...	...	...	..
May	12	...	...	...	...	..
June	5	...	1	...	...	..
July	7	...	3	...	1	..
Augu	3	...	...	...	1	..
Septe	5	...	2	1	...	..
Octol	4	...	3	...	1	..
Nove	5	...	1	...	...	..
Dece	5	...	...	...	1	..
	71	...	18	1	4	..

	Constitutional.		Developmental.			
	Phthisis and Wasting Diseases.	Others, *e.g.*, Diabetes, Rickets, Leucocythæmia.	Birth Debility.	Malformations.	Old Age.	Special Senses
Janu	8	...	...	...	...	..
Febr	2	...	1	...	1	..
Mar	4	...	2	...	2	
Apr	7	...	1	...	...	..
May	7	...	1	...	...	..
June	8	...	2	...	1	..
July	5	...	...	...	...	..
Aug	5	...	1	...	...	...
Sept	6	...	2	...	...	...
Octo	2	...	...	1	...	...
Nov	1	...	...	...	2	...
Dec	3	...	1	...	1	...
	58	...	11	1	7	1

5 7.

	Constitutional.		Developmental.			
	Phthisis and Wasting Diseases.	Others, *e.g.*, Diabetes, Rickets, Leucocythæmia.	Birth Debility.	Malformations.	Old Age.	Special Senses.
Janu	5	...	1	...	2	...
Febr	4	...	1	...	3	...
Marc	6	...	...	...	1	...
April	6	...	...	...	1	...
May	9	...	...	...	1	...
June	7	...	1	...	1	...
July	10	...	...	...	...	...
Augu	8	...	4	...	...	...
Septe	1	...	2	...	...	...
Octol	4	...	2	...	...	...
Nove	2	...	3	...	...	...
Dece	5	...	...	...	1	...
T	67	...	14	...	10	...

		Constitutional.		Developmental.			
		Phthisis and Wasting Diseases.	Others, *e.g.*, Diabetes, Rickets, Leucocythæmia.	Birth Debility.	Malformations.	Old Age.	Special Senses.
J	6	...	1	...	1	.
F	3	...	2	...	2	.
M.	11	...	...	...	2	.
A.	4	...	...	...	1	.
M.	8	...	...	...	...	.
Jl	9	...	2	...	2	.
J.	4	...	...	...	...	.
A.	7	...	...	...	1	.
S.	3	...	...	...	...	.
Cl	4	...	...	...	1	.
N.	5	...	2	...	3	.
D.	4	...	...	...	...	.
4	68	...	7	...	13	.

	Constitutional.		Developmental.			
	Phthisis and Wasting Diseases.	Others, *e.g.*, Diabetes, Rickets, Leucocythæmia.	Birth Debility.	Malformations.	Old Age.	Special Senses.
Jan	7	...	...	...	2	...
Feb	4	...	1	...	1	...
Mar	7	...	3	...	...	...
Apr	6	...	3	...	2	...
May	7	...	1	...	1	...
Jun	8	...	4	...	1	...
July	6	...	...	...	2	...
Aug	5	...	3	...	1	...
Sep	2	...	...	...	1	...
Oct	4	...	1	...	1	..
Nov	5	...	2	...	...	...
Dec	11	...	...	...	1	...
	72	...	18	...	13	..

O.

CONSTITUTIONAL.		DEVELOPMENTAL.			
Phthisis and Wasting Diseases.	Others, *e.g.*, Diabetes, Rickets, Leucocythæmia.	Birth Debility.	Malformations.	Old Age.	Special Senses.
7	...	3	...	2	...
5	...	3	...	1	..
4	...	2	...	...	..
7	...	...	...	...	..
5	1	...	...	2	..
5	...	...	...	...	..
9	...	1	...	1	..
6	1	3	1	2	..
2	...	2	...	...	...
9	...	1	...	...	...
8	...	2	...	1	..
5	...	4	...	2	..
72	2	20	1	11	..

	Constitutional.		Developmental.			
	Phthisis and Wasting Diseases.	Others, *e.g.*, Diabetes, Rickets, Leucocythaemia.	Birth Debility.	Malformations.	Old Age.	
Jan	5	...	...	...	2	.
Feb	7	...	1	...	2	.
Mar	17	...	2	...	3	.
Apr	14	...	1	...	1	.
May	10	...	2	...	1	.
Jun	10	...	1	...	1	.
July	8	...	1	...	...	.
Aug	12	...	2	...	...	.
Sept	13	...	1	...	1	.
Oct	9	...	3	...	1	.
Nov	7	...	1	...	3	.
Dec	7	...	2	...	...	.
	119	...	17	...	15	.

2.

		Constitutional.		Developmental.			
		Phthisis and Wasting Diseases.	Others, *e.g.*, Diabetes, Rickets, Leucocythæmia.	Birth Debility.	Malformations.	Old Age.	Special Senses.
Janu	6	...	...	...	...	...	
Febr	7	...	...	...	1	...	
Marc	7	...	5	...	1	...	
Apri	9	...	1	...	2	...	
May	10	...	...	...	1	...	
June	12	...	1	...	1	...	
July	8	...	1	...	...	...	
Augu	5	...	1	...	2	...	
Septe	3	1	2	...	2	...	
Octo	8	...	7	...	3	...	
Nove	3	...	4	...	3	...	
Dece	6	...	3	...	...	...	
	84	1	25	...	16	...	

3.

	Constitutional.		Developmental.			
	Phthisis and Wasting Diseases.	Others, *e.g.*, Diabetes, Rickets, Leucocythæmia.	Birth Debility.	Malformations.	Old Age.	
Janu	2	...	4	...	1	..
Febr	5	...	2	...	5	..
Marc	3	...	...	...	2	..
April	11	...	2	...	2	.
May	16	...	6	...	2	..
June	16	...	1	1	...	..
July	12	...	1	...	1	..
Augu	8	...	3	...	...	.
Septe	7	...	2	...	...	.
Octo	7	...	6	...	2	.
Nove	10	...	8	...	2	.
Dece	6	...	13	...	...	.
	103	...	48	1	17	.

74.

	Constitutional.		Developmental.			
	Phthisis and Wasting Diseases.	Others, *e.g.*, Diabetes, Rickets, Leucocythæmia.	Birth Debility.	Malformations.	Old Age.	Special Senses.
Jan	7	...	1	...	2	
Feb	12	...	3	...	3	
Mar	11	1	8	1	1	
Apr	10	...	11	...	...	
May	13	...	5	...	1	
Jun	14	...	3	...	2	
Jul	5	...	6	...	4	
Aug	11	...	5	...	3	
Sep	12	...	3	...	3	
Oct	3	1	2	1	3	
Nov	6	...	1	...	1	
Dec	10	...	8	...	1	
	114	2	56	2	24	

5.

	Constitutional.		Developmental.			
	Phthisis and Wasting Diseases.	Others, *e.g.*, Diabetes, Rickets, Leucocythæmia.	Birth Debility.	Malformations.	Old Age.	Special Senses.
Ja	12	...	6	1	3	..
Fe	18	...	6	...	4	.
M	17	...	9	...	3	..
A	20	...	3	...	...	..
M	11	...	2	...	...	..
Ju	9	...	1	...	1	..
Ju	10	...	2	...	1	..
A	16	...	1	...	1	..
Se	13	...	2	...	3	..
O	11	...	1	...	1	.
N	4	...	9	...	2	.
D	12	1	3	...	2	.
	153	1	45	1	21	.

Constitutional.		Developmental.			
Phthisis and Wasting Diseases.	Others, *e.g.*, Diabetes, Rickets, Leucocythæmia.	Birth Debility.	Malformations.	Old Age.	Special Senses.
14	...	5	1	2	.
12	...	5	...	2	.
16	...	5	1	3	.
10	...	9	2	1	.
11	...	3	2	6	.
14	...	4	...	1	.
18	...	5	...	...	.
14	1	8	...	1	.
16	...	4	...	1	.
10	1	1	...	...	.
6	...	4	...	2	.
17	...	...	...	1	
158	2	53	6	20	

7 7.

	Constitutional.		Developmental.			
	Phthisis and Wasting Diseases.	Others, *e.g.*, Diabetes, Rickets, Leucocythæmia.	Birth Debility.	Malformations.	Old Age.	Special Senses.
Jan	16	1	5	1	2	..
Feb	8	...	3	...	3	.
Mar	14	...	6	...	1	..
Apr	11	1	2	...	...	..
May	23	...	4	1	5	..
Jun	16	...	5	...	3	..
Jul	16	...	8	...	4	..
Aug	20	...	4	...	1	..
Sep	13	...	8	1	2	..
Oct	19	...	2	...	3	..
Nov	7	...	8	...	...	..
Dec	12	...	5	...	...	.
	175	2	60	3	24	.

	Constitutional.		Developmental.			
	Phthisis and Wasting Diseases.	Others, *e.g.*, Diabetes, Rickets, Leucocythaemia.	Birth Debility.	Malformations.	Old Age.	
J.	11	...	2	...	...	.
F.	9	...	6	...	1	.
M.	17	...	6	...	1	.
A2	16	...	11	...	...	.
M4	11	...	9	...	...	.
J1.	17	...	2	...	1	.
J1.	23	...	5	...	1	.
A2	27	...	8	1	4	.
S1	11	...	5	...	1	.
O.	16	...	7	2	1	.
N.	14	1	3	...	2	.
D.	7	...	5	...	2	.
9	179	1	69	3	14	.

	Constitutional.		Developmental.			
	Phthisis and Wasting Diseases.	Others, *e.g.*, Diabetes, Rickets, Leucocythæmia.	Birth Debility.	Malformations.	Old Age.	Special Senses.
Jan	18	...	7	...	3	..
Feb	18	...	4	1	4	..
Mar	20	...	6	...	1	..
Apr	18	...	5	...	1	..
May	19	...	2	1	...	..
Jun	21	...	5	1	...	..
July	14	1	2	...	3	..
Aug	9	...	3	1	1	..
Sep	13	...	4	...	3	..
Oct	13	...	4	1	...	..
Nov	16	1	3	...	1	..
Dec	16	...	1	1	3	..
	195	2	46	6	20	..

80.

		Constitutional.		Developmental.			
		Phthisis and Wasting Diseases.	Others, *e.g.*, Diabetes, Rickets, Leucocythæmia.	Birth Debility.	Malformations.	Old Age.	Special Senses.
Jan	14	...	3	...	3	...
Feb	21	...	3	...	...	...
Ma	20	1	5	...	4	...
Ap	19	1	1	...	...	...
Ma	20	...	7	...	3	...
Jun	16	...	4	1	2	...
Jul	21	...	9	...	3	...
Au	14	1	7	...	...	...
Sep	13	...	5	...	1	...
Oct	19	1	6	...	2	...
No	14	...	11	...	5	1
De	11	...	9	...	...	...
	202	4	70	1	23	1

1881	Gout, Rheumatism, and Rheumatic Fever.	Cancer.	Developmental. Malformations.	Old Age.	Special Senses.
January ...	...	2	...	7	...
February	...	2	...	...	...
March ...	...	...	...	2	...
April ...	...	2	1	2	...
May ...	...	...	...	...	1
June ...	1	3	...	1	...
July ...	...	1	1	1	...
August ...	...	...	...	1	...
September	...	2	...	2	...
October ...	...	...	1	1	..
November	...	...	...	1	...
December	...	1	1	3	...
Total	1	13	4	21	1

			Developmental.	
	Phthisis and Wasting Diseases.	Others, *e.g.*, Diabetes, Rickets, Leucocythæmia.	Birth Debility.	Malformations.	Old Age.
	13	1	12	...	2
	17	1	5	...	1
	21	...	3	...	2
	19	1	5	...	4
	20	...	6	...	1
	16	...	2	...	1
	23	...	8	...	2
	20	...	4	...	1
	15	...	11	...	1
	12	...	7	...	...
	19	...	7	...	2
	7	...	3	1	2
	202	3	73	1	19

3.

	Constitutional.		Developmental.			
	Phthisis and Wasting Diseases.	Others, *e.g.*, Diabetes, Rickets, Leucocythaemia.	Birth Debility.	Malformations.	Old Age.	Special Senses.
Jan	21	...	1	...	6	...
Feb	16	...	5	...	...	...
Mar	12	...	2	...	2	...
Apr	22	1	14	1	5	...
May	26	1	7	...	...	...
Jun	16	2	5	...	3	...
July	28	1	7	...	2	...
Aug	14	...	10	...	2	...
Sept	19	...	4	...	...	...
Oct	21	...	12	...	...	1
Nov	14	2	6	1	3	...
Dec	10	...	8	...	1	...
	219	7	81	2	26	1

34.

	Constitutional.		Developmental.			
	Phthisis and Wasting Diseases.	Others, *e.g.*, Diabetes, Rickets, Leucocythæmia.	Birth Debility.	Malformations.	Old Age.	Special Senses
1						
nua	21	1	6	...	5	..
bru	22	1	4	1	2	..
arch	19	...	3	1	3	..
pril	18	2	10	...	3	..
ay	12	...	6	...	2	.
ne	20	1	6	...	...	.
ly	14	1	6	...	1	.
ugus	22	...	9	...	...	.
pter	22	1	13	...	2	
tob	25	...	6	...	1	.
ver	18	1	5	...	3	.
cem	15	...	12	...	4	.
T	228	8	86	2	26	

	Constitutional.		Developmental.			
	Phthisis and Wasting Diseases.	Others, *e.g.*, Diabetes, Rickets, Leucocythæmia.	Birth Debility.	Malformations.	Old Age.	Special Senses.
Janu	22	...	7	1	2	..
Febr	14	1	3	...	...	..
Marc	18	...	4	...	3	..
Appri	21	...	6	1	2	...
May	24	2	4	...	1	...
June	19	...	5	...	2	...
July	14	...	3	...	2	..
Aug	21	...	3	...	1	...
Sept	13	...	8	...	1	...
Octo	7	...	11	3	...	..
Nov	23	...	1	...	2	...
Dec	19	...	7	...	1	...
	215	3	62	5	17	..

	Constitutional.		Developmental.			
	Phthisis and Wasting Diseases.	Others, *e.g.*, Diabetes, Rickets, Leucocythæmia.	Birth Debility.	Malformations.	Old Age.	Special Senses.
	13	...	2	...	2	..
	17	...	5	...	5	..
	25	...	6	...	4	..
	13	...	4	...	3	..
	28	...	4	1	1	..
	13	...	6	...	...	..
	11	...	8	...	3	..
	15	...	5	1	1	..
	11	...	4	1	2	..
	13	...	3	...	1	..
	10	...	2	1	1	..
	11	1	2	...	3	..
	190	1	51	4	26	..

87.

	Constitutional.		Developmental.			
	Phthisis and Wasting Diseases.	Others, *e.g.*, Diabetes, Rickets, Leucocythæmia.	Birth Debility.	Malformations.	Old Age.	Special Senses.
nu	12	...	2	...	6	...
br	15	...	6	...	2	...
rc	20	...	5	...	1	...
ril	21	...	12	...	3	...
y	28	1	6	...	4	...
ne	11	1	3	...	1	...
ly	15	...	7	...	2	...
gu	28	...	4	...	2	...
pte	10	...	5	...	1	...
to	14	...	6	1	3	...
ve	11	2	3	...	3	...
ce	14	1	3	1	1	...
	199	5	62	2	29	...

88.

	Constitutional.		Developmental.			
	Phthisis and Wasting Diseases.	Others, *e.g.*, Diabetes, Rickets, Leucocythæmia.	Birth Debility.	Malformations.	Old Age.	Special Senses.
	16	...	5	...	1	..
	17	...	8	...	2	..
	17	...	7	...	3	..
	13	...	4	...	1	..
	13	...	4	...	1	..
	14	1	8	...	1	..
	7	...	9	...	1	..
	12	...	3	...	2	..
	8	1	3	...	...	..
	10	...	5	...	2	..
	7	...	3	1	3	..
	14	...	5	...	2	..
	148	2	64	1	19	..

9.

	Constitutional.		Developmental.			
	Phthisis and Wasting Diseases.	Others, *e.g.*, Diabetes, Rickets, Leucocythæmia.	Birth Debility.	Malformations.	Old Age.	Special Senses.
anu	5	...	2	...	4	...
ebr	7	1	5	...	4	...
iar	7	1	7	...	3	...
pr	18	...	7	...	2	...
ay	15	...	10	...	3	..
un	18	...	5	...	1	..
uly	15	...	9	...	...	..
ug	5	...	2	...	1	..
ept	16	...	2	...	3	..
ct	14	...	5	...	3	..
ov	10	1	6	...	2	..
ec	11	...	7	...	2	..
	141	3	67	...	28	..

9 O.

	Constitutional.		Developmental.			
	Phthisis and Wasting Diseases.	Others, *e.g.*, Diabetes, Rickets, Leucocythaemia.	Birth Debility.	Malformations.	Old Age.	Special Senses.
Jan	11	...	7	...	2	...
Feb	14	1	9	1	1	...
Mar	11	...	12	...	1	...
Apr	18	...	12	1	...	...
May	11	...	5	...	2	...
Jun	12	...	3	...	3	...
July	12	...	7	...	8	...
Aug	7	2	6	...	1	...
Sept	8	...	9	...	2	...
Oct	10	...	7	1	3	...
Nov	13	...	5	...	4	...
Dec	10	...	6	...	6	...
	137	3	88	3	33	..

) I.

	Constitutional.		Developmental.			
	Phthisis and Wasting Diseases.	Others, *e.g.*, Diabetes, Rickets, Leucocythæmia.	Birth Debility.	Malformations.	Old Age.	Special Senses.
an	11	2	8	...	4	..
eb	10	...	7	...	2	..
ar	9	...	11	1	3	..
pr	14	...	5	...	4	..
ay	12	...	14	...	2	..
an	6	1	13	1	1	..
ly	11	...	4	...	2	..
ug	19	2	4	...	2	..
pt	10	...	12	...	2	..
ct	8	...	3	...	1	..
ov	14	1	9	...	8	..
ec	7	1	3	...	4	.
	131	7	93	2	35	.

92.

	Constitutional.		Developmental.		
	Phthisis and Wasting Diseases.	Others, *e.g.*, Diabetes, Rickets, Leucocythæmia.	Birth Debility.	Malformations.	Old Age.
anu	13	...	9	...	4
ebr	12	...	6	...	2
Iarc	10	....	8	...	3
pri	12	...	9	...	...
Iay	11	...	10	...	4
une	11	...	4	...	...
uly	11	1	8	...	1
ugu	8	2	6	...	4
ept	11	...	11	...	2
cto	10	1	6	...	1
ove	7	1	9	...	...
ece	13	1	5	...	3
)	129	6	91	...	24

94.

	Constitutional.		Developmental.			
	Phthisis and Wasting Diseases.	Others, *e.g.*, Diabetes, Rickets, Leucocythæmia.	Birth Debility.	Malformations.	Old Age.	Special Senses.
	13	...	4	...	5	..
	12	1	2	1	1	..
	18	...	9	...	5	..
	13	...	5	...	1	..
	10	...	6	...	4	..
	13	...	7	...	2	..
	18	...	6	...	...	..
	16	...	7	...	1	..
	11	...	...	...	1	..
	20	1	14	...	2	..
	7	...	7	...	1	..
	11	...	5	1	...	..
	162	2	72	2	23	..

95.

	Constitutional.		Developmental.			
	Phthisis and Wasting Diseases.	Others, *e.g.*, Diabetes, Rickets, Leucocythæmia.	Birth Debility.	Malformations.	Old Age.	Special Senses
Janu	10	1	10	...	4	1
Febi	19	1	9	...	10	..
Mar	10	...	...	...	7	..
Apri	9	...	8	...	2	..
May	16	...	13	...	2	..
June	9	...	4	...	...	..
July	23	1	5	...	3	..
Aug	11	1	11	...	2	..
Sept	13	...	10	...	1	..
Octo	22	...	5	...	4	..
Nov	9	1	6	...	3	..
Dec	11	...	8	...	2	..
	162	5	89	...	40	

	Constitutional.		Developmental.			
	Phthisis and Wasting Diseases.	Others, *e.g.*, Diabetes, Rickets, Leucocythæmia.	Birth Debility.	Malformations.	Old Age.	Special Senses.
Jan	7	...	12	1	2	...
Feb	7	...	3	...	4	...
Ma	11	1	7	...	4	...
Ap	14	2	10	...	2	...
Ma	17	1	6	...	3	...
Jun	15	...	6	...	...	...
Jul	21	...	11	...	2	...
Au	12	...	5	...	4	...
Sep	11	1	7	...	2	...
Oct	12	...	8	...	2	...
No	8	...	9	...	7	...
De	9	2	7	...	2	...
	144	7	91	1	34	..

97.

	Constitutional.		Developmental.			
	Phthisis and Wasting Diseases.	Others, *e.g.*, Diabetes, Rickets, Leucocythæmia.	Birth Debility.	Malformations.	Old Age.	Special Senses.
J Janu	20	...	5	...	5	...
F Febr	11	...	8	...	...	...
M Marc	14	1	12	...	4	...
A Apri	9	1	14	...	1	...
M May	15	2	7	...	3	..
J June	12	1	6	...	2	...
J July	7	...	12	...	3	...
A Aug	16	2	10	...	1	...
S Sept	16	1	6	...	1	...
O Octo	9	...	11	...	2	...
N Nov	14	...	8	...	4	...
D Dece	13	...	14	...	10	...
	156	8	113	...	36	...

98.

	Constitutional.		Developmental.		
	Phthisis and Wasting Diseases.	Others, *e.g.*, Diabetes, Rickets, Leucocythæmia.	Birth Debility.	Malformations.	Old Age.
Jan	11	...	7	...	2
Feb	9	1	11	...	3
Mar	18	...	9	1	4
Apr	16	...	11	...	2
May	7	1	5	3	5
Jun	13	...	8	...	4
July	11	2	4	...	3
Aug	10	...	9	2	...
Sep	10	...	6	...	1
Oct	10	2	4	2	1
Nov	9	1	11	1	2
Dec	11	1	6	1	1
	135	8	91	10	28