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SEVENTIETH
ANNUAL REPORT

OF THE

REGISTRAR-GENERAL

OF

BIRTHS, DEATHS, AND MARRIAGES
IN ENGLAND AND WALES.

(1907.)

Presented to both Houses of Parliament by Command of His Majesty.



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REPORT

TO

THE RIGHT HONOURABLE JOHN BURNS, M.P.,

President of the Local Government Board, &c., &c.

(1907.)

SIR,

I HAVE the honour to submit to you the following Report on the estimated population, and on the marriages, births, and deaths registered in England and Wales during the year 1907.

The provisional numbers of marriages, births, and deaths in England and Wales and in each registration county for the year 1907 have already been published in the "General Abstract," and in somewhat greater detail as regards causes of death for the counties of England and Wales, and for London and the other large towns, in the "Annual Summary," which publication was issued in May, 1908. The figures given in the Summary were tabulated from returns furnished by the local registrars acting in the 2,029 registration sub-districts of England and Wales.

The statistics which I now lay before you also relate to the year 1907, but they have been tabulated from the individual entries in the registers of births, deaths, and marriages deposited in this office; and they have been analysed in much greater detail than was possible in the Annual Summary.

The issue of the Annual Reports is expedited as far as possible, but it should be borne in mind that they are of a permanent character, and that technical knowledge as well as the expenditure of considerable time is required for a detailed and accurate analysis of the vital statistics concerning a population of thirty-five millions.

POPULATION.

The population of England and Wales, enumerated at the end of March, 1901, consisted of 32,527,843 persons. From that date until the middle of 1907 the number of births exceeded the number of deaths by 2,520,944. Had neither emigration nor immigration occurred this surplus would have raised the population in the middle of the year to 35,048,787. In the absence of precise information with reference to migration, the populations in the Annual Reports are provisionally estimated on the assumption that the rate of increase which had prevailed in the last intercensal period has since been maintained.

Estimated in this way the population of England and Wales in the middle of the year 1907 amounted to 34,945,600 persons, of whom 16,879,509 were males and 18,066,091 were females. This population has been distributed among the counties after making due allowance for their several rates of increase in the intercensal period.

It was not practicable to bring into account the figures of the intermediate census of London which was taken in 1896, as the boundaries of London have been changed since that date. Had a census of London been taken in 1906, the results of that census would have been employed in preparing estimates of population or this Report.

MARRIAGES.

Complete statistics of the marriages recorded in the whole of England and Wales are available only from 1st July, 1837, on which date the Births, Deaths, and Marriage Registration Acts of 1836 came into operation. The proportion to the total population of persons married during the 70 years (1838-1907) ranged between a maximum of 17.9 per 1000 living in 1853, and a minimum of 14.2 per 1000 in 1886; the mean annual rate in the whole period being 16.0 per 1000.

Several years ago it was possible to trace some correspondence between the fluctuations in the marriage rate and the fluctuations in the price of wheat. In more recent years the figures show no such correspondence; there is, however, no doubt that the alternating periods of commercial prosperity and depression have a distinct effect on the marriage rate.

The marriages in England and Wales during the year 1907 numbered 276,421, corresponding to a rate of 15.8 persons married per 1000 of the population at all ages. The rates in the preceding three years (1904-1906) had been 15.2, 15.3, and 15.6 per 1000 living.

Methods of Measuring the Marriage Rate.—The total population does not, however, afford the most satisfactory standard by which to measure the marriage rate, because of the variations which occur from time to time in the number and age constitution of marriageable men and of marriageable women* in the population. How important these changes have been in recent years is shown by the statement on page vii, which gives for the last four censuses the proportions of the unmarried, married and widowed in each age group above 15 years.

These figures show that the proportion of bachelors in 1000 males aged 15 years and upwards rose from 384 in 1871 to 411 in 1901, and that among 1000 females aged 15 years and upwards the proportion of spinsters increased from 361 to 395. On the other hand, the proportion of widowed persons in the population steadily decreased throughout the period. The proportions of bachelors showed an increase in each age-group up to 55 years, while the increase in the proportion of spinsters affected every age-group.

Before drawing deductions from the several calculations in the following pages, it would be well to point out that the changes in the rate of marriage in years since the last census, must be regarded as approximate only, because the estimates of total population on which the proportions are based depend on an assumption, and estimates of sections of the population such as the numbers of persons of specified ages depend on further assumptions. It should also be noted that calculations based on the ages at marriage must be used with caution, because in earlier years a comparatively high proportion of the ages were unstated.

Table A., page viii, shows for each of the years 1876-1907, the marriage rates based on the total population, and the rates based on that section of the population in which marriages take place. It will be seen from this Table and from the accompanying Diagram that the two methods used for calculating the marriage rate lead to different conclusions.

* Defined as meaning unmarried and widowed persons at ages above 15 years.

PROPORTIONS OF UNMARRIED, MARRIED, and WIDOWED in 1,000 MALES and 1,000 FEMALES in EACH AGE GROUP:—

Age and Condition as to Marriage.		Census Years.			
		1871.	1881.	1891.	1901.
<i>Males.</i>					
Total aged 15 years and upwards.	Unmarried ...	384	392	406	411
	Married ...	559	553	540	536
	Widowed ...	57	55	54	53
15-20 ...	Unmarried ...	995	995	996	997
	Married ...	5	5	4	3
	Widowed ...	0	0	0	0
20-25 ...	Unmarried ...	767	777	805	826
	Married ...	230	221	193	173
	Widowed ...	3	2	2	1
25-35 ...	Unmarried ...	316	317	343	359
	Married ...	668	669	645	631
	Widowed ...	16	14	12	10
35-45 ...	Unmarried ...	137	138	147	158
	Married ...	826	826	818	812
	Widowed ...	37	36	35	30
45-55 ...	Unmarried ...	97	96	100	110
	Married ...	832	832	827	819
	Widowed ...	71	72	73	71
55-65 ...	Unmarried ...	89	83	84	89
	Married ...	771	779	771	764
	Widowed ...	140	138	145	147
65 and upwards.	Unmarried ...	79	76	73	74
	Married ...	579	587	590	574
	Widowed ...	342	337	337	352
<i>Females.</i>					
Total aged 15 years and upwards.	Unmarried ...	361	367	387	395
	Married ...	523	517	499	497
	Widowed ...	116	116	114	108
15-20 ...	Unmarried ...	968	975	981	985
	Married ...	32	25	19	15
	Widowed ...	0	0	0	0
20-25 ...	Unmarried ...	652	665	701	726
	Married ...	343	331	296	272
	Widowed ...	5	4	3	2
25-35 ...	Unmarried ...	294	293	326	340
	Married ...	676	681	653	643
	Widowed ...	30	26	21	17
35-45 ...	Unmarried ...	156	153	164	185
	Married ...	762	765	761	751
	Widowed ...	82	82	75	64
45-55 ...	Unmarried ...	120	119	124	136
	Married ...	717	711	706	705
	Widowed ...	163	170	170	159
55-65 ...	Unmarried ...	109	109	110	117
	Married ...	589	581	573	569
	Widowed ...	302	310	317	314
65 and upwards.	Unmarried ...	102	104	107	111
	Married ...	331	325	319	306
	Widowed ...	567	571	574	583

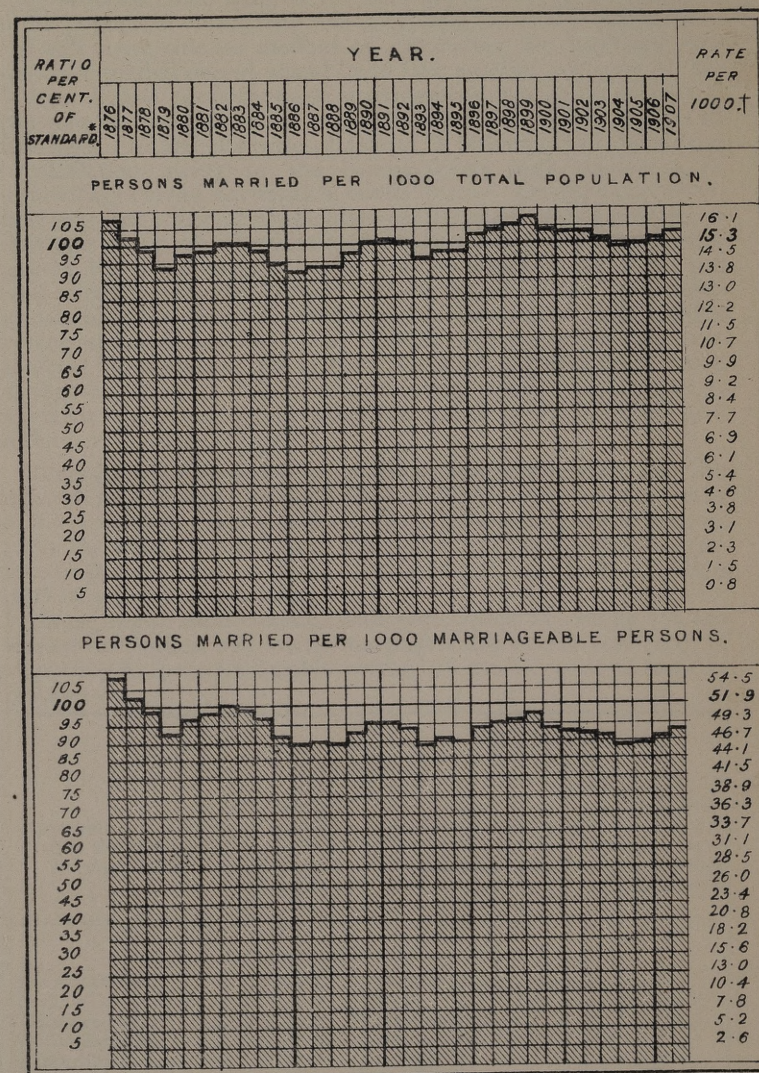
TABLE A.—ENGLAND AND WALES.—MARRIAGE RATES, 1876-1907.

Cols.	a.		b.	
	Calculated on the total population at all ages.		Calculated on the total number of marriageable persons in the population.	
Period.	Rate per 1000.	Compared with rate in 1876-80 taken as 100.	Rate per 1000.	Compared with rate in 1876-80 taken as 100.
1876-1880	15.3	100.0	51.9	100.0
1881-1885	15.2	99.3	50.6	97.5
1886-1890	14.7	96.1	47.8	92.1
1891-1895	15.1	98.7	47.9	92.3
1896-1900	16.1	105.2	49.7	95.8
1901-1905	15.6	102.0	47.6	91.7
1876	16.5	107.8	56.0	107.9
1877	15.7	102.6	53.3	102.7
1878	15.2	99.3	51.4	99.0
1879	14.4	94.1	48.5	93.4
1880	14.9	97.4	50.3	96.9
1881	15.1	98.7	51.1	98.5
1882	15.5	101.3	52.1	100.4
1883	15.5	101.3	51.7	99.6
1884	15.1	98.7	50.2	96.7
1885	14.5	94.8	47.9	92.3
1886	14.2	92.8	46.8	90.2
1887	14.4	94.1	47.0	90.6
1888	14.4	94.1	46.9	90.4
1889	15.0	98.0	48.6	93.6
1890	15.5	101.3	49.8	96.0
1891	15.6	102.0	49.8	96.0
1892	15.4	100.7	49.0	94.4
1893	14.7	96.1	46.5	89.6
1894	15.0	98.0	47.4	91.3
1895	15.0	98.0	47.0	90.6
1896	15.7	102.6	49.1	94.6
1897	16.0	104.6	49.7	95.8
1898	16.2	105.9	50.1	96.5
1899	16.5	107.8	50.7	97.7
1900	16.0	104.6	48.9	94.2
1901	15.9	103.9	48.6	93.6
1902	15.9	103.9	48.4	93.3
1903	15.6	102.0	47.8	92.1
1904	15.2	99.3	46.5	89.6
1905	15.3	100.0	46.0	89.8
1906	15.6	102.0	47.7	91.9
1907	15.8	103.3	48.3	93.1

ENGLAND & WALES.

MARRIAGE-RATES.

DIAGRAM I.—ANNUAL MARRIAGE-RATES, 1876-1907.



* The Standard adopted (see left hand column) is the average rate in the five years 1876-80.

† The Rate per 1000 in the top section of the diagram is calculated upon the total population, and that in the bottom section upon the number of marriageable persons in the population. (See right hand column).

For purposes of comparison the mean rate in the period 1876-80 is taken as a standard in each case; the rates based on the total population were above the standard in 15 of the 27 years (1881-1907), whereas those based on the numbers of marriageable persons in the population were, with one exception, below the standard.

A still more precise method of calculating the marriage rate over an extended period would be to take account not only of the changes in the proportions of marriageable bachelors, widowers, spinsters, and widows in the population, but also of the changes in their ages. A difficulty arises, however, in attempting to make such a calculation owing to the comparatively high proportion of unstated ages in the marriages in earlier years.* On the assumption, however, that a fair approximation to the number of marriages in each age group may be obtained by distributing the unrecorded ages in the same proportions as the recorded ages, a rate has been calculated for the period 1876-80 based on the age constitution and proportions of marriageable men and of marriageable women at the Census of 1901. Taking this corrected rate as a standard, the marriage rate in 1907, when compared with the rate of 1876-80, shows a fall of 10·4 per cent, which may be said to represent approximately the proportional fall in the marriage rate in the period under review.

Marriages in Counties.—Table B. on page x shows for the registration counties of England and Wales the marriage rates in the four past census periods, in the triennial period 1903-5, and in the years 1906 and 1907. The rates are based on the proportions of persons married to the unmarried and widowed population aged 15 years and upwards.

Among registration counties with populations exceeding 100,000 persons the highest and lowest marriage rates in the year 1907, in proportion to the marriageable section of the population, were as follows:—

a.		b.	
Registration Counties with the highest Marriage rates.	Persons married per 1000 marriageable population.	Registration Counties with the lowest Marriage rates.	Persons married per 1000 marriageable population.
England and Wales ... 48·3.			
Monmouthshire ...	60·1	Herefordshire ...	40·5
Durham ...	59·2	Kent ...	40·0
Glamorganshire ...	59·2	Hertfordshire ...	40·0
Nottinghamshire ...	57·9	Shropshire ...	39·0
Staffordshire ...	54·7	Surrey ...	38·1
Warwickshire ...	54·7	Sussex ...	36·9
Lincolnshire ...	53·9	Carnarvonshire ...	33·5
Derbyshire ...	53·6		

It should be observed that the differences between the marriage rates are not due entirely to variations in the economic conditions in the several counties, but are due in some measure to differences in the age and sex constitution of the respective marriageable populations.

* See remarks relating to unstated ages at Marriage on page XII.

TABLE B.—ANNUAL MARRIAGE RATES in each REGISTRATION COUNTY, 1870-1907.

Registration Counties.	Persons married per 1000 of the unmarried and widowed population aged 15 years and upwards.*							Increase or Decrease per cent. in each County between the period 1870-72 and 1907.
	Three year periods.					Years.		
	1870-72.	1880-82.	1890-92.	1900-02.	1903-05.	1906.	1907.	
England and Wales	57.2	51.5	49.8	48.7	47.0	47.7	48.3	-15.6
London	60.9	56.2	52.3	50.3	48.3	48.3	48.1	-21.0
Surrey	38.3	39.2	37.0	38.0	39.0	39.4	38.1	-0.5
Kent	46.1	46.0	42.4	43.5	40.9	39.5	40.0	-13.2
Sussex	44.5	42.3	38.4	39.0	37.5	38.2	36.9	-17.1
Hampshire ..	48.9	48.0	44.7	44.5	45.7	44.9	45.7	-6.5
Berkshire ..	47.0	43.4	43.7	43.2	43.6	43.2	43.6	-7.2
Middlesex ..	34.8	38.0	37.8	42.5	44.3	44.3	44.6	+28.2
Hertfordshire	41.0	37.2	38.0	39.3	40.7	40.0	40.0	-2.4
Buckinghamshire	47.7	45.7	44.5	47.1	44.5	44.7	45.3	-5.0
Oxfordshire	46.6	41.4	41.7	41.6	43.6	43.6	43.8	-6.0
Northamptonshire	58.0	53.0	53.6	49.4	46.8	44.7	47.1	-18.8
Huntingdonshire	52.1	44.8	44.7	46.0	45.5	48.6	49.2	-5.6
Bedfordshire	52.3	48.0	43.2	43.8	43.2	45.8	47.4	-9.4
Cambridgeshire	52.0	41.8	45.3	46.3	44.4	45.5	45.2	-13.1
Essex	45.9	46.2	48.4	49.3	47.8	47.3	47.5	+3.5
Suffolk	51.8	50.2	46.9	47.0	45.0	43.5	44.0	-15.1
Norfolk	52.3	50.2	45.9	45.5	45.2	45.7	44.4	-15.1
Wiltshire ..	47.4	44.5	44.8	45.0	46.7	47.9	46.6	-1.7
Dorsetshire..	45.6	42.7	43.1	41.5	43.1	41.2	43.8	-3.9
Devonshire..	50.6	46.7	45.7	43.4	44.6	44.6	43.5	-14.0
Cornwall ..	44.6	38.7	39.8	38.4	39.2	38.7	42.4	-4.9
Somersetshire	45.6	42.2	43.1	40.7	40.9	42.0	41.7	-8.6
Gloucestershire	58.1	50.9	49.2	47.2	45.9	44.5	45.7	-21.3
Herefordshire	38.6	35.4	38.3	38.6	36.9	37.2	40.5	+4.9
Shropshire ..	44.9	37.9	40.2	42.0	39.9	37.5	39.0	-13.1
Staffordshire	71.6	60.0	58.7	55.9	52.3	52.9	54.7	-23.6
Worcestershire	56.2	47.5	47.0	46.1	43.3	45.7	44.8	-20.3
Warwickshire	62.9	53.2	56.4	54.7	51.8	55.6	54.7	-13.0
Leicestershire	61.8	55.1	53.4	51.6	50.4	47.4	49.2	-20.4
Rutlandshire	43.1	37.0	38.3	37.2	37.8	35.2	31.9	-26.0
Lincolnshire	53.1	47.9	49.9	50.6	50.8	51.1	53.9	+1.5
Nottinghamshire	68.1	64.8	58.4	58.1	54.3	57.8	57.9	-15.0
Derbyshire ..	60.0	51.2	54.3	53.5	50.1	51.6	53.6	-10.7
Cheshire ..	54.7	46.8	45.5	43.8	43.2	43.9	44.9	-17.9
Lancashire ..	66.1	56.8	52.8	50.3	48.1	50.4	51.2	-22.5
West Riding ..	66.1	55.2	54.1	52.0	48.9	50.4	51.5	-22.1
East Riding ..	63.8	54.9	53.7	50.4	48.0	48.5	50.8	-20.4
North Riding ..	50.7	49.7	45.9	47.4	45.3	48.1	49.4	-2.6
Durham	70.9	62.9	57.6	58.9	54.6	57.9	59.2	-16.5
Northumberland	64.4	54.1	52.9	51.1	48.2	48.2	50.2	-22.0
Cumberland ..	47.6	45.7	42.6	43.7	42.8	42.9	44.9	-5.7
Westmorland ..	44.7	39.2	37.7	36.4	37.1	36.3	35.1	-21.5
Monmouthshire	64.4	55.6	57.5	55.6	54.6	57.2	60.1	-6.7
South Wales ..	56.8	51.2	54.9	53.5	50.5	52.1	53.4	-6.0
Glamorganshire	67.6	60.3	63.3	59.2	55.0	57.5	59.2	-12.4
Carmarthenshire	53.0	45.6	45.4	46.4	46.9	45.7	46.9	-11.5
Pembrokeshire	47.0	41.6	42.8	42.8	44.0	44.4	42.9	-8.7
Cardiganshire ..	38.1	31.7	31.3	30.9	30.6	30.9	27.8	-27.0
Brecknockshire	50.5	44.1	47.1	52.3	47.1	44.2	49.1	-2.8
Radnorshire ..	43.3	38.1	34.6	40.1	29.7	28.3	28.8	-33.5
North Wales ..	43.0	38.7	40.6	39.8	38.3	37.2	36.1	-16.0
Montgomeryshire	41.6	33.3	37.7	37.2	40.2	35.5	33.3	-20.0
Flintshire ..	38.3	36.0	42.1	37.2	34.9	37.5	38.7	+1.0
Denbighshire ..	45.7	42.0	46.8	43.9	41.4	41.4	41.1	-10.1
Merionethshire	44.8	37.6	36.1	38.6	35.4	31.4	33.9	-24.3
Carnarvonshire	44.0	41.3	39.5	39.0	37.8	37.0	33.5	-23.9
Anglesey ..	37.9	36.6	36.1	38.5	36.1	36.2	33.8	-10.8

* See remarks, page vi.

First Marriages; Re-marriages.—The changes in the marriage rates among bachelors, widowers, spinsters, and widows, calculated on those sections of the population aged 15 years and upwards, are shown in the following table:—

MEAN ANNUAL MARRIAGE RATE PER 1000 LIVING, AGED 15 YEARS AND UPWARDS.*

	Bachelors.	Widowers.	Spinsters.	Widows.
1880-82	58.7	52.9	59.0	15.5
1890-92	57.1	50.7	55.7	15.2
1900-02	54.7	44.4	53.0	14.4
1903	54.0	40.6	52.2	13.4
1904	52.8	38.0	50.9	12.5
1905	52.9	38.3	51.0	12.6
1906	54.2	38.6	52.3	12.6
1907	54.8	39.4	53.0	12.7

* The rates in each period are based on the age constitution, and proportions of these particular sections of the population as enumerated at the Census of 1901.

The fall in the marriage rate in the period reviewed in the table has been greater among widowers and widows than among the unmarried of either sex, but the apparent tendency among the widowed not to re-marry is not so great as it would appear to be from the above statement, because there has been a considerable decrease in the proportions of persons who have become widowed at the younger ages. The number of widows is always much greater than that of widowers, because, in the first place, men marry later in life than women, secondly, because the duration of male life is shorter than that of female life, and thirdly because the proportion of widows who re-marry is much lower than the proportion of widowers who re-marry.

The next table gives a general view of the changes in the proportions of first marriages and re-marriages since the year 1871; here again it will be observed that the proportion of widowed persons who re-married shows a continuous decrease.

PROPORTIONS OF FIRST MARRIAGES AND RE-MARRIAGES IN 1000 MARRIAGES.

Period.	Bachelors.	Widowers.	Spinsters.	Widows.	Bachelors who married.		Widowers who married.	
					Spinsters.	Widows.	Spinsters.	Widows.
1871-75 ...	862	138	900	100	816	46	84	54
1876-80 ...	864	136	902	98	820	44	82	54
1881-85 ...	874	126	911	89	834	40	77	49
1886-90 ...	881	119	917	83	844	37	73	46
1891-95 ...	887	113	921	79	851	36	70	43
1896-1900	904	96	931	69	871	33	60	36
1901-05 ...	911	89	933	67	877	34	56	33
1906 ...	917	83	938	62	885	32	53	30
1907 ...	916	84	939	61	885	31	54	30

Divorced Persons who Re-married.—The following table shows for the period 1871-1907 the average annual number of persons divorced, and the number of divorced persons who re-married. It will be noted from these figures that in the period under review the annual number of persons divorced has more than trebled, also that the proportion of such persons who re-married shows a steady and practically continuous increase.

The proportion of divorced persons who re-married in 1871-5 amounted to about 17 per cent. of the number divorced during that period, whereas in 1907 the proportion had risen to nearly 50 per cent. It should be pointed out, however, that in some cases persons who have been divorced abroad re-marry in this country, and also that the figures given in the table refer only to persons described in the marriage register as divorced, and possibly this description is not given in all cases in which it is applicable.

AVERAGE ANNUAL **Number** OF PERSONS DIVORCED, AND OF DIVORCED PERSONS WHO RE-MARRIED, 1871-1907.

Period.	Persons divorced.*	Divorced persons who remarried.			Divorced men and spinsters.	Divorced men and widows.	Divorced men and divorced women.	Divorced women and bachelors.	Divorced women and widows.
		Total.	Men.	Women.					
1871-75 ...	356.8	61.4	31.2	30.2	25.8	4.0	1.4	20.0	8.8
1876-80 ...	554.0	103.8	55.8	48.0	42.0	12.2	1.6	31.2	15.2
1881-85 ...	671.2	128.0	68.2	59.8	52.8	12.6	2.8	42.0	15.0
1886-90 ...	706.8	169.0	79.8	89.2	64.8	10.8	4.2	65.0	20.0
1891-95 ...	743.6	213.8	109.6	104.2	88.8	15.0	5.8	75.4	23.0
1896-1900 ...	980.0	345.2	172.4	172.8	137.8	24.4	10.2	125.8	36.8
1901-05 ...	1126.4	509.2	261.6	247.6	204.8	37.8	19.0	181.0	47.6
1906 ...	1092	676	351	325	268	55	28	227	70
1907 ...	1288	636	309	327	259	31	19	259	49

* These figures were compiled and furnished to the Registrar-General by the Principal Probate Registry. In addition to decrees absolute for dissolution of marriage, the figures include decrees absolute for nullity of marriage.

Ages at Marriage.—A precise comparison for a long series of years of the figures relating to ages at marriage cannot be made, because prior to 1896 the classification of marriage ages was limited to those cases in which both the contracting parties had given the requisite information.

In the two years ended with June, 1841, the ages of both parties were stated in only 6 per cent. of the marriages. In the year 1858 the proportion had risen to about 60 per cent., in 1870 to 70 per cent., and in 1880 to 82 per cent.; in the ten succeeding years the increase was rapid, the ages of both parties being stated in more than 96 per cent. of the marriages registered in 1890. Since that date the increase, although necessarily less marked, has been almost continuous. In the year 1896 the proportion exceeded 98 per cent., and gradually rose until in the year under review precise statements of age were made by 99.14 per cent. of the husbands, and by 99.04 per cent. of the wives.

For purposes of comparison the proportions of unstated ages for the years 1906 and 1907 are placed side by side in the following statement.

	Proportions per cent. of Ages not stated.			
	Adult Husbands.		Adult Wives.	
	1906.	1907.	1906.	1907.
In Marriages of—				
Bachelors with Spinsters	0.65	0.66	0.83	0.84
Bachelors with Widows	2.06	1.77	2.37	2.22
Widowers with Spinsters	3.21	3.03	3.30	3.21
Widowers with Widows	4.00	2.99	4.20	3.19
In all Marriages of—				
Bachelors	0.70	0.70	0.89	0.90
Widowers	3.50	3.01	3.63	3.20
Spinsters	0.80	0.80	0.99	1.00
Widows	3.01	2.37	3.26	2.70

Among the 552,842 persons who married in 1907 2,388, or 0.86 per cent., of the husbands, and 2,664, or 0.96 per cent., of the wives, failed to make definite statements of age in the marriage register. The proportions of unstated ages both among husbands and among wives are the lowest on record.

Of the 50,433 minors who married, all but three spinsters stated their ages. Among adults, 0.90 per cent. of the husbands and 1.12 per cent. of the wives were indefinitely described as of "full age." It has been noted in several previous Reports that unstated ages are more frequent in re-marriages than in first marriages, and most frequent of all in re-marriages of widowers. This is again confirmed by the figures for 1907.

Marriages of Minors.—The subjoined table shows the decline in the proportions of marriages under age in recent years. Among

	Minors in 1000 Marriages.	
	Husbands.	Wives.
1876-80	77.8	217.0
1881-85	73.0	215.0
1886-90	63.2	200.2
1891-95	56.2	182.6
1896-1900	51.2	168.0
1901	49.6	159.9
1902	47.0	153.7
1903	45.7	152.3
1904	45.6	152.7
1905	43.8	146.0
1906	43.0	145.7
1907	40.7	141.8

the persons who married in 1907, 40.7 per 1,000 of the husbands and 141.8 per 1,000 of the wives were minors. This is the lowest proportion of minors recorded among men, and the lowest proportion since 1848 among women.

Among registration counties with populations exceeding 100,000 persons, the highest and lowest proportions per 1,000 of husbands and of wives under age at marriage were as follows :—

Minors in 1000 Marriages.			
Registration Counties.	Highest per 1000 Marriages.	Registration Counties.	Lowest per 1000 Marriages.
<i>Husbands.</i>			
Nottinghamshire ...	66	Surrey	26
Leicestershire ...	61	Kent	24
Bedfordshire ...	59	Devonshire ...	24
Monmouthshire ...	58	Hampshire ...	22
Staffordshire ...	56	Shropshire ...	21
Warwickshire ...	52	Denbighshire ...	15
Durham	52	Carnarvonshire ...	13
Derbyshire	51	Herefordshire ...	10
West Riding of Yorkshire.	51		
<i>Wives.</i>			
Durham	223	Surrey	102
Monmouthshire ...	206	Hertfordshire ...	102
Nottinghamshire ...	204	Gloucestershire ...	102
Derbyshire	195	Somersetshire ...	101
Glamorganshire ...	193	Shropshire	94
North Riding of Yorkshire.	180	Denbighshire ...	87
West Riding of Yorkshire.	175	Herefordshire ...	82
		Carnarvonshire...	60

Broadly speaking, the ages of the men at marriage are, so far as concerns the growth of population, of much less importance than the ages of women at marriage. The fact that child-bearing is practically limited to the period between the ages 15 and 45 years, and that the fertility of married women is highest at the earlier age groups, makes it evident that any great alteration in the ages of women at marriage must necessarily have important effects on the birth-rate.

Men and women intermarry at all ages ; but taking the records in the ten years 1898-1907 as an example, over 40 per cent. of the bridegrooms and nearly 60 per cent. of the brides were at their first marriage under 25 years of age, while the mean age at marriage in those ten years averaged 26.9 years for all bachelors and 25.3 years for all spinsters. For the assistance of those who desire to investigate this subject, the age constitution of the bachelors, spinsters, widowers, and widows who married in England and Wales in the years 1896-1907 is shown in the following tables.

ENGLAND AND WALES.—AGE-CONSTITUTION OF BACHELORS and SPINSTERS who MARRIED reduced to 1,000 MARRIAGES at ALL AGES, 1896-1907.

Year.	Minors.					Full Age.								Age not Stated.
	Under 18 Years.	18-	19-	20-	Total Minors.	21-	25-	30-	35-	40-	45-	50-	55 and upwards.	
						<i>Bachelors.</i>								
1896	0	3	15	41	59	414	342	109	38	14	6	2	2	14
1897	0	3	15	39	57	412	345	111	39	14	6	2	2	12
1898	0	3	15	39	57	412	346	110	38	15	6	3	2	11
1899	0	3	14	38	55	410	350	110	39	14	6	3	2	11
1900	0	3	14	39	56	413	343	110	40	16	7	3	2	10
1901	0	3	14	38	55	405	349	114	41	16	7	3	2	8
1902	0	3	14	35	52	391	358	121	42	16	7	3	2	8
1903	0	3	13	34	50	389	362	123	40	16	7	3	2	8
1904	0	3	13	34	50	385	364	124	41	16	7	3	2	8
1905	0	3	12	33	48	382	366	127	42	16	7	3	2	7
1906	0	3	12	32	47	380	368	127	43	16	7	3	2	7
1907	0	2	11	31	44	379	368	130	44	16	7	3	2	7
						<i>Spinsters.</i>								
1896	6	28	61	93	188	431	248	72	26	11	5	2	1	16
1897	6	27	60	90	183	435	251	73	26	10	5	2	1	14
1898	5	27	59	89	180	436	253	73	26	11	5	2	1	13
1899	5	26	58	87	176	436	256	75	26	10	5	2	1	13
1900	5	25	58	86	174	434	259	75	28	11	5	2	1	11
1901	5	25	57	85	172	429	264	77	28	12	5	2	1	10
1902	5	24	54	82	165	427	271	79	28	12	5	2	1	10
1903	5	23	53	82	163	428	274	79	27	11	5	2	1	10
1904	5	23	53	82	163	426	274	79	28	12	5	2	1	10
1905	5	22	51	79	157	430	274	82	28	11	6	2	1	9
1906	5	22	51	77	155	428	278	83	28	11	6	2	1	8
1907	5	22	48	76	151	423	281	85	29	12	6	2	2	9

ENGLAND AND WALES.—AGE-CONSTITUTION of WIDOWERS and WIDOWS who MARRIED reduced to 1,000 MARRIAGES at ALL AGES, 1896-1907.

Year.	Minors.					Full Age.								Age not Stated.
	Under 18 Years.	18-	19-	20-	Total Minors.	21-	25-	30-	35-	40-	45-	50-	55 and upwards.	
						<i>Widowers.</i>								
1896	—	—	—	0	0	11	77	134	159	148	130	107	183	51
1897	—	—	0	—	0	10	74	135	162	148	131	108	184	48
1898	—	—	—	0	0	11	73	133	152	150	139	109	188	45
1899	—	—	—	0	0	10	69	128	160	153	137	107	196	40
1900	—	—	—	0	0	10	70	126	155	150	144	113	195	37
1901	—	—	—	0	0	10	65	127	157	153	140	116	197	35
1902	—	—	—	0	0	9	68	132	155	155	136	116	193	36
1903	—	—	—	0	0	10	72	130	156	153	132	116	196	35
1904	—	—	—	0	0	9	70	131	157	149	137	113	197	37
1905	—	—	—	0	0	10	65	128	153	150	137	118	202	37
1906	—	—	0	—	0	10	66	125	149	152	143	117	203	35
1907	—	—	—	—	—	8	63	126	150	155	136	119	213	30
						<i>Widows.</i>								
1896	—	0	0	1	1	26	120	174	182	156	123	82	89	47
1897	—	—	0	1	1	27	107	179	189	155	125	81	94	42
1898	—	—	0	1	1	27	116	178	187	153	125	83	91	39
1899	—	—	0	1	1	26	112	168	190	161	129	81	95	37
1900	—	0	0	1	1	25	113	174	190	161	130	78	95	33
1901	—	—	0	1	1	31	119	178	189	158	121	79	93	31
1902	0	—	0	1	1	28	126	183	192	155	116	77	90	32
1903	—	—	1	0	1	28	124	185	189	164	113	77	90	29
1904	—	—	0	1	1	28	123	185	187	155	118	77	92	34
1905	—	—	0	1	1	26	118	180	192	159	122	79	91	32
1906	—	—	0	1	1	23	113	180	184	162	131	78	95	33
1907	—	—	0	1	1	25	108	180	192	158	128	82	99	27

Mean Age at Marriage.—In view of the great reduction that has taken place in the disturbing factor of unstated ages, it has become possible to measure with approximate accuracy for a series of recent years the mean age at marriage, based on the recorded ages.

ENGLAND AND WALES.—MEAN AGES at MARRIAGE 1896-1907 (recorded ages).
HUSBANDS.

Year.	All Husbands.	All Bachelors.	All Widowers.	Bachelors with Spinsters.	Bachelors with Widows.	Widowers with Spinsters.	Widowers with Widows.
1896	28.43	26.59	44.49	26.30	33.93	41.38	49.60
1897	28.38	26.63	44.53	26.35	34.10	41.43	49.73
1898	28.34	26.62	44.70	26.34	33.94	41.82	49.69
1899	28.34	26.65	44.90	26.37	34.29	41.87	49.81
1900	28.41	26.68	45.02	26.39	34.35	42.19	49.75
1901	28.55	26.76	45.18	26.48	33.94	42.43	49.69
1902	28.53	26.88	44.96	26.60	33.94	42.11	49.81
1903	28.49	26.91	44.94	26.63	34.24	42.16	49.72
1904	28.46	26.93	45.03	26.66	34.06	42.25	49.98
1905	28.56	27.01	45.27	26.74	34.26	42.47	50.18
1906	28.56	27.03	45.37	26.76	34.39	42.59	50.25
1907	28.66	27.10	45.62	26.84	34.58	42.85	50.56

WIVES.

Year.	All Wives.	All Spinsters.	All Widows.	Spinsters with Bachelors.	Widows with Bachelors.	Spinsters with Widowers.	Widows with Widowers.
1896	26.21	25.08	40.58	24.54	35.69	32.43	44.81
1897	26.18	25.10	40.74	24.59	35.95	32.31	45.00
1898	26.18	25.14	40.59	24.62	35.85	32.68	45.04
1899	26.21	25.16	40.83	24.65	36.12	32.83	45.16
1900	26.29	25.23	40.74	24.71	36.19	32.97	44.95
1901	26.39	25.31	40.43	24.77	35.65	33.04	44.96
1902	26.37	25.36	40.25	24.86	35.62	32.86	44.95
1903	26.35	25.37	40.27	24.89	35.69	32.93	45.01
1904	26.32	25.37	40.35	24.90	35.82	33.03	45.22
1905	26.38	25.43	40.53	24.96	36.02	33.08	45.29
1906	26.41	25.46	40.79	24.99	36.27	33.30	45.53
1907	26.49	25.54	40.91	25.06	36.32	33.43	45.68

It will be noted from the figures in the above Tables that the mean age at marriage has steadily increased both for bachelors and for spinsters, and a similar tendency, with slight fluctuations, is noticeable in the case of widowers. In the case of widows the mean age has shown a progressive increase since 1902.

Changes in the mean age at marriage of bachelors and spinsters measure with approximate accuracy the tendency to earlier or later marriage; but changes in the mean age of widowers and widows who re-marry are the result of more complex causes. For example, a general decrease of mortality defers the age at which married persons become widowed and tends to defer in corresponding degree the age of re-marriage. The mean age of all of each sex who marry or re-marry is involved in still greater complexity, for it depends not only on the mean ages of the bachelors and widowers and of the spinsters and widows, but on the proportion of bachelors to widowers and on the proportion of spinsters to widows, among those who marry; and these proportions have changed very considerably in recent years.

Had the proportions been the same in 1896 as they were in 1907, the mean age of all husbands and all wives who married in the earlier year would have been 28.10 years and 26.04 years respectively instead of 28.43 years and 26.21 years, and the mean ages in 1907 would have shown increases of 0.56 and 0.45 years instead of 0.23 and 0.28 years.

The mean age at marriage varies in different parts of the country, and the following comparison for the year 1907 between London and the rest of England and Wales, may be of interest:—

In marriages of—	Husbands.		Wives.	
	England and Wales, less London.	London.	England and Wales, less London.	London.
	All Bachelors	26.99	27.75	25.39	25.78
„ Widowers	45.45	46.62	37.88	37.54
„ Spinsters	27.65	28.43	25.49	25.84
„ Widows	42.46	42.23	41.07	40.05
Bachelors with spinsters ...	26.74	27.44	25.01	25.35
Bachelors with widows ...	34.40	35.47	36.33	36.24
Widowers with spinsters ...	42.56	44.53	33.39	33.70
Widowers with widows... ..	50.55	50.56	45.83	44.74
In all marriages	28.55	29.33	26.44	26.76

NOTE.—The table is to be read as follows:—The mean age of all the bachelors who married was 27.75 years in London, and 26.99 in the rest of the country; the mean age of their wives being 25.78 and 25.39 years respectively. The mean age of all the spinsters who married was 25.84 years in London, and 25.49 in the rest of the Country: the mean age of their husbands being 28.43 and 27.65 years respectively.

It will be noted that except in the case of marriages of widows the mean age at marriage was higher in the Metropolis than in the rest of the country.

The mean age at marriage is for many purposes a convenient summary of the statements as to age; it is nevertheless only a summary and does not necessarily reflect all the changes, nor even the most important changes, in the ages at which people marry. (See tables on pages xv and xvi.)

Signatures in Marriage Register.—Now that so much progress has been made in elementary education, the records of the ability or inability of persons to sign their names in the marriage register will be regarded with increased interest.

It will be seen from the next table that in the period 1841-45 approximately one in three of the men and one in two of the women who married could not write their names in the marriage register. How defective the elementary education of the country was at that time is evident from these figures. From that date the proportions of illiterate persons of each sex steadily declined, and the effect of the Education Act of 1870 which practically brought every child in the country under educational influences, is reflected in the more rapid decline of the proportions since 1885.

In the year under notice only 1.4 per cent. of the bridegrooms and 1.7 per cent. of the brides failed to sign their names in the marriage register.

Proportion per cent. of men and women who signed the marriage register with marks, 1841-1907:—

Period.	In every 100 Marriages the Annual Proportion who Signed the Marriage Register with Marks.			Comparison with Rate in 1841-45 taken as 100.	
	Men.	Women.	Both.	Men.	Women.
1841-1845	32.6	48.9	?	100	100
1846-1850	31.4	46.2	?	96	94
1851-1855	30.2	43.5	22.5	93	89
1856-1860	27.1	38.1	18.6	83	78
1861-1865	23.6	32.9	15.1	72	67
1866-1870	20.5	28.3	12.3	63	58
1871-1875	18.5	25.2	10.4	57	52
1876-1880	14.8	20.0	7.5	45	41
1881-1885	12.3	15.5	5.4	38	32
1886-1890	8.4	9.8	3.0	26	20
1891-1895	5.1	6.0	1.7	16	12
1896-1900	3.2	3.7	1.0	10	8
1901-1905	2.0	2.4	0.6	6	5
1906	1.5	1.9	0.5	5	4
1907	1.4	1.7	0.4	4	3

Among counties with populations exceeding 100,000 persons the highest proportions of illiteracy among husbands were recorded in Norfolk, in Glamorganshire, in Cambridgeshire, in Suffolk, in Denbighshire, in Herefordshire, in Cornwall, and in Monmouthshire; and among wives in London, in the North Riding, in Yorkshire, in Glamorganshire, in Durham, in Warwickshire, in Monmouthshire, in Carmarthenshire, and in Carnarvonshire.

It has been frequently pointed out in these Reports that the comparatively high proportion of illiteracy in London is more apparent than real; in 1907 no less than 1.6 per cent. of the bridegrooms and 2.3 per cent. of the brides failed to sign their names in the marriage register. Illiteracy is not, however, common to all parts of London, it is practically confined to a group of four East-end Registration Districts (Bethnal Green, Whitechapel, St. George-in-the-East, and Mile End Old Town) where a large proportion of signatures by mark occur in the marriages of foreign Jews. If these districts be excluded the proportions of illiteracy in London will be reduced to 0.6 out of every 100 men, and 0.9 out of every 100 women who married.

Buildings in which Marriages may be Solemnized.—At the end of the year 1907 the number of churches or chapels of the Established Church and of registered buildings in which marriages could be legally solemnized were as follows:—

Established Church	15,664
All other Religious Denominations	14,986
Total	<u>30,650</u>

The increase upon the numbers at the end of the previous year was: Established Church 41, other religious denominations 317.

By the Acts 15 & 16 Vict. c. 36 and 18 & 19 Vict. c. 81 it was enacted that all places of religious worship not being churches or chapels of the Established Church should, if the congregation desired, but not otherwise, be certified to the Registrar-General: certification for public worship being a necessary preliminary to the registration of a building for the solemnization of marriages. The number of places of meeting for religious worship on the official register on 31st December, 1907, and the number of buildings registered for the solemnization of marriages appear in the following Table.

Denomination.	Buildings certified to the Registrar-General as Meeting places for Religious Worship.	Buildings registered for the Solemnization of Marriages.*
Roman Catholics	1,300	1,255
Wesleyan Methodists	7,236	3,375
Congregationalists	3,120	2,795
Baptists	2,908	2,500
Primitive Methodists	4,141	1,494
United Methodist Church†... ..	1,926	1,075
Calvinistic Methodists	1,115	820
Presbyterians... ..	433	434
Unitarians	173	190
New Jerusalem Church	50	53
Catholic Apostolic Church	68	49
Countess of Huntingdon's Connexion	40	42
Salvation Army	1,199	28
Society of Friends	357	†
Jews	190	†
All others	2,487	876
	26,743	14,986

* Of these buildings nearly 1000 were certified before 1852, as Places of Meeting for Religious Worship, to some other Authority than the Registrar-General and therefore are not included in the preceding column.

† In accordance with the provisions of the United Methodist Church Act of 1907, the Bible Christian Church, the Methodist New Connexion Church and the United Methodist Free Churches have become merged in the single denomination of the United Methodist Church.

‡ It is not necessary for buildings to be registered for the Solemnization of Quaker or Jewish Marriages. Under section 31 of the Births and Deaths Registration Act (1836) Registering Officers of the Society of Friends and Secretaries of Jewish Synagogues who have been certified to the Registrar-General record the Marriages in each case.

The Marriage Act of 1898 provided that, under specified conditions, marriages might be solemnized in registered buildings in the presence of duly authorised persons without the attendance of a Registrar of Marriages. The governing bodies of some of the registered buildings have availed themselves of this privilege, and at the end of the year 1907 the number of such buildings which had been brought under the operation of the Act, and so

remained, was 2,435 out of the total of 14,986; the numbers of these buildings and the denominations to which they belonged, were as follows:—

1,151	Wesleyan Methodists.
397	Congregationalists.
239	Baptists.
235	Primitive Methodists.
210	United Methodist Church.
62	Calvinistic Methodists.
141	Other Denominations, and Unsectarian.

2,435 Total.

These 2,435 registered buildings were distributed among 461 of the registration districts. In the remaining 173 registration districts there was no registered building under the operation of the Act.

Manner of Solemnization.—Of the 276,421 marriages in England and Wales during the year 1907, 172,497, or 624 per 1000, were solemnized according to the rites of the Established Church, 49,898, or 181 per 1000, were solemnized according to the rites of other religious denominations, and 54,026, or 195 per 1000, took place in the offices of superintendent registrars.

Period	Of 1000 Marriages.						
	According to the Rites of the Established Church.	Not according to the Rites of the Established Church.	In Registered Buildings.		Quakers.	Jews.	Civil Marriages in Superintendent Registrar's Office.
			Roman Catholics.	Nonconformists.			
1841-50 ...	896	104	73		0.5	1.4	29
1851-60 ...	831	169	47	66	0.4	1.7	54
1861-70 ...	778	222	45	91	0.3	1.8	84
1871-80 ...	739	261	42	107	0.3	2.3	109
1881-90 ...	706	294	43	115	0.3	3.3	132
1891-00 ...	686	314	41	121	0.3	5.4	146
1901-5 ...	650	350	41	130	0.3	7.3	171
1901 ...	666	334	41	128	0.3	7.0	158
1902 ...	661	339	41	127	0.3	7.4	163
1903 ...	651	349	41	130	0.4	7.3	170
1904 ...	642	358	41	131	0.3	7.0	179
1905 ...	636	364	41	132	0.3	7.6	183
1906 ...	631	369	42	130	0.3	8.3	188
1907 ...	624	376	42	131	0.4	7.2	195

In the period under review, the proportion of Church marriages has shown a continuous decrease, balanced by the increased proportions of civil, Nonconformist and Jewish marriages.

In the year 1907, the proportion of Church marriages was the lowest on record; marriages in registered buildings belonging to the various Nonconformist bodies amounted to 131 per 1000

of the total marriages, against 130 per 1000 in the previous year. This proportion was made up of 96 per 1000 that were contracted in the presence of registrars (against 97 in 1906), and of 35 per 1000 that were contracted in the presence of "Authorized Persons" under the provisions of the Marriage Act of 1898 (against 33 in 1906).

The proportion of Roman Catholic marriages was 42 per 1000, and was equal to the proportion in the preceding year.

The proportion of Jewish marriages which had, with slight fluctuations, steadily increased for many years, until in the year 1906 it reached 8.3 per 1000, fell to 7.2 per 1000 in the year under notice. Of the 1907 Jewish marriages contracted in the year 1907 in England and Wales, 1474 or 74 per cent. were registered in London, 166 or 8 per cent. in the city of Manchester, and 113 or 6 per cent. in the city of Leeds. Of the Jewish marriages in London, no fewer than 1199 or 81 per cent. were registered in a group of three registration districts—London City, Whitechapel, and Mile End Old Town.

Civil marriages, that is to say, marriages taking place in the office of a superintendent registrar, steadily increased from an average of 29 per 1000 in the period 1841-1850 to 195 per 1000 in the year 1907.

Among registration counties with populations exceeding 100,000 persons, the highest proportions of marriages solemnized according to the rites of the Established Church, and of those contracted otherwise were as follows:—

Of 1000 Marriages.			
According to Rites of Established Church.	Roman Catholics.	Nonconformists.	Civil Marriages.
Cambridgeshire .. 759	Lancashire .. 108	Carnarvonshire 352	Glamorganshire 460
Oxfordshire .. 752	Durham .. 76	Carmarthenshire 339	Carmarthenshire 441
Berkshire .. 746	Northumberland 74	Denbighshire .. 332	Carnarvonshire 352
Worcestershire .. 743	Cumberland .. 68	Cornwall .. 325	Monmouthshire 305
Buckinghamshire 741	North Riding .. 64	Monmouthshire 235	Northumberland 301
Norfolk .. 739	Cheshire .. 54	Glamorganshire 224	Denbighshire .. 292
Herefordshire .. 738		Cheshire .. 176	Durham .. 275
Staffordshire .. 735			

BIRTHS.

The births registered in the year 1907 numbered 918,042, of these 881,853 were legitimate, and 36,189 were illegitimate.

No trustworthy birth statistics existed in this country prior to the year 1837. From the commencement of civil registration in that year to the year 1874 the registration of births steadily improved, but it was not until the passing of the Births and Deaths Registration Act in 1874 that the registration of births was made compulsory; it may be assumed, therefore, that from the beginning of

the year 1875 the numbers of births recorded in England and Wales have been for all practical purposes complete.

Looking back over the years of birth registration, it will be seen from Table 3, page 5, that the birth-rate attained the highest point in 1876, viz., 36.3 per 1000 of the population; since that year the proportion has, with slight fluctuations, steadily fallen, and in the year 1907 it reached the lowest point on record, viz., 26.3 per 1000 of the total population. This crude birth-rate was 0.8 per 1000 below that recorded in 1906, and was 2.1 per 1000 below the average in the ten years 1897-1906.

Heavy as the fall in the birth-rate has been in this country, the effects in regard to the numbers of the population have been to some extent modified by the decline in the death-rate, but clearly the death-rate cannot continue to decline indefinitely, and it will be noted from the statement on page xxxiii that the effective addition to the population, *i.e.*, the annual rate of increase by excess of births over deaths, which was 14.56 per 1000 living in the period 1876-80, had fallen to 11.27 per 1000 in the year 1907.

In connection with the subject of the fall in the birth-rate, it is essential to bear in mind that the birth-rate and the death-rate are to a certain extent interdependent, and that both exert an influence on the sex and age constitution of the population. A series of tables was given in the Appendix to the last Census Report which illustrated in considerable detail the marked changes that had taken place in the constitution of the English population. The subjoined figures, extracted from the Census Report, will show at a glance how important these changes, as regards the age constitution of the population, have been in recent years; for example, out of every million living there were 37,000 fewer children under the age of 15 years in 1901 than in 1871; or in other words, if the proportions of population at the several age groups in 1901 had been the same as the proportions in 1871, there would have been enumerated at the Census of 1901 about 11,747,000 children at ages 0-15 years instead of the 10,545,739 actually recorded.

PROPORTIONS at TWELVE GROUPS of AGES in a MILLION PERSONS at all AGES enumerated at each CENSUS 1871-1901.

Ages.	1871.	1881.	1891.	1901.
All ages	1,000,000	1,000,000	1,000,000	1,000,000
Under 5 years	135,225	135,551	122,523	114,262
5—	119,166	121,173	117,065	107,209
10—	106,737	107,811	111,148	102,735
15—	96,002	98,067	101,745	99,796
20—	88,268	89,635	91,248	95,946
25—	147,083	146,046	150,943	161,579
35—	113,205	113,217	114,776	122,849
45—	87,958	83,676	86,092	89,222
55—	59,036	59,062	57,133	59,741
65—	33,692	32,818	34,130	33,080
75—	11,968	11,476	11,689	12,090
85 years and upwards .	1,660	1,468	1,508	1,491

Among the several factors affecting the birth-rate, note must also be taken of the changes in the marriage-rate, of the changes in the proportion of women of conceptive ages in the population, and of the changes in the age constitution of the married female population. The extent of these changes is shown in the following statement relating to the four last Census periods.

ENGLAND AND WALES.

Census Years.	Proportion per cent. of Women aged 15-45 years in the Total Population of both sexes and all ages.	Proportion per cent. of Married Women in the Female Population aged 15-45 years.	Of the Married Women aged 15-45 years, the proportion per cent. at four groups of ages.				Persons Married to 1000 Marriageable Persons in the Population.
			Aged 15-20 years.	Aged 20-25 years.	Aged 25-35 years.	Aged 35-45 years.	
			1871	23·1	49·6	1·3		13·9	45·5	39·3	56·9
1881	23·1	49·1	1·1	13·7	45·6	39·6	51·1
1891	23·8	47·1	0·9	12·8	46·0	40·3	49·8
1901	25·0	46·8	0·7	11·8	46·8	40·7	48·6

Measuring the Birth-rate.—The crude birth-rate, *i.e.*, the proportion of registered births to the total population at all ages, is sufficient for comparing the birth-rate in a population from year to year; while in conjunction with the death-rate it affords a ready means for gauging the natural rate of increase in a population; but the crude birth-rate is not adapted for comparisons extending over a long series of years, because it takes no account of the effect of the changing constitution of a population in regard to sex, age, and condition as to marriage; nor is it well adapted for comparing the rates in two or more communities, because of the differences in the sex and age constitution of the respective populations.

It is desirable, therefore, to make a comparison of birth-rates, based not only on the total population, but also on the number of possible mothers.

In Table C on page xxv the results are shown of calculating the birth-rate based on the following proportions:—

- Of total births to the total population of both sexes and all ages;
- Of total births to the female population aged 15-45 years;
- Of legitimate births to the married female population aged 15-45 years; and
- Of illegitimate births to the unmarried and widowed female population aged 15-45 years.

These calculations have also been illustrated in the accompanying diagrams, facing page xxvi, which afford a ready means of gauging the fall in the birth-rate during the past thirty years.

TABLE C.—ENGLAND AND WALES.—BIRTH-RATES, 1876-1907.

Period.	(a.)		(b.)		(c.)		(d.)	
	Birth-rate calculated on Total Population at All Ages.		Birth-rate calculated on the Female Population aged 15-45 years.		Legitimate Birth-rate calculated on the Married Female Population aged 15-45 years.		Illegitimate Birth-rate calculated on the Unmarried and Widowed Female Population aged 15-45 years.	
	Rate per 1,000.	Compared with rate in 1876-80 taken as 100.	Rate per 1,000.	Compared with rate in 1876-80 taken as 100.	Rate per 1,000.	Compared with rate in 1876-80 taken as 100.	Rate per 1,000.	Compared with rate in 1876-80 taken as 100.
1876-1880	35·3	100·0	153·3	100·0	296·3	100·0	14·4	100·0
1881-1885	33·5	94·9	144·3	94·1	282·4	95·3	13·5	93·8
1886-1890	31·4	89·0	133·4	87·0	267·1	90·1	11·8	81·9
1891-1895	30·5	86·4	126·8	82·7	258·3	87·2	10·1	70·1
1896-1900	29·3	83·0	118·8	77·5	242·9	82·0	9·2	63·9
1901-1905	28·1	79·6	112·5	73·4	230·7	77·9	8·4	58·3
1876 ..	36·3	102·8	157·5	102·7	304·1	102·6	14·6	101·4
1877 ..	36·0	102·0	155·9	101·7	301·1	101·6	14·6	101·4
1878 ..	35·6	100·8	154·5	100·8	298·8	100·8	14·4	100·0
1879 ..	34·7	98·3	150·5	98·2	291·1	98·2	14·2	98·6
1880 ..	34·2	96·9	148·3	96·7	287·0	96·7	14·1	97·9
1881 ..	33·9	96·0	147·0	95·9	284·9	96·2	14·1	97·9
1882 ..	33·8	95·8	145·8	95·1	283·0	95·8	13·8	95·8
1883 ..	33·5	94·9	144·1	94·0	281·9	95·1	13·4	93·1
1884 ..	33·6	95·2	144·2	94·1	283·7	95·7	13·2	91·7
1885 ..	32·9	93·2	140·7	91·8	277·6	93·7	13·0	90·3
1886 ..	32·8	92·9	140·2	91·5	278·0	93·8	12·8	88·9
1887 ..	31·9	90·4	135·5	88·4	269·9	91·1	12·4	86·1
1888 ..	31·2	88·4	132·3	86·3	265·0	89·4	11·7	81·3
1889 ..	31·1	88·1	131·7	85·9	265·1	89·5	11·5	79·9
1890 ..	30·2	85·6	127·6	83·2	258·2	87·1	10·7	74·3
1891 ..	31·4	89·0	132·1	86·2	268·8	90·7	10·6	73·6
1892 ..	30·4	86·1	127·3	83·0	259·3	87·5	10·1	70·1
1893 ..	30·7	87·0	127·9	83·4	260·4	87·9	10·3	71·5
1894 ..	29·6	83·0	122·4	79·8	249·4	84·2	9·9	68·8
1895 ..	30·3	85·8	124·8	81·4	254·5	85·9	9·9	68·8
1896 ..	29·6	83·9	121·5	79·3	247·8	83·6	9·7	67·4
1897 ..	29·6	83·9	120·7	78·7	246·4	83·2	9·5	66·0
1898 ..	29·3	83·0	118·9	77·6	243·0	82·0	9·3	64·6
1899 ..	29·1	82·4	117·7	76·8	241·0	81·3	8·9	61·8
1900 ..	28·7	81·3	115·6	75·4	236·8	79·9	8·6	59·7
1901 ..	28·5	80·7	114·2	74·5	234·2	79·0	8·4	58·3
1902 ..	28·5	80·7	114·1	74·4	234·2	79·0	8·4	58·3
1903 ..	28·4	80·5	113·8	74·2	233·3	78·7	8·4	58·3
1904 ..	27·9	79·0	111·8	72·9	229·1	77·3	8·4	58·3
1905 ..	27·2	77·1	108·9	71·0	223·2	75·3	8·2	56·9
1906 ..	27·1	76·8	108·3	70·6	222·0	74·9	8·1	56·3
1907 ..	26·3	74·5	105·1	68·6	215·6	72·8	7·8	54·2

Note.—In the absence of precise information as to the changes in the number and constitution of the population from year to year, the estimates of total population at all ages are calculated by geometrical progression, on the assumption that the rate of increase in each intercensal period was maintained regularly throughout the period; the estimates for the several sections of the population are based on the further assumption that the proportion which each section bore to the total population changed uniformly during the intercensal period. In view of the necessity of these, or similar assumptions, the figures for intercensal years are inevitably less accurate than those for years in which censuses were taken.

As already stated, the birth-rate in England and Wales attained the highest point on record in the year 1876; and for the purpose of measuring the decrease that has since occurred, the mean annual rate in the quinquennial period 1876-80 has been taken as a standard. Calculated on the total population the fall in the birth-rate in the period under review amounted to over 25 per cent. Based on the proportion of births to the number of possible mothers, *i.e.*, the total number of women living at child-bearing ages, the fall in the rate amounted to over 31 per cent. in the same period; while the fertility of married women, based on the ratio of legitimate births to wives of conceptive ages, showed a decrease amounting to over 27 per cent. Put in another way, if the fertility of married women in proportion to their numbers had been identical in 1876-80 and in 1907, then the legitimate births would have numbered over 1,212,000 in 1907 instead of the 881,853 actually recorded.

As the birth registers do not afford information respecting the ages of the mothers there are no means of ascertaining the fertility of women at the several ages comprised in the child-bearing period; there are, however, sufficient grounds for stating that during the past 30 years approximately 14 per cent. of the decline in the birth-rate (based on the proportion of births to the female population aged 15-45 years) is due to the decrease in the proportion of married women in the female population of conceptive ages, and that over 7 per cent. is due to the decrease of illegitimacy. With regard to the remaining 79 per cent. of the decrease, although some of the reduced fertility may be ascribed to changes in the age constitution of married women, there can be little doubt that much of it is due to deliberate restriction of child-bearing.

The fact is also significant that at the last Census period, 1900-02, the fertility of English wives was lower than that recorded in any European country except France. (See page lix.)

Birth-rates among Married Women in Counties.—Table D, on page xxvii., shows the rates in proportion to the married women of conceptive ages in each of the registration counties into which England and Wales is divided.

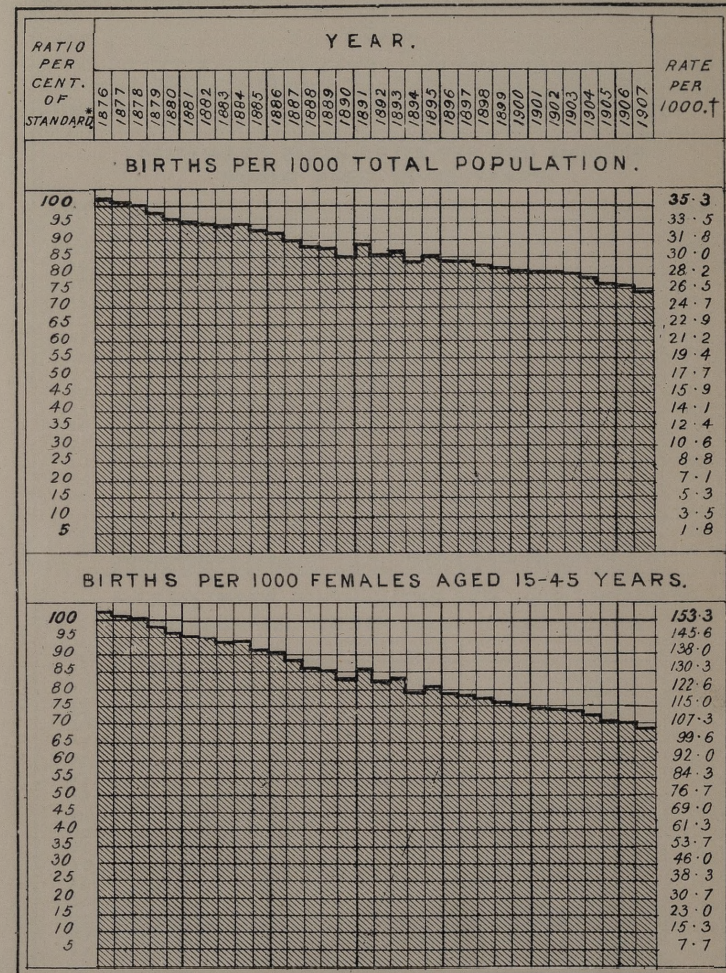
Broadly speaking, the fertility rates are high in nearly all the mining counties and low in the agricultural counties. The disparities between the birth-rates in the several counties are to some extent due to differences in the age constitution of the married women in the respective populations; for it is obvious that the counties containing a large proportion of young married women in their populations will produce a relatively larger number of children than those counties containing a small proportion of young married women.

In order to exemplify the effect of age constitution on the birth-rates in the several counties, Table E on page xxviii has been constructed, which shows the fertility rates in proportion to the married women of conceptive ages, together with the proportion per cent. of married women at three age groups in the several counties. In order to avoid errors which might arise from erroneous estimates of the number of married women of child-bearing ages for intercensal years, the calculations have been restricted to the last Census period.

ENGLAND & WALES.

BIRTH-RATES.

DIAGRAM II.—ANNUAL BIRTH-RATES, 1876-1907.



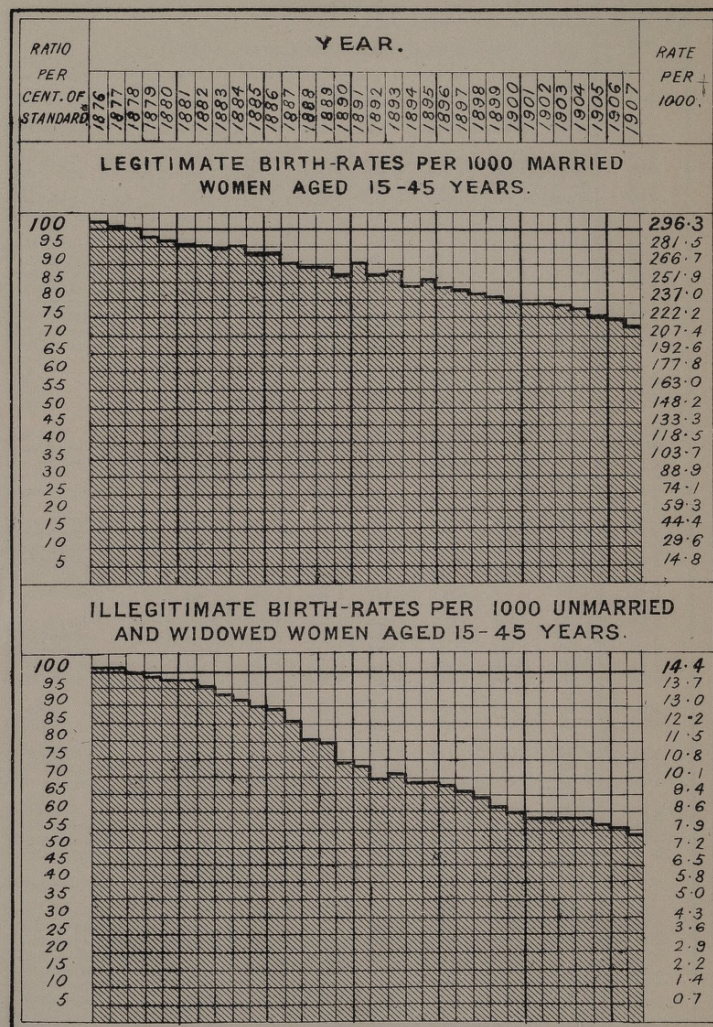
* The Standard adopted (see left hand column) is the average rate in the five years 1876-80.

† The Rate per 1000 in the top section of the diagram is calculated upon the total population, and that in the bottom section upon the number of females aged 15-45 years (See right hand column).

ENGLAND & WALES.

BIRTH-RATES.

DIAGRAM III-ANNUAL LEGITIMATE AND ILLEGITIMATE BIRTH-RATES, 1876-1907.



*The Standard adopted (see left hand column) is the average rate in the five years 1876-80.

†The Rate per 1000 in the top section of the diagram is calculated upon the number of married women aged 15-45 years, and that in the bottom section upon the number of unmarried and widowed women aged 15-45 years. (See right hand column).

TABLE D.—ANNUAL FERTILITY RATES OF MARRIED WOMEN in each REGISTRATION COUNTY, 1870-1907.

Registration Counties.	Legitimate Births per 1000 Married Women aged 15-45 years.*						Decrease per cent. in each County between the period 1870-72 and 1907.	
	Three-year periods.					Years.		
	1870-72.	1880-82.	1890-92.	1900-02.	1903-05.	1906.		1907.
England and Wales..	292.5	286.0	263.8	235.5	228.5	222.0	215.6	26.3
London	269.9	272.6	250.4	227.8	218.2	209.9	202.5	25.0
Surrey	285.1	284.3	244.4	208.2	215.4	215.7	211.6	25.8
Kent	288.8	287.6	255.6	221.2	214.5	204.4	197.0	31.8
Sussex	284.6	279.2	235.9	203.3	194.5	188.7	180.8	36.5
Hampshire ..	272.9	273.9	243.3	211.6	209.4	210.7	204.0	25.2
Berkshire ..	294.5	290.0	257.6	219.0	217.1	206.7	204.9	30.4
Middlesex ..	288.0	293.6	252.3	224.1	231.6	226.3	224.4	22.1
Hertfordshire	300.0	291.7	264.0	224.8	224.7	222.6	217.7	27.4
Buckinghamshire	299.5	291.9	270.4	230.4	230.8	216.3	210.6	29.7
Oxfordshire ..	295.7	294.7	271.1	228.0	223.5	221.0	212.4	28.2
Northamptonshire	297.5	290.6	265.8	222.0	199.2	186.1	175.3	41.1
Huntingdonshire	302.3	274.9	262.5	236.0	233.4	241.6	229.4	24.1
Bedfordshire ..	296.0	283.1	256.8	219.1	206.6	213.5	202.9	31.5
Cambridgeshire	294.3	276.6	255.0	223.9	220.4	215.1	207.1	29.6
Essex	293.7	300.4	270.0	238.5	228.6	217.2	207.7	29.3
Suffolk	290.2	293.6	269.5	236.5	231.1	223.4	215.4	25.8
Norfolk	273.1	279.3	257.2	229.5	221.1	215.9	208.5	23.7
Wiltshire	297.9	291.6	261.3	225.1	225.5	228.1	227.6	23.6
Dorsetshire ..	288.8	286.8	254.7	219.2	220.8	220.9	208.4	27.8
Devonshire ..	284.5	284.5	252.2	208.4	203.9	199.0	193.8	31.9
Cornwall	294.0	287.7	262.0	219.6	203.8	197.6	196.4	33.2
Somersetshire ..	293.0	292.0	267.6	221.0	220.0	209.2	207.2	29.3
Gloucestershire	285.7	281.5	259.3	224.6	220.0	213.0	198.0	30.7
Herefordshire ..	285.6	279.2	272.3	235.0	231.2	222.1	219.2	23.2
Shropshire	302.7	286.8	275.3	257.0	255.1	241.4	233.5	22.9
Staffordshire ..	320.2	311.1	298.7	270.1	256.6	246.7	239.5	25.2
Worcestershire ..	296.6	288.3	268.2	239.0	224.9	217.5	208.0	29.9
Warwickshire ..	291.5	287.3	264.5	243.2	234.6	231.4	226.6	22.3
Leicestershire ..	300.6	295.0	268.4	232.7	217.3	208.0	197.5	34.3
Rutlandshire ..	295.9	297.9	258.5	227.5	217.4	229.1	206.4	30.2
Lincolnshire ..	293.4	284.1	255.3	228.3	223.9	229.6	221.4	24.5
Nottinghamshire	285.6	287.8	260.5	242.9	240.6	232.5	229.8	19.5
Derbyshire	296.6	293.2	270.8	243.9	235.2	220.4	219.2	26.1
Cheshire	292.8	286.0	266.9	230.8	224.2	220.5	213.5	27.1
Lancashire	297.1	285.0	264.3	233.7	224.9	219.4	214.2	27.9
West Riding ..	293.0	272.7	249.3	223.0	211.9	203.5	197.9	32.5
East Riding ..	281.9	274.9	258.1	238.7	227.0	221.2	212.4	24.7
North Riding ..	313.6	304.2	274.5	260.4	257.2	259.7	253.8	19.1
Durham	344.1	307.9	299.7	282.7	272.5	269.1	261.3	19.4
Northumberland	313.0	300.1	290.0	266.8	261.2	250.7	245.4	21.6
Cumberland ..	311.8	309.7	288.6	256.5	254.8	245.6	233.7	25.0
Westmorland ..	305.9	300.2	267.4	218.9	212.3	210.3	191.0	37.6
Monmouthshire*	304.1	298.7	304.6	283.5	288.7	287.5	282.7	7.0
South Wales:—	317.3	305.9	301.0	271.4	268.5	258.8	254.7	19.7
Glamorganshire ..	313.1	303.4	303.5	274.0	268.9	258.9	255.1	18.5
Carmarthenshire ..	344.1	321.7	309.4	274.9	284.3	284.3	281.4	18.2
Pembrokeshire ..	319.6	320.4	291.9	253.8	259.4	246.2	246.1	23.0
Cardiganshire ..	315.2	296.4	277.3	245.4	242.8	236.0	225.6	28.4
Brecknockshire ..	310.6	296.4	292.1	272.9	276.5	267.1	249.6	19.6
Radnorshire ..	308.6	302.5	282.6	264.2	243.2	188.5	201.6	34.7
North Wales:—	300.1	283.1	261.7	245.1	242.0	232.8	218.8	27.1
Montgomeryshire ..	308.7	292.5	273.2	253.0	250.1	247.1	225.1	27.1
Flintshire	310.4	284.0	285.7	246.4	274.7	274.5	264.4	14.8
Denbighshire ..	301.2	289.6	282.8	265.3	259.6	241.5	235.5	21.8
Merionethshire ..	311.0	287.2	255.5	247.7	233.2	221.2	199.9	35.7
Carnarvonshire ..	289.9	271.8	237.2	226.7	215.3	210.2	193.4	33.3
Anglesey	277.2	275.1	240.7	224.2	229.0	218.1	203.2	26.7

* See note to Table C, page xxv.

TABLE E.—REGISTRATION COUNTIES.—LEGITIMATE BIRTH RATES, 1900-2, AND DISTRIBUTION OF MARRIED WOMEN aged 15-45 years at three groups of ages at the date of the Census of 1901.

Registration Counties (arranged in order of their Legitimate Birth-rates).	Legitimate Birth-rates per 1000 Married Women aged 15-45 years, 1900-2.	Of the Married Women aged 15-45 years, the proportion per cent. at three groups of ages at the Census of 1901.		
		15-25 years.	25-35 years.	35-45 years.
Sussex	203·3	10·0	45·8	44·2
Surrey	208·2	9·8	46·8	43·4
Devonshire	208·4	10·3	45·5	44·2
Hampshire	211·6	11·4	40·3	42·3
Westmorland	218·9	8·3	45·0	46·7
Berkshire	219·0	9·5	45·1	45·4
Bedfordshire	219·1	10·6	44·8	44·6
Dorsetshire	219·2	9·0	45·9	45·1
Cornwall	219·6	9·7	45·2	45·1
Somersetshire	221·0	9·5	45·4	45·1
Kent	221·2	12·2	46·3	41·5
Northamptonshire	222·0	11·9	46·7	41·4
West Riding of Yorkshire	223·0	12·9	47·1	40·0
Cambridgeshire	223·9	11·0	45·5	43·5
Middlesex	224·1	11·0	48·2	40·8
Gloucestershire	224·6	11·1	46·6	42·3
Hertfordshire	224·8	10·1	45·6	44·3
Wiltshire	225·1	9·4	45·4	45·2
Rutlandshire	227·5	7·3	43·7	49·0
London	227·8	13·1	47·4	39·5
Oxfordshire	228·0	8·4	44·0	47·6
Lincolnshire... ..	228·3	12·2	45·4	42·4
Norfolk	229·5	10·9	44·2	44·9
Buckinghamshire	230·4	10·5	45·4	44·1
Cheshire	230·8	11·4	47·1	41·5
Leicestershire	232·7	12·6	47·2	40·2
Lancashire	233·7	12·5	47·4	40·1
Herefordshire	235·0	8·3	44·2	47·5
England and Wales	235·5	12·5	46·8	40·7
Huntingdonshire	236·0	9·9	44·5	45·6
Suffolk	236·5	10·4	44·8	44·8
Essex	238·5	12·0	47·4	40·6
East Riding of Yorkshire	238·7	13·7	46·8	39·5
Worcester	239·0	11·4	47·3	41·3
Nottinghamshire	242·9	14·3	45·9	39·8
Warwickshire	243·2	13·7	47·4	38·0
Derbyshire	243·9	13·6	46·6	39·8
North Wales	245·1	10·0	45·8	44·2
Cumberland	256·5	11·9	45·1	43·0
Shropshire	257·0	9·2	45·1	45·7
North Riding of Yorkshire	260·4	13·4	45·5	41·1
South Wales (less Glamorganshire)	263·3	10·3	44·9	44·8
Northumberland	266·8	15·1	47·3	37·6
Staffordshire	270·1	14·0	47·3	38·7
Glamorganshire	274·0	15·1	48·2	36·7
Durham... ..	282·7	16·1	46·9	37·0
Monmouthshire	283·5	14·2	47·8	38·0

An analysis of the figures in Table E presents many points of interest; the excess or deficiency of the fertility rates, above or below the mean for the whole country generally, coincides with high or low proportions of young married women in the several populations. There are, however, some exceptions; notably London and the West Riding of Yorkshire, where, notwithstanding the fact that the proportions of young wives were above the mean, the fertility rates were below it; on the other hand, in North Wales, in South Wales (less Glamorganshire) in Cumberland and in Shropshire, in spite of the low proportion of young wives and the correspondingly high proportions of elderly wives, the fertility rates were comparatively high.

Birth-rates in Urban and Rural Districts.—The English Birth Registers do not contain a statement of the parents' ages, of the mothers' occupation (if any), of the duration of marriage, or of the previous issue. These particulars are essential for a complete analysis of birth statistics; nevertheless, apart from the refined calculations which could be based on such information, there are sufficient grounds for stating that the fertility of wives in districts that are wholly rural is about 7 per cent. greater than that of wives in towns.* It should be observed, however, that the continuous migration of young persons from the country has considerably reduced the normal proportion of younger married women in the rural districts; if in the town and country districts the proportions of married women at the several ages were equal, the additional fertility of the latter would be still more marked.

Sex Proportions at Birth.—In 1907 the births of males in England and Wales numbered 467,728 and the births of females 450,314; the male births were therefore to the female births in the proportion of 1039 to 1000; the proportions since the commencement of birth registration had ranged from 1032 to 1054 per 1000. From Table 4, page 6, it will be seen that up to the quinquennium 1896-1900 the excess in the proportions of male births showed a tendency to diminish. Since that period a slight increase is observable.

In registration counties with populations exceeding 100,000 the ratios varied considerably; in the ten years 1898-1907 the highest

* In the 60th Annual Report, page xxviii, a calculation was made showing the legitimate birth-rates in 21 large towns and in 112 entirely rural districts at the three past Census periods: the results were as follows:—

	Legitimate Births per 1000 Married Women aged 15-45 years.		
	1881.	1891.	1901.
Aggregate of 21 large Towns	273·3	259·0	228·9
Aggregate of 112 entirely Rural Registration Dis- tricts.	294·5	272·9	244·0

and lowest proportional numbers of males born to females born were as follows :—

Counties.	Highest proportion of Males to 1000 Females, 1898-1907.	Counties.	Lowest proportion of Males to 1000 Females, 1898-1907.
Cambridgeshire ...	1063	Carmarthenshire ...	1020
Carnarvonshire ...	1062	Herefordshire ...	1023
Cumberland ...	1057	Berkshire ...	1025
Denbighshire ...	1054	Shropshire... ..	1026
Bedfordshire ...	1055	Worcestershire ...	1030
Buckinghamshire...	1050	West Riding of	1031
Dorsetshire ...	1049	Yorkshire,	
North Riding of	1049	Nottinghamshire ...	1031
Yorkshire.			

Illegitimate Births.—The 918,042 births registered during the year 1907 included 881,853 of legitimate children and 36,189 of illegitimate children. Sixty years ago (1846-50) the proportion of illegitimate births to total births registered was 67 per 1000; thirty years later (1876-80) it had fallen to 48 per 1,000, and the diminution in the ratio has gone on until in the year under review it had reached 39 per 1000 of the total births. (See Tables 3 and 4, pages 5 and 6.)

But it must not be assumed that the relative measure of illegitimacy is fairly expressed by these ratios; a better method is to state the illegitimate rate as a proportion to the number of single and widowed women at child-bearing ages.

Reference to Table F., page xxxi, shows for a series of years the results of the two methods of calculating the ratio of illegitimacy. Comparing the proportion of illegitimate births in England and Wales in the year 1907 with that recorded in the quinquennial period 1876-80, when registration may be said for all practical purposes to have been complete, it will be seen that based on the standard of total births, the rate of illegitimacy had decreased by about 17 per cent.; but based on the number of unmarried and widowed women of conceptive ages in the population, the decrease during the same period amounted to nearly 46 per cent.; this latter figure representing with approximate accuracy the decrease in the proportion of illegitimacy in this country.

Illegitimate Births in Counties.—It is difficult to explain the variations in the rates of illegitimacy in the several counties. It may be stated generally that the proportion of illegitimate children cannot alone serve as a standard of morality. Broadly speaking, however, the single and widowed women in London, in the counties south of the Thames, and in the south western counties, have comparatively few illegitimate children; on the other hand, the number of illegitimate children is comparatively high in Shropshire, in Herefordshire, in Staffordshire, in Nottinghamshire, in Cumberland, in North Wales, and also in nearly all the counties on the eastern seaboard, viz., Suffolk, Norfolk, Lincolnshire, the East and North Ridings of Yorkshire, and Durham. In the Registrar-General's Report for the year 1851, it was assumed that there

TABLE F.—ENGLAND AND WALES.—ILLEGITIMATE BIRTH-RATES, 1876-1907.

Period.	Illegitimate Births.			
	In proportion to total Births.		In proportion to the Unmarried and Widowed Female population aged 15-45 years.	
	Rate per 1000.	Compared with rate in 1876-80 taken as 100.	Rate per 1000.	Compared with rate in 1876-80 taken as 100.
1876-1880 ...	47.5	100.0	14.4	100.0
1881-1885 ...	48.0	101.1	13.5	93.8
1886-1890 ...	46.3	97.5	11.8	81.9
1891-1895 ...	42.4	89.3	10.1	70.1
1896-1900 ...	41.0	86.3	9.2	63.9
1901-1905 ...	39.5	83.2	8.4	58.3
1876	46.8	98.5	14.6	101.4
1877	47.5	100.0	14.6	101.4
1878	47.2	99.4	14.4	100.0
1879	47.9	100.8	14.2	98.6
1880	48.3	101.7	14.1	97.9
1881	48.8	102.7	14.1	97.9
1882	48.5	102.1	13.8	95.8
1883	47.9	100.8	13.4	93.1
1884	47.1	99.2	13.2	91.7
1885	47.9	100.8	13.0	90.3
1886	47.4	99.8	12.8	88.9
1887	47.5	100.0	12.4	86.1
1888	46.3	97.5	11.7	81.3
1889	45.9	96.6	11.5	79.9
1890	44.2	93.1	10.7	74.3
1891	42.4	89.3	10.6	73.6
1892	41.9	88.2	10.1	70.1
1893	42.5	89.5	10.3	71.5
1894	43.1	90.7	9.9	68.8
1895	42.1	88.6	9.9	68.8
1896	42.3	89.1	9.7	67.4
1897	41.7	87.8	9.5	66.0
1898	41.5	87.4	9.3	64.6
1899	40.0	84.2	8.9	61.8
1900	39.7	83.6	8.6	59.7
1901	38.0	81.0	8.4	58.3
1902	39.0	82.1	8.4	58.3
1903	39.3	82.7	8.4	58.3
1904	39.9	84.0	8.4	58.3
1905	40.2	84.6	8.2	56.9
1906	40.0	84.2	8.1	56.3
1907	39.4	82.9	7.8	54.2

TABLE G.—ANNUAL ILLEGITIMATE BIRTH-RATES in each REGISTRATION COUNTY, 1870-1907.

Registration Counties.	Illegitimate Births to 1000 Unmarried and Widowed Females, aged 15-45 years.*						Decrease per cent, in each County between the period 1870-2 and 1907.	
	Three-year periods.					Years.		
	1870-72.	1880-82.	1890-92.	1900-02.	1903-5.	1906.		1907.
England and Wales..	17'0	14'1	10'5	8'5	8'3	8'1	7'8	54'1
London	10'3	9'8	8'1	6'9	6'9	6'8	6'4	37'9
Surrey	9'5	8'5	6'6	5'9	5'7	5'9	5'7	40'0
Kent	14'7	12'1	9'3	7'5	7'6	7'5	7'2	51'0
Sussex	13'7	11'5	8'7	7'2	7'0	6'5	6'4	53'3
Hampshire ..	13'6	11'8	8'5	7'3	7'1	6'9	6'4	52'9
Berkshire ..	16'8	13'4	10'3	8'7	8'6	8'1	8'4	50'0
Middlesex ..	9'4	9'4	6'5	5'9	6'0	6'1	5'7	39'4
Hertfordshire..	18'4	15'3	10'4	7'0	7'2	6'6	7'5	59'2
Buckinghamshire	19'0	16'5	12'6	9'1	8'9	7'3	8'8	53'7
Oxfordshire ..	19'0	15'4	10'4	9'0	9'1	9'3	9'2	51'6
Northamptonshire	18'7	15'9	11'7	9'1	8'8	9'0	7'7	58'8
Huntingdonshire	19'8	14'0	12'9	10'9	9'7	9'7	9'7	51'0
Bedfordshire ..	21'1	18'0	11'2	8'4	8'0	8'2	8'7	58'8
Cambridgeshire	19'3	15'6	12'4	9'6	10'1	9'7	10'4	46'1
Essex	16'2	12'7	9'1	7'3	7'1	6'7	6'4	60'5
Suffolk	22'0	17'8	14'0	12'0	11'7	12'4	12'5	43'2
Norfolk	27'3	22'6	16'7	13'4	13'4	12'5	12'8	53'1
Wiltshire	17'1	14'7	10'3	9'2	8'7	8'6	9'3	45'6
Dorsetshire ..	14'2	13'1	9'6	7'2	7'2	8'1	6'4	54'9
Devonshire ..	14'0	10'6	8'1	6'7	6'5	6'7	6'1	56'4
Cornwall	16'5	14'8	11'2	8'6	8'1	7'5	7'5	54'5
Somersetshire..	13'3	11'3	7'4	6'0	6'0	5'4	5'5	58'6
Gloucestershire	12'9	11'6	8'2	6'3	6'1	6'8	5'8	55'0
Herefordshire..	21'4	19'0	13'4	11'2	11'5	10'3	11'0	48'6
Shropshire ..	28'2	21'8	16'6	12'8	13'4	13'0	11'8	58'2
Staffordshire ..	24'6	19'4	14'5	11'2	11'4	10'9	10'1	58'9
Worcestershire	16'3	13'7	9'2	7'2	6'8	6'6	6'6	59'5
Warwickshire ..	14'9	13'2	9'7	7'6	7'5	6'6	6'8	54'4
Leicestershire	19'9	16'1	11'4	8'6	7'9	7'5	7'3	63'3
Rutlandshire ..	18'1	12'7	7'9	7'2	6'8	9'0	11'4	37'0
Lincolnshire ..	22'3	18'5	14'2	12'2	12'1	12'7	11'9	46'6
Nottinghamshire	24'5	21'7	15'4	12'7	12'6	12'0	11'9	51'4
Derbyshire ..	22'5	17'7	12'8	10'0	10'0	10'0	9'4	58'2
Cheshire	17'5	14'2	10'3	7'7	7'3	7'2	6'9	60'6
Lancashire ..	16'2	13'6	10'2	7'9	7'8	7'5	7'2	55'6
West Riding ..	20'4	16'1	11'4	9'4	9'2	8'8	8'1	60'3
East Riding ..	23'0	18'2	14'3	12'2	11'7	12'2	10'6	53'9
North Riding..	27'7	20'2	15'4	12'1	11'6	11'9	10'2	63'2
Durham	24'0	18'0	13'8	11'1	11'1	10'8	11'6	51'7
Northumberland	21'1	17'9	12'4	10'2	10'0	10'4	9'3	55'9
Cumberland ..	20'2	23'9	18'6	12'3	12'3	12'3	11'0	62'3
Westmorland..	21'9	17'9	13'1	8'6	9'1	8'5	7'8	64'4
Monmouthshire	18'6	15'9	11'3	10'2	9'1	9'6	9'3	50'0
South Wales :—	18'8	14'8	10'8	8'7	9'1	8'7	8'4	55'3
Glamorganshire	17'7	13'5	10'3	8'5	9'1	8'9	8'4	52'5
Cardiganshire ..	18'2	13'9	9'4	7'7	8'2	7'7	8'9	51'1
Pembrokeshire ..	21'6	15'9	12'4	8'9	10'2	10'7	8'4	61'1
Cardiganshire ..	16'0	14'8	11'8	8'9	7'8	6'3	7'3	54'4
Brecknockshire	19'9	18'0	12'5	10'1	9'2	9'2	8'3	58'3
Radnorshire ..	41'8	33'2	20'1	14'4	13'4	8'3	11'3	73'0
North Wales :—	21'9	17'9	14'2	12'0	11'6	11'8	11'1	49'3
Montgomeryshire	29'5	24'3	16'7	13'1	13'4	12'6	11'7	60'3
Flintshire ..	18'7	18'4	13'1	9'7	11'2	11'9	11'0	41'2
Denbighshire ..	21'1	17'6	13'4	12'3	11'6	13'5	10'3	51'2
Merionethshire	24'4	19'5	16'4	13'5	13'4	13'2	12'7	48'0
Carnarvonshire	18'3	13'9	12'7	10'3	9'6	9'4	10'5	42'6
Anglesey	19'7	16'7	15'7	16'1	14'9	13'3	12'9	34'5

* See note to Table C, page xxv.

was an indirect connection between female illiteracy and illegitimacy. This may have been the case in the middle of the last century, but there is no conclusive evidence that such is the case at the present day. The proportions of illegitimacy and the proportions of married women who signed the marriage register by mark are relatively high in Staffordshire, in North Wales, in Durham, and in the North Riding of Yorkshire; on the other hand, in Norfolk, in Suffolk, and in Lincolnshire there is a comparatively high proportion of illegitimacy and a low proportion of illiteracy. A study of the facts in Table G. may possibly assist those who are interested in the welfare of the people to investigate the causes of the discrepancies which appear in the several counties.

Natural increase.—The increase or decrease of population is governed by two factors (1) the balance between births and deaths, and (2) the balance between emigration and immigration. As regards this country the balance between births and deaths has invariably, at least in recent times resulted in an excess of births over deaths; in reference to migration, emigrants have invariably exceeded immigrants, at all events since 1851.

Dealing with the question of natural increase, *i.e.*, the excess of births over deaths, it will be observed from the following statement that the average annual rate fell from 14'56 per 1000 living in the quinquennium 1876-1880 to 11'58 per 1000 in the quinquennium 1896-1900; this was due to the birth-rate having declined more rapidly than the death-rate. In the years 1901, 1902 and 1903, the annual rate of natural increase began to rise again, due to the death-rate having declined more rapidly than the birth-rate, but in the succeeding years this tendency was not maintained, the rate of natural increase in the year 1907 having fallen to 11'27 per 1000 living.

	Mean Annual Birth-rate per 1000 living.	Mean Annual Death-rate per 1000 living.	Mean Annual rate of increase, by excess of Births over Deaths, per 1000 living.
1876-1880	35'35	20'79	14'56
1881-1885	33'51	19'40	14'11
1886-1890	31'44	18'89	12'55
1891-1895	30'48	18'71	11'77
1896-1900	29'27	17'69	11'58
1901-1905	28'10	16'00	12'10
1901	28'50	16'91	11'59
1902	28'50	16'23	12'27
1903	28'41	15'42	12'99
1904	27'92	16'24	11'68
1905	27'21	15'23	11'98
1906	27'07	15'38	11'69
1907	26'27	15'00	11'27

DEATHS.

The deaths of 524,221 persons were registered in England and Wales in the year 1907; of these, 269,259 were males and 254,962 were females.

In the year under review the deaths from all causes corresponded to a rate of 15·0 per 1000 of the population; this rate was 0·4 per 1000 below the rate in 1906, and lower than the rate in any other year on record. Compared with the average in the ten years 1897-1906, the death-rate in 1907 showed a decrease of 1·7 per 1000.

The following statement shows the changes in the death-rate from the year 1861 to the present day:—

ENGLAND AND WALES.—ANNUAL RATE* of MORTALITY per 1000 LIVING AMONG PERSONS, MALES and FEMALES, corrected for AGE and SEX CONSTITUTION, 1861-1907.

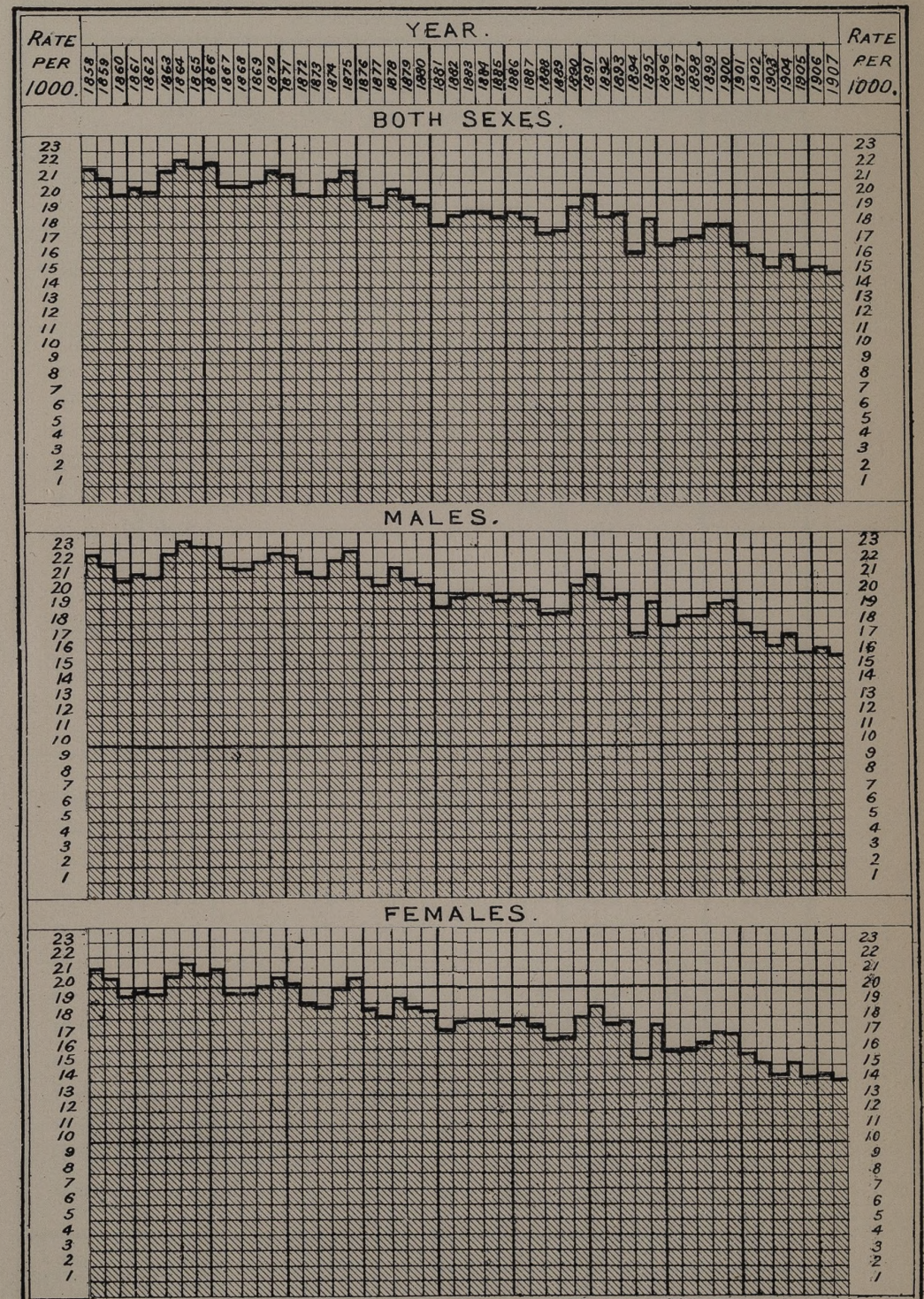
Period.	Persons.	Males.	Females.	Deaths of Males to 1000 Deaths of Females in equal numbers living.
1861-1865	21·4	22·3	20·6	1,083
1866-1870	21·2	22·2	20·3	1,094
1871-1875	20·9	22·0	19·8	1,111
1876-1880	19·8	21·0	18·7	1,123
1881-1885	18·7	19·7	17·8	1,107
1886-1890	18·5	19·6	17·5	1,120
1891-1895	18·5	19·6	17·5	1,120
1896-1900	17·6	18·8	16·5	1,139
1901	16·9	18·1	15·8	1,147
1902	16·2	17·4	15·2	1,147
1903	15·4	16·5	14·4	1,146
1904	16·2	17·3	15·2	1,136
1905	15·2	16·2	14·3	1,134
1906	15·4	16·4	14·4	1,141
1907	15·0	16·0	14·1	1,130

* The death-rates in this table are based upon the constitution of the population as enumerated at the Census of 1901, and differ, therefore, from the crude death-rates given in Table 4, page 6.

From the foregoing figures and the accompanying diagram (No. IV.) it will be seen that in the period under review the death-rate in England and Wales showed a remarkable decrease; this satisfactory reduction in mortality has been mainly brought about by the passing of the Public Health Act in 1875, under which the country was divided into sanitary districts and a medical officer of health was appointed for each area; by the advance in medical science, and by the increased attention paid to hygienic matters by the individual, the local administrative authorities, and the State. Compared with the average rate in the period 1861-65, the death-rate in 1907 showed a decrease of 30 per cent.; the reduction being equal to 28 per cent. among males and 32 per cent. among females.

ENGLAND & WALES.
DEATH-RATES.

DIAGRAM IV.—ENGLAND & WALES 1858-1907. ANNUAL DEATH-RATES FROM ALL CAUSES PER 1000 LIVING AT ALL AGES, CORRECTED FOR VARIATIONS OF AGE CONSTITUTION.



Note:—The death-rates throughout the entire period are based upon the age constitution of the population as enumerated in 1901.

It is interesting to note that although the deaths of males invariably exceed those of females, the proportional excess of male over female mortality has with fluctuations increased considerably in the period under review ; for while in the quinquennium 1861-65

ENGLAND AND WALES.—ANNUAL DEATH-RATES PER 1000 LIVING AT TWELVE AGE-PERIODS, 1876-1907.

Ages.	1876-1880.	1881-1885.	1886-1890.	1891-1895.	1896-1900.	1901-1905.	1905.	1907.	Decrease per cent. in 1907 compared with 1876-80.
<i>Males.</i>									
All ages* ..	21·0	19·7	19·6	19·6	18·8	17·1	16·4	16·0	23·8
0-5 ..	67·0	61·3	61·9	62·9	62·4	53·8	49·3	44·8	33·1
5-10 ..	6·3	5·8	4·9	4·5	4·1	3·6	3·4	3·3	47·6
10-15 ..	3·4	3·2	2·8	2·6	2·3	2·1	2·0	1·9	44·1
15-20 ..	4·9	4·5	4·1	4·0	3·6	3·2	3·0	2·9	40·8
20-25 ..	6·7	6·0	5·5	5·2	4·9	4·3	3·9	3·8	43·3
25-35 ..	8·7	8·2	7·4	7·1	6·5	5·9	5·6	5·6	35·6
35-45 ..	13·4	12·8	12·0	12·0	11·1	9·9	9·5	9·5	29·1
45-55 ..	19·8	19·3	19·4	19·6	18·3	17·3	16·8	16·9	14·6
55-65 ..	34·9	34·2	35·2	35·9	34·1	32·9	33·2	33·7	3·4
65-75 ..	69·4	68·7	72·1	72·5	68·3	67·2	68·7	70·5	+ 1·6
75-85 ..	152·2	145·4	147·9	149·3	142·9	137·4	136·9	138·3	9·1
85 and upwards.	331·6	297·8	313·8	291·0	282·6	283·0	319·5	316·0	4·7
<i>Females.</i>									
All ages* ..	18·7	17·8	17·5	17·5	16·5	15·0	14·4	14·1	24·6
0-5 ..	56·8	51·9	52·0	52·8	52·7	44·9	41·2	37·0	34·9
5-10 ..	5·9	5·7	4·9	4·6	4·2	3·7	3·6	3·4	42·4
10-15 ..	3·5	3·3	2·9	2·8	2·4	2·2	2·2	2·0	42·9
15-20 ..	5·0	4·7	4·1	4·0	3·3	3·0	2·7	2·7	46·0
20-25 ..	6·2	5·9	5·2	4·8	4·1	3·6	3·3	3·2	48·4
25-35 ..	8·0	7·9	6·9	6·6	5·6	5·0	4·7	4·6	42·5
35-45 ..	11·2	11·0	10·3	10·2	9·1	8·2	7·8	7·8	30·4
45-55 ..	15·4	15·2	15·0	15·2	14·3	13·3	13·0	13·1	14·9
55-65 ..	28·6	28·1	28·8	29·5	27·4	25·7	25·3	26·0	9·1
65-75 ..	60·8	59·0	61·7	63·1	58·4	56·4	56·1	59·7	1·8
75-85 ..	135·5	128·9	132·3	134·4	126·8	121·5	123·2	127·0	6·3
85 and upwards.	299·0	265·4	276·2	264·2	258·5	261·3	287·4	293·4	1·9

* The death-rates at all ages are based on the age constitution of the population prevailing at the Census of 1901.

there were, out of equal numbers living, 1083 deaths of males to 1000 deaths of females, in 1907 the proportion was as 1130 to 1000.

Mortality of each Sex at various Age Groups.—A study of the figures in the table on page xxxv shows that in the first age period, 0-5 years, female children experience lower mortality than male children, but at ages 5-10 years and 10-15 years the male sex has a slight advantage; after that period, however, female mortality is lower than male mortality at every age group.

It should be observed that the higher mortality among males is mainly caused by excess of deaths from immaturity, by the greater liability of men to deaths from violence in connection with their occupations, and to excess of mortality from tuberculosis, pneumonia and respiratory diseases; while the greater mortality from intemperance among men has considerable influence in the same direction.

On the other hand, in addition to the special risk of death by childbirth, women are also specially liable to cancer of the mammary and generative organs.

If a comparison be made of the fall in the death-rate at the several age groups, between the period 1876-80 and the year 1907, it will be seen from the figures in the last column in the table that, at every age group except 5-15 years and at ages over 75 years, the decrease in the rate of mortality among females has been greater than among males, and closer examination of the figures shows that the advantage of the decrease is particularly accentuated among females at the age periods 15-35 years.

Turning to the tables on pages 36-63, showing the several causes of death, it will be seen that a considerable decrease has taken place in recent years in the mortality among females from phthisis, and also in the mortality either caused by or associated with pregnancy or child-bearing; the saving of life in these directions mainly accounts for the greater fall in the female death-rate when compared with the male death-rate at these ages.

Death Rates in Counties.—In Table H, on page xxxvii the crude death rates are compared with the death rates corrected on the basis of the sex and age constitution of the population of the whole country as enumerated at the last census.* It thus appears that correction increased the crude death rate during the year 1907 in

* In recent Annual Reports attention has been drawn to the modifying effects of the steady decrease in the Birth Rate on the age constitution of the population and consequently on the rate of mortality. The crude death-rate, that is the proportion borne by deaths from all causes to each thousand of the population at all ages is a fairly trustworthy test of relative mortality when comparing the death rates year by year for the whole country, or for the same district; but when comparisons for an extended period are made, or when one district is compared with another, comparisons of crude death rates may be erroneous, and should be supplemented by rates in which the sex and age distribution of the respective populations is taken into account.

In the 67th Report a full description was given of two methods used for applying to crude death rates, the correction for difference of sex and age constitution; (1) the "direct" method (when the death rates at the several age groups are known) used in the Annual Reports (2) the "indirect" method (when the death rates at the several age groups are not known) used in the Annual Summaries.

TABLE H.—ENGLAND and WALES: COMPARISON of DEATH-RATES in REGISTRATION COUNTIES BEFORE and AFTER CORRECTION for DIFFERENCES of SEX and AGE-CONSTITUTION, 1907.

Registration County.	Before Correction.	After Correction.	Increase or Decrease of Death-rate due to Correction.
England and Wales ...	15.0	15.0	—
London ...	14.7	15.5	+ 0.8
Surrey ...	12.9	13.0	+ 0.1
Kent ...	12.8	12.3	- 0.5
Sussex ...	13.3	11.9	- 1.4
Hampshire ...	13.7	12.9	- 0.8
Berkshire ...	13.0	11.7	- 1.3
Middlesex ...	12.3	13.0	+ 0.7
Hertfordshire ...	13.6	12.1	- 1.5
Buckinghamshire ...	12.7	11.2	- 1.5
Oxfordshire ...	14.7	12.3	- 2.4
Northamptonshire ...	12.2	11.4	- 0.8
Huntingdonshire ...	14.5	11.0	- 3.5
Bedfordshire ...	14.4	12.9	- 1.5
Cambridgeshire ...	14.1	11.7	- 2.4
Essex ...	12.4	12.5	+ 0.1
Suffolk ...	14.5	12.1	- 2.4
Norfolk ...	14.7	12.0	- 2.7
Wiltshire ...	13.9	11.9	- 2.0
Dorsetshire ...	14.0	11.8	- 2.2
Devonshire ...	15.0	13.1	- 1.9
Cornwall ...	15.1	12.8	- 2.3
Somersetshire ...	13.9	11.8	- 2.1
Gloucestershire ...	13.8	12.8	- 1.0
Herefordshire ...	15.0	11.9	- 3.1
Shropshire ...	14.4	12.1	- 2.3
Staffordshire... ..	15.7	16.2	+ 0.5
Worcestershire ...	13.4	13.0	- 0.4
Warwickshire ...	15.4	15.6	+ 0.2
Leicestershire ...	13.0	12.8	- 0.2
Rutlandshire... ..	13.5	10.5	- 3.0
Lincolnshire... ..	15.3	13.4	- 1.9
Nottinghamshire ...	16.4	16.4	—
Derbyshire ...	14.3	14.6	+ 0.3
Cheshire ...	14.7	15.2	+ 0.5
Lancashire ...	17.0	18.8	+ 1.8
West Riding of Yorkshire...	15.6	16.8	+ 1.2
East Riding of Yorkshire ...	15.7	15.3	- 0.4
North Riding of Yorkshire	17.8	17.2	- 0.6
Durham ...	17.0	17.8	+ 0.8
Northumberland ...	15.7	16.4	+ 0.7
Cumberland ...	16.7	16.3	- 0.4
Westmorland ...	12.7	11.2	- 1.5
Monmouthshire ...	16.7	16.7	—
South Wales... ..	16.2	16.4	+ 0.2
Glamorganshire ...	16.2	17.4	+ 1.2
Carmarthenshire... ..	16.0	15.4	- 0.6
Pembrokeshire ...	15.5	13.8	- 1.7
Cardiganshire ...	17.8	14.1	- 3.7
Brecknockshire ...	16.3	14.7	- 1.6
Radnorshire ...	11.6	9.7	- 1.9
North Wales... ..	15.6	13.9	- 1.7
Montgomeryshire ...	15.3	12.3	- 3.0
Flintshire ...	15.8	14.6	- 1.2
Denbighshire ...	16.0	15.1	- 0.9
Merionethshire ...	15.6	13.9	- 1.7
Carnarvonshire ...	15.2	13.7	- 1.5
Anglesey ...	15.9	13.0	- 2.9

thirteen counties, the increase being as much as 1·2 per 1000 in the West Riding of Yorkshire and in Glamorganshire, and 1·8 in Lancashire. On the other hand correction diminished the crude rate in forty counties; the decrease amounting to as much as 3·1 in Herefordshire, 3·5 in Huntingdonshire, and 3·7 in Cardiganshire.

Among Registration Counties the highest and lowest corrected death rates during the year were as follows :—

Registration Counties.	Highest Corrected Death Rates.	Registration Counties.	Lowest Corrected Death Rates.
Lancashire	18·8	Dorsetshire	11·8
Durham	17·8	Somersetshire	11·8
Glamorganshire	17·4	Berkshire	11·7
North Riding of Yorkshire.	17·2	Cambridgeshire	11·7
West Riding of Yorkshire.	16·8	Northamptonshire	11·4
Monmouthshire	16·7	Buckinghamshire	11·2
Nottinghamshire	16·4	Westmorland	11·2
Northumberland	16·4	Huntingdonshire	11·0
Cumberland	16·3	Rutlandshire	10·5
Staffordshire	16·2	Radnorshire	9·7

Tables 18 and 19, pages 19 and 20, give the death rates at various ages for males and females separately in each of the Registration Counties of England and Wales, and thus illustrate the variations of sex and age mortality in different parts of the country.

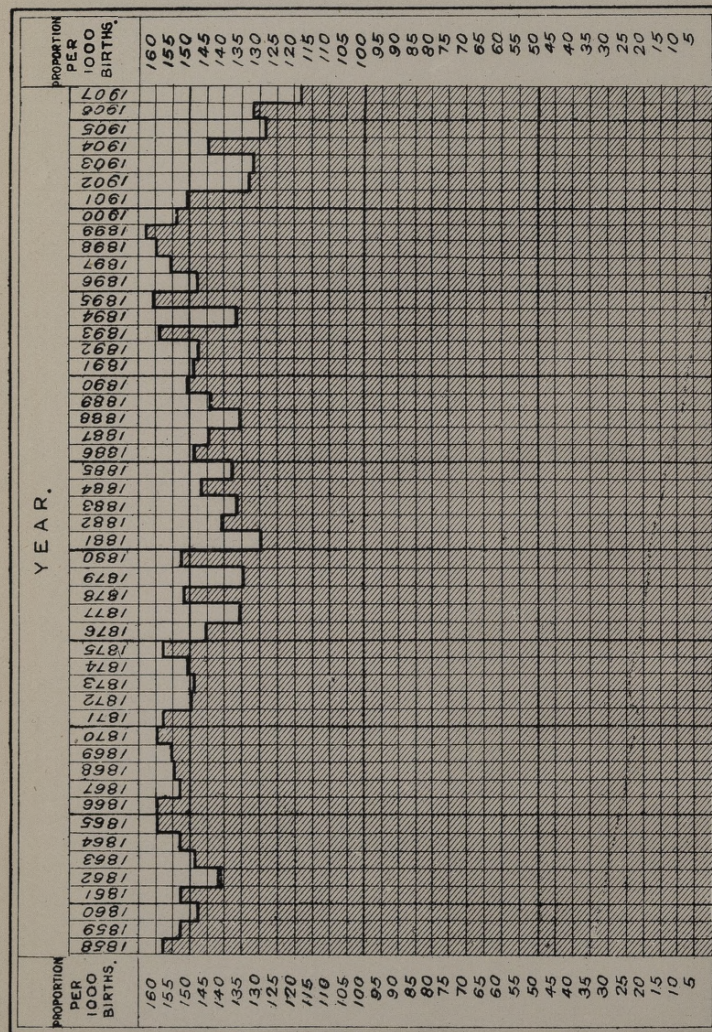
Infantile Mortality.—In the course of the 40 years ended in 1900 the corrected death rate at all ages had fallen by about 15 per cent., but no such corresponding reduction could be recorded in the proportion of deaths of children under one year of age, the average ratio to total births having been fairly constant in each decennium (Table 27, page 64). It will be seen, however, that since the beginning of this century the rate of infantile mortality has, with fluctuations, shown an appreciable decline. It is a fair assumption that this may, in part, be due to the increasing attention the subject of the waste of infant life has received from all classes of the community; but at the same time it should be pointed out that the country has recently experienced a series of seasons favourable to infant life; for example, the showery and exceedingly cool summer in the year under review checked the rise in the mortality from diarrhoeal diseases that usually occurs in the third quarter of the year in a remarkable manner.

The deaths of infants under one year of age registered in England and Wales in the year 1907 numbered 107,978, and were in the proportion of 118 per 1000 births as compared with 132 in the year immediately preceding, and 145 the average proportion in the ten years 1897-1906. The rate in 1907 was the lowest on record; but as already mentioned the summer of that year was

ENGLAND & WALES.

INFANTILE MORTALITY.

DIAGRAM V.—ANNUAL DEATHS OF CHILDREN UNDER ONE YEAR OF AGE PER 1000 BIRTHS, 1858-1907.



exceptionally cool and showery. If the rates in the several quarters of the year 1907 be compared with the respective decennial averages, it will at once be apparent how very largely the saving of infantile life was due to the reduced mortality experienced in the third quarter of the year; for while the mortality in the first, second, and fourth quarters was 3, 12, and 6 per 1000 below the respective decennial averages, it was no less than 88 per 1000 below the average in the third quarter.

The rate of infantile mortality in the third quarter generally exceeds the rate recorded in any other quarter of the year; and it is interesting to note that during the past 40 years there were only two exceptions to this rule, viz., in the years 1879 and 1907 when the rate of infantile mortality in the summer quarter was below that recorded in the other quarters of the year.

Year.	Deaths of Children under one year to 1,000 Births.					Observations at Greenwich—Third Quarter of each Year.	
	Complete Year.	First Quarter.	Second Quarter.	Third Quarter.	Fourth Quarter.	Mean Temperature of Earth at depth of 3 ft. 2 ins.	Amount of Rainfall.
1897... ..	156	141	124	213	145	62.2	6.3
1898... ..	160	141	123	225	153	62.0	2.5
1899... ..	163	137	116	255	145	64.0	4.3
1900... ..	154	148	131	188	151	61.3	4.6
1901... ..	151	137	118	208	142	62.0	5.1
1902... ..	133	140	120	125	149	59.6	5.7
1903... ..	132	131	110	133	154	60.2	12.3
1904... ..	145	143	113	190	136	61.4	4.8
1905... ..	128	132	106	155	120	61.6	5.8
1906... ..	132	126	102	176	126	62.0	3.8
Average in 10 years, 1897-1906.	145	138	116	187	142	61.6	5.5
1907... ..	118	135	104	99	136	59.2	3.5

If the records of infantile mortality for a long series of years are examined (*see* Table 27, page 64, and diagram V facing this page) it will be noted that the rates are subject to wide fluctuations, and there can be little doubt that these are mainly caused by variations of summer temperature and rainfall. In order to exemplify this, the tabular statement on page xl has been prepared, showing for the past thirty-eight years the rates in the third or summer quarter of each year, together with the mean temperature and amount of rainfall in that period of the year. By grouping the highest and lowest rates their relation to climatic conditions is clearly shown; the former correspond to years in which the summers were comparatively hot and dry, and the latter to years in which the earth temperature was low and the rainfall excessive.

ENGLAND and WALES.—INFANTILE MORTALITY, Temperature and Rainfall in the THIRD QUARTER of the years 1870-1907.

Year.	Deaths of Infants under one year to 1000 Births.	Observations at Greenwich.		Year.	Deaths of Infants under one year to 1000 Births.	Observations at Greenwich.	
		Mean Temperature of earth at depth of 3 feet 2 inches.	Amount of Rainfall.			Mean Temperature of earth at depth of 3 feet 2 inches.	Amount of Rainfall.
		°	Inches.			°	Inches.
1870	200	61.5	5.7	1890	160	60.4	7.7
1871	194	62.8	8.2	1891	146	60.2	7.9
1872	182	63.0	6.5	1892	150	60.6	6.6
1873	173	62.4	7.6	1893	214	63.1	5.9
1874	174	62.2	6.2	1894	134	60.7	7.5
1875	176	61.7	10.3	1895	201	62.3	6.5
1876	172	62.6	5.3	1896	178	62.2	8.7
1877	138	61.6	6.4	1897	213	62.2	6.3
1878	185	63.1	6.5	1898	225	62.0	2.5
1879	115	59.4	11.7	1899	255	64.0	4.3
1880	195	62.0	8.8	1900	188	61.3	4.6
1881	138	61.3	8.2	1901	208	62.0	5.1
1882	150	60.3	6.0	1902	125	59.6	5.7
1883	142	61.0	6.5	1903	133	60.2	12.3
1884	191	63.1	4.5	1904	190	61.4	4.8
1885	141	61.5	5.6	1905	155	61.6	5.8
1886	180	62.3	4.9	1906	176	62.0	3.8
1887	175	63.0	5.9	1907	99	59.2	3.5
1888	135	59.3	11.2				
1889	166	61.9	5.6				

SUMMARY.

Deaths of Children under one year to 1000 Births in the Third Quarter of the Year.				Observations at Greenwich.	
				Mean Temperature of Earth at depth of 3 ft. 2 ins.	Mean Rainfall.
Proportions ranging from	99 to 146 (11 years).	Average in 11 years	131	°	Inches.
Proportions ranging from	150 to 188 (16 years).	Average in 16 years	171	60.4	7.9
Proportions ranging from	190 to 255 (11 years).	Average in 11 years	208	61.9	6.4
				62.4	5.7

There are many special agencies at work which are prejudicial to infantile life; among these may be mentioned ante-natal influences, maternal ignorance and neglect, food contamination by flies, impure milk, insanitary environment, overcrowding, and the industrial employment of mothers.

The statistics dealing with the causes of death among infants are dealt with in considerable detail in a later part of this Report (see Dr. Tatham's letter, page cxxv, and tables on pages 72-87). It may be of interest, however, to point out that of the total mortality under one year of age an average of about 30 per cent. takes place in the first month of life, and further that of the deaths at this early period about three-fourths are due to a group of conditions—premature birth, congenital defects, atrophy, debility, and inanition—which may be described under the heading "Immaturity." Apart from this phase of the question, much of the loss of infant life is no doubt due either to ignorance or to callous neglect on the part of the mothers. In the report of the Duke of Devonshire's Committee on Physical Deterioration this topic was fully discussed—the opinion being expressed that among the younger women of the present day there is evidence of increasing carelessness and deficient sense of responsibility which can only be disastrous to the rising generation.

In the following statement the proportions of deaths, per 1000 births, from premature birth, from congenital defects, and from debility, atrophy, and inanition are shown for the years 1881-1907.

ENGLAND and WALES.—DEATHS of CHILDREN under ONE YEAR from "IMMATURETY" per 1000 BIRTHS, 1881-1907.

		Proportion of Deaths to 1000 Births of each Sex.						
		1881-1885.	1886-1890.	1891-1895.	1896-1900.	1901-1905.	1906.	1907.
Premature Birth.	Both Sexes...	14.2	16.1	18.4	19.6	20.2	20.4	19.8
	Males ...	15.7	17.8	20.3	21.7	22.4	22.6	21.8
	Females ...	12.7	14.4	16.4	17.5	18.1	18.1	17.8
Congenital Defects.	Both Sexes...	4.1	4.3	4.8	5.2	6.6	7.5	7.5
	Males ...	4.6	4.8	5.3	5.8	7.4	8.3	8.4
	Females ...	3.7	3.8	4.2	4.5	5.8	6.6	6.5
Debility, Atrophy, Inanition.	Both Sexes...	22.2	21.7	21.5	20.5	17.9	16.1	15.0
	Males ...	23.8	23.5	23.7	22.5	19.8	17.8	17.0
	Females ...	20.3	19.7	19.4	18.4	15.8	14.3	13.0
Total due to "Immaturity."	Both Sexes...	40.5	42.1	44.7	45.3	44.7	44.0	42.3
	Males ...	44.1	46.1	49.3	50.0	49.6	48.7	47.2
	Females ...	36.7	37.9	40.0	40.4	39.7	39.0	37.3

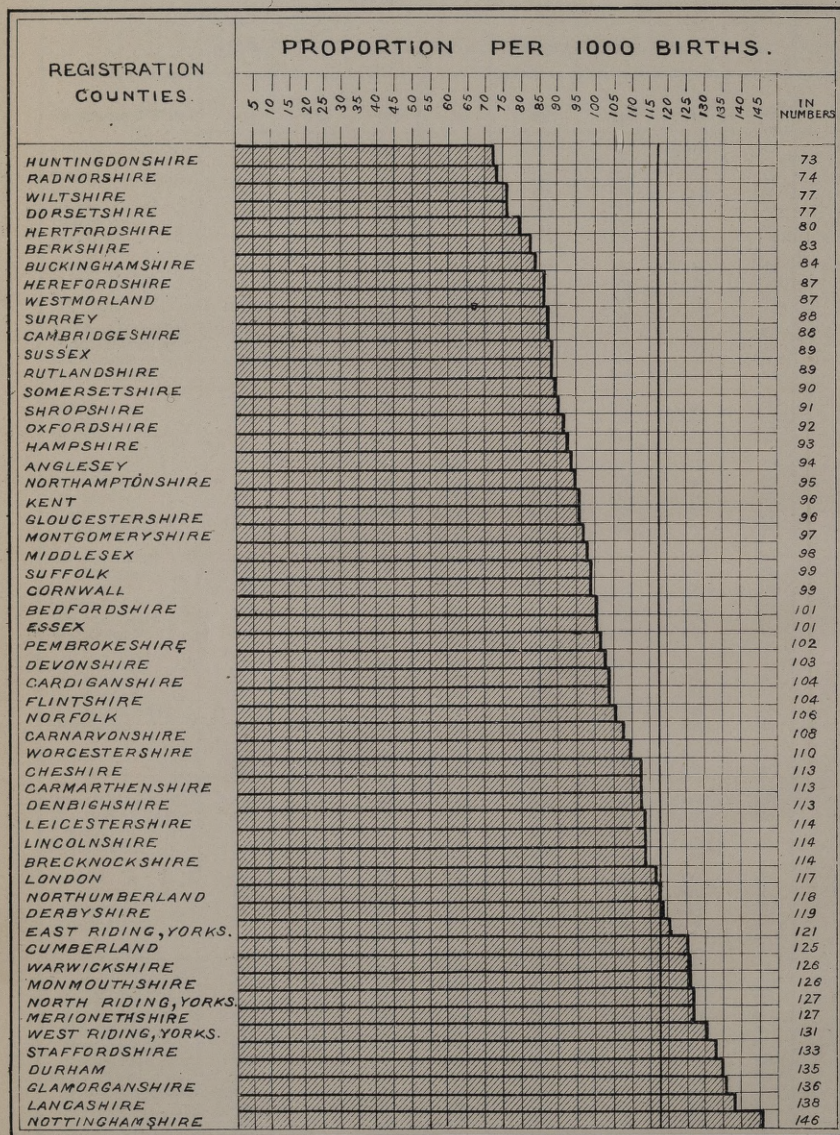
Before drawing deductions from these figures it should be observed that the certification of the causes of infantile death has

TABLE I.—INFANTILE MORTALITY RATES in each REGISTRATION COUNTY in QUINQUENNIAL PERIODS 1876-1905, and in the YEARS 1906 and 1907.

Registration Counties.	Deaths of Children under 1 year to 1000 Births.								Increase (+) or Decrease (-) per cent. in each County between the period 1876-80 and 1907.
	Quinquennial Periods.						Years.		
	1876-80.	1881-85.	1886-90.	1891-95.	1896-1900.	1901-05.	1906.	1907.	
England and Wales	145	139	145	151	156	138	132	118	-18.6
London	154	150	154	156	163	140	133	117	-24.0
Surrey	115	110	109	116	127	105	109	88	-23.5
Kent	123	114	119	123	135	118	114	96	-22.0
Sussex	114	107	111	115	121	101	96	89	-21.0
Hampshire ..	116	108	116	122	132	110	103	93	-19.8
Berkshire ..	117	102	108	110	118	101	97	83	-29.1
Middlesex ..	130	127	130	130	146	121	118	98	-24.6
Hertfordshire ..	115	108	109	109	111	92	104	80	-30.4
Buckinghamshire ..	129	115	117	113	114	98	94	84	-34.9
Oxfordshire ..	125	109	116	114	113	99	87	92	-26.4
Northamptonshire ..	141	129	134	134	132	115	106	95	-32.6
Huntingdonshire ..	121	107	106	120	116	95	99	73	-39.7
Bedfordshire ..	146	130	131	124	128	106	118	101	-30.8
Cambridgeshire ..	135	120	123	124	124	107	108	88	-34.8
Essex	125	124	128	132	150	127	123	101	-19.2
Suffolk	123	112	116	121	121	111	105	99	-19.5
Norfolk	147	131	138	141	143	128	123	106	-27.9
Wiltshire	103	101	104	103	102	91	84	77	-28.7
Dorsetshire ..	107	97	96	100	103	92	91	77	-28.0
Devonshire ..	126	116	125	128	134	118	112	103	-18.3
Cornwall	145	133	142	144	137	117	101	99	-31.7
Somersetshire ..	119	110	110	114	115	95	89	90	-24.4
Gloucestershire ..	135	123	125	132	131	114	110	96	-28.9
Herefordshire ..	117	104	114	115	108	101	100	87	-25.6
Shropshire ..	124	114	120	115	114	105	98	91	-26.6
Staffordshire ..	155	152	160	168	176	151	144	133	-14.2
Worcestershire ..	135	129	139	141	141	124	116	110	-18.5
Warwickshire ..	152	145	154	160	178	152	152	126	-17.1
Leicestershire ..	169	161	168	167	161	140	142	114	-32.5
Rutlandshire ..	120	110	113	113	108	97	88	89	-25.8
Lincolnshire ..	135	127	136	141	144	131	127	114	-15.6
Nottinghamshire ..	159	154	155	156	170	153	145	146	- 8.2
Derbyshire ..	137	131	138	144	148	133	120	119	-13.1
Cheshire	140	137	146	155	157	138	130	113	-19.3
Lancashire ..	165	161	170	177	181	161	157	138	-16.4
West Riding ..	158	152	160	164	165	152	143	131	-17.1
East Riding (with York).	156	147	152	164	168	149	140	121	-22.4
North Riding ..	135	132	138	144	149	140	142	127	- 5.9
Durham	153	150	154	166	169	158	154	135	-11.8
Northumberland ..	142	139	146	155	167	151	143	118	-16.0
Cumberland ..	131	120	125	128	132	127	124	125	- 4.6
Westmorland ..	107	102	99	109	104	89	88	87	-18.7
Monmouthshire ..	133	132	148	149	154	142	129	126	- 5.3
South Wales ..	129	132	147	162	163	151	141	130	+ 0.8
Glamorganshire ..	138	143	159	173	175	158	150	136	- 1.4
Carmarthenshire ..	117	115	124	141	143	142	112	113	- 3.4
Pembrokeshire ..	115	111	120	124	122	116	115	102	-11.3
Cardiganshire ..	99	93	100	120	119	119	116	104	+ 5.1
Brecknockshire ..	128	124	137	140	134	124	96	114	-10.9
Radnorshire ..	124	115	113	125	114	105	119	74	-40.3
North Wales ..	126	117	120	130	139	127	134	109	-13.5
Montgomeryshire ..	111	104	108	106	114	103	96	97	-12.6
Flintshire ..	126	106	112	120	126	101	120	104	-13.3
Denbighshire ..	134	123	131	139	153	136	154	113	-15.7
Merionethshire ..	129	120	122	141	152	130	123	127	- 1.6
Carnarvonshire ..	132	122	118	135	138	136	144	108	-18.2
Anglesey ..	114	113	120	115	128	131	132	94	-17.5

REGISTRATION COUNTIES.
INFANTILE MORTALITY.

DIAGRAM VI.—DEATHS OF CHILDREN UNDER ONE YEAR OF AGE PER 1000 BIRTHS IN EACH REGISTRATION COUNTY: 1907.



Note:—The thick vertical line marks the rate of Infantile Mortality in England and Wales as a whole during the year.

become more accurate in recent years, consequently the increase in the ratio of deaths from premature birth and from congenital defects may be more apparent than real. Probably many deaths that were ascribed to debility, &c., in the earlier years were in reality due to premature birth or congenital defects. Evidently, however, any transfer of this kind would not affect the total mortality from "Immaturity."

It should be further noted that the proportion of deaths from "Immaturity" among male infants exceeds that among female infants by from 20 to 27 per cent.

Table I on page xlii shows the relative incidence of infantile mortality in the several Registration Counties, and it will be observed from the figures in that table and from the accompanying Diagram, No. VI., that the improvement in the rate in the year under review as compared with previous years was shared by nearly all parts of the country; as already mentioned, however, the climatic conditions in the summer of 1907 were exceptionally favourable to infantile life.

Among counties with populations of more than 100,000 persons the highest and lowest proportions in the year 1907 of deaths of children under one year to 1000 births were as follows:—

Registration Counties with Highest Rates of Infantile Mortality.	Deaths of Children under 1 year per 1000 Births.	Registration Counties with Lowest Rates of Infantile Mortality.	Deaths of Children under 1 year per 1000 Births.
Nottinghamshire	146	Sussex	89
Lancashire... ..	138	Surrey	88
Glamorganshire	136	Cambridgeshire	88
Durham	135	Herefordshire	87
Staffordshire	133	Buckinghamshire... ..	84
West Riding of Yorkshire	131	Berkshire	83
North Riding of Yorkshire	127	Hertfordshire	80
Warwickshire	126	Wiltshire	77
Monmouthshire	126	Dorsetshire	77

It has been frequently pointed out that those divisions of the country that comprise the districts of the mining, textile, and pottery industries show very badly in the Tables of Infantile Mortality; not only are the rates excessive in many of the large boroughs of these districts, but they are equally so in the majority of the smaller towns.

The lists on pp. xlv-xlvi show the towns with the highest and lowest average annual rates of infantile mortality in the quinquennial period 1903-07, together with Census statistics relating to overcrowding and to the industrial employment of women.

Examination of the figures in List A. shows that there are several groups of towns in Staffordshire, Cheshire, Lancashire, and Glamorganshire carrying on the industries alluded to above; in no fewer than eight of these towns, Bilston, Longton, Tunstall, Stalybridge, Burnley, Farnworth, Ince in Makerfield and Aberdare, an average of about one in every five children born did not survive

the first year of life. Speaking broadly, excessive waste of infant life is generally associated with a high birth rate, overcrowding, and the industrial employment of married women, and it will be noted that these conditions prevail in the majority of the towns given in the list; it should be observed, however, that there are several towns which have a comparatively low birth rate and little overcrowding but in which nevertheless the child mortality is very high. Such towns not only produce fewer children, but lose an immoderate proportion of this smaller number of children.

Turning to List B. it will be seen that the towns with low rates of infantile mortality may generally be described as superior residential towns or suburbs, the birth rates in these towns are conspicuously low, and there is no apparent evidence of overcrowding. There are three instances in this list deserving of special notice—Erith, Swindon and Burton-on-Trent: the statistics for these towns would appear to show that industrial urban life need not necessarily be inimical to infant life.

From the foregoing analysis of the figures relating to infantile mortality it will be gathered that there are several areas in this country, both urban and rural, where the rates are low and compare favourably with the lowest recorded in the several Foreign and Colonial States. On the other hand, many industrial centres have been specified where the excessive rates indicate that the conservation of infant life is much neglected. It may confidently be affirmed that, in future, any permanent reduction in the mortality of young children in England and Wales as a whole will largely depend upon a due recognition of parental responsibility on the one hand, and on the other, an improved health administration in these industrial areas, particularly in that of numerous small towns.

LIST A.—TOWNS WITH HIGH RATES OF INFANTILE MORTALITY.

—	Census, 1901.			Average Rate, 1903-07.	
	Population.	Proportion per cent. of persons living more than two in a room.	Proportion per cent. of Married or Widowed Women Occupied.	Births to 1000 living.	Deaths of Children under One Year to 1000 Births.
England and Wales ...	32,527,843	8.2	13.2	27.4	131
Towns.					
Norfolk—					
Norwich* ...	113,922	3.3	18.4	26.8	160
Staffordshire—					
Bilston ...	24,034	12.5	10.7	37.5†	192†
Burslem ...	38,766	2.7	22.1	33.6	184
Fenton ...	22,742	4.6	20.9	35.6†	175†
Hanley* ...	62,226	3.8	18.1	33.7	180
Longton ...	35,815	6.6	30.5	35.9	204
Tunstall* ...	24,709	4.2	17.5	36.7†	203†

* Boundaries altered since the Census of 1901.

† Average for four years 1904-7.

LIST A.—continued.

—	Census, 1901.			Average Rate, 1903-07.	
	Population.	Proportion per cent. of persons living more than two in a room.	Proportion per cent. of Married or Widowed Women Occupied.	Births to 1000 living.	Deaths of Children under One Year to 1000 Births.
Worcestershire—					
Dudley ...	48,733	17.5	10.8	33.1	167
Oldbury ...	25,191	12.3	8.3	36.2	176
Warwickshire—					
Birmingham ...	522,204	10.3	19.0	30.1	165
Lincolnshire—					
Grimsby ...	63,138	1.9	8.9	29.4	172
Nottinghamshire—					
Nottingham ...	239,743	3.7	24.1	27.2	166
Derbyshire—					
Chesterfield ...	27,185	5.0	8.8	30.9	166
Ilkeston ...	25,384	3.7	7.1	37.7	173
Cheshire—					
Hyde ...	32,766	5.9	29.2	23.5	180
Stalybridge ...	27,673	6.7	28.3	24.6	201
Stockport* ...	92,832	5.0	23.7	27.4	180
Lancashire—					
Ashton-under-Lyne ...	43,890	5.1	24.8	26.2	172
Blackburn* ...	129,216	3.9	37.9	24.5	161
Burnley ...	97,043	7.1	33.8	27.3	198
Farnworth ...	25,925	5.7	21.6	26.9	211
Gorton ...	26,564	4.6	11.5	34.2	171
Hindley ...	23,504	12.2	6.9	30.8†	163†
Ince in Makerfield ...	21,262	17.6	7.9	36.7†	196†
Leigh ...	40,001	3.8	10.7	30.3	184
Liverpool* ...	704,134	7.9	14.5	33.0	165
Manchester* ...	606,824	6.3	19.3	30.2	165
Preston ...	112,989	2.6	30.5	28.5	171
Radcliffe ...	25,368	6.4	22.7	23.1	166
Salford ...	220,957	7.5	16.6	30.8	161
Swinton & Pendlebury	27,005	7.3	11.6	29.3	165
Widnes ...	28,580	5.1	5.8	35.5	162
Wigan* ...	82,428	13.4	10.5	33.7	171
Yorkshire—					
Barnsley ...	41,086	9.6	9.5	35.1	166
Batley ...	30,321	20.7	21.4	26.3	186
Dewsbury ...	28,060	20.9	21.0	23.4	170
Doncaster ...	28,932	2.9	8.0	24.2	165
Middlesbrough ...	91,302	10.9	6.1	35.5	171
Sheffield* ...	409,070	9.5	11.0	31.2	162
Monmouthshire—					
Abertillery ...	21,945	7.7	3.5	42.0†	169†
Glamorganshire—					
Aberdare ...	43,365	5.8	4.7	33.6	191
Merthyr Tydfil ...	69,228	12.2	5.7	37.4	173
Mountain Ash ...	31,093	3.1	3.5	40.0	173
Rhondda ...	113,735	5.0	4.0	38.6	177

* Boundaries altered since the Census of 1901.

† Average for four years 1904-7.

LIST B.—TOWNS WITH LOW RATES OF INFANTILE MORTALITY.

	Census, 1901.			Average Rate, 1903-07.	
	Population.	Proportion per cent. of persons living more than two in a room.	Proportion per cent. of Married or Widowed Women Occupied.	Births to 1000 living.	Deaths of Children under One Year to 1000 Births.
England and Wales ...	32,527,843	8.2	13.2	27.4	131
Towns.					
Surrey—					
Guildford* ...	20,639	0.8	13.3	21.8†	71‡
Reigate ...	25,993	1.0	11.9	20.6	83
Richmond ...	31,672	2.6	15.4	19.8	101
Kent—					
Beckenham* ...	26,288	1.3	10.4	22.8	99
Bromley* ...	27,397	1.8	12.2	23.3	102
Dover* ...	42,672	1.7	12.4	24.4	107
Erith ...	25,296	3.5	5.3	30.4	100
Tunbridge Wells ...	33,373	1.1	14.5	18.0	81
Sussex—					
Eastbourne ...	43,344	2.1	16.3	19.0	98
Hastings ...	65,528	2.9	17.1	17.3	106
Worthing* ...	22,567	0.8	15.9	20.4†	104†
Hampshire—					
Aldershot ...	30,974	3.2	13.5	30.8	95
Bournemouth* ...	59,762	0.6	14.3	17.3	95
Gosport and Alverstoke.	28,884	1.0	10.8	28.7	106
Winchester ...	20,929	0.8	15.2	22.6†	86†
Middlesex—					
Hornsey ...	72,056	2.0	7.8	18.8	80
Wood Green ...	34,233	4.3	8.3	31.1	98
Hertfordshire—					
Watford* ...	29,414	0.8	7.9	26.8	89
Oxfordshire—					
Oxford ...	49,336	1.4	17.0	20.9	102
Northamptonshire—					
Peterborough ...	30,872	0.9	7.6	22.3	108
Essex—					
Ilford* ...	41,244	1.0	5.4	29.6	100
Wiltshire—					
Salisbury ...	20,185	1.5	11.5	21.8‡	95‡
Swindon ...	45,006	1.3	7.2	28.5	100
Devonshire—					
Torquay ...	33,625	2.1	17.6	15.9	107
Somersetshire—					
Bath ...	49,839	4.5	20.2	19.8	100
Staffordshire—					
Burton-on-Trent ...	50,386	1.7	6.9	25.2	102
Handsworth ...	52,921	1.5	7.9	24.0	107
Worcestershire—					
Kings Norton and Northfield.	57,122	1.5	8.9	26.4	99

* Boundaries altered since Census of 1901.
 † Average for four years 1904-7.
 ‡ Average for three years 1905-7.

Centenarians.—Among the deaths registered during the year there were 59 of reputed centenarians, 17 of whom were males and 42 females. In the preceding three years the numbers had been 59, 58, and 65 respectively.

Urban and Rural Mortality.—At page lxxviii. will be found a table showing the variations in the death-rates both in 1907 and in the quinquennium 1902-06 in the two groups of counties selected to represent severally the urban and rural areas of England and Wales.

After correction for differences of sex and age constitution of the respective populations, the death-rate during 1907 in the urban group was equal to 16.4 per 1000, and in the rural group to 12.8 per 1000. Compared with the average rates in 1902-06, the mortality in the urban group showed a decrease of 0.8 per 1000, and that in the rural group a decrease of 0.5 per 1000.

In the year 1907 the ratio of urban to rural mortality, based on the death-rates per million living, was as 1287 is to 1000, against a ratio of 1299 to 1000 in the five years immediately preceding.

Certification of Causes of Death.—Of the 524,221 deaths registered in England and Wales during the year 1907, the causes of 480,151, or 91.59 per cent., were certified by registered medical practitioners; inquests were held respecting 36,474, or 6.96 per cent.; whilst the causes of the remaining 7,596, or 1.45 per cent., were uncertified. This is the lowest proportion of uncertified deaths hitherto recorded.

Of the 7,596 uncertified deaths, 837, or 11.0 per cent., were not reported to coroners, as compared with 891, or 11.0 per cent., in the year 1906.

The subjoined table shows the changes in the proportion to total deaths of certified deaths, inquest cases, and uncertified deaths in the course of the seven years 1901-1907:—

Year.	Proportion per 100 Deaths.				
	Certified by Registered Medical Practitioners.	Inquest Cases.	Uncertified Deaths.		
			Total.	Reported to Coroners.	Not reported to Coroners.
1901 ...	91.52	6.67	1.81	1.50	0.31
1902 ...	91.52	6.68	1.80	1.54	0.26
1903 ...	91.40	6.91	1.69	1.47	0.22
1904 ...	91.85	6.53	1.62	1.42	0.20
1905 ...	91.52	6.86	1.62	1.43	0.19
1906 ...	91.64	6.83	1.53	1.36	0.17
1907 ...	91.59	6.96	1.45	1.29	0.16

It will be observed that the decline in the proportion of uncertified deaths is shown more especially in those cases which were not reported to Coroners.

In six English counties—Berkshire, Derbyshire, Herefordshire, Durham, Huntingdonshire, and Westmorland, and in five Welsh counties—Carnarvonshire, Montgomeryshire, Cardiganshire, Pembrokeshire, and Anglesey, the proportions of uncertified deaths were unduly high, ranging from 2·86 to 8·53 per cent. of the total deaths, compared with 1·45 per cent. in the whole of England and Wales. In several of the 76 large towns also the proportion of uncertified deaths was excessive; it reached 3·4 in Birmingham, 3·5 in St. Helens, 4·4 in Gateshead, 4·5 in Warrington, and 5·1 in South Shields.

An analysis of the uncertified deaths shows that in the English counties the average proportion of such deaths registered without previous reference to Coroners was as low as 9 per cent., whereas in the Welsh counties the proportion was as high as 40 per cent.

Table K on page xlix shows the uncertified deaths registered in 1907, arranged according to sex, age, and assigned cause of death, distinguishing the cases reported from those not reported to Coroners.

It will be noted that about one-fourth of the uncertified cases which were referred to Coroners, and about one-half of those which were not so referred were of infants under three months of age, and that premature birth, convulsions and debility were the assigned causes of most of these deaths.

Deaths in Public Institutions.—Of the 524,221 deaths registered during the year, no fewer than 98,276 or 18·75 per cent. occurred in Workhouses and Workhouse Infirmaries, in Hospitals, or in Asylums for the Insane, the proportion during the 10 years immediately preceding having averaged 15·62 per cent.

Thus the present figures confirm those of previous reports to the effect that the proportion of deaths occurring in public Institutions, although fluctuating slightly from time to time, has a distinct tendency to increase. The following statement shows the proportions of deaths occurring in Workhouses, in Hospitals, and in Lunatic Asylums:—

Public Institutions.	Proportion per cent. to Total Deaths.	
	Ten years, 1897-1906.	1907.
Workhouses and Workhouse Infirmaries ...	8·44	10·05
Hospitals	5·55	6·69
Lunatic and Idiot Asylums	1·63	2·01

The 98,276 deaths in public Institutions registered during the year were equal to a rate of 2·81 per 1,000 of the estimated population of England and Wales, against an average rate in the ten preceding years of 2·59 per 1,000. Detailed tables, showing the

names and descriptions of the several institutions and the numbers of deaths occurring therein, are given on pages 227 to 278 of this Report.

OFFENCES AGAINST THE REGISTRATION ACTS.

In 1907, 12 persons, on prosecution by order of the Registrar-General, were convicted of different offences against the Registration Acts. The offences for which convictions were obtained were as under:—

For giving a false place of birth in order to avoid vaccination	1
For falsifying certificate of birth or death and using same as true	6
For giving false information to the registrar when registering a birth or death	3
For refusing to give a medical certificate of cause of death	1
For failing to deliver to cemetery authorities, with coffin containing two bodies, a statement with respect to each body	1

Proceedings were taken by the Public Prosecutor (at the instance of the Registrar General) for making a false declaration on a notice of marriage to the effect that a girl aged 15½ years was of full age, and the man who gave the notice was sentenced to one month's imprisonment.

PROGRESS OF REGISTRATION.

The names in the alphabetical indexes of births, deaths, and marriages recorded in the national registers of England and Wales were increased during the year 1907 by 1,995,105, this addition raising the total of names in the indexes, which at the end of 1907 embraced a period of 70½ years, to 114,751,322.

SEARCHES AND CERTIFICATES.

Besides the certified copies of the registered births, deaths, and marriages kept in England and Wales pursuant to the Registration Acts of 1836 and 1874, a large number of other registers and records are deposited in this Office under statute or other arrangement. A list of these various registers and records will be found on pages xxix.-xxxii. of the Fifty-eighth Report. Searches may be made in any of these registers, and certificates obtained on payment of the prescribed fees.

During the 52 weeks ended 28th December, 1907, the total number of searches was 69,249, and of certificates issued 53,058; the total amount received in fees was 10,194l. 9s.

The following Table affords an indication of the extent to which the records in this Office have been utilized by the public for legal evidence of births, deaths, and marriages since 1866 :—

Years.	Total Searches.	Certificates Issued.	Amount Received.		
			£	s.	d.
1866 (52 weeks)	12,135	10,017	1,860	15	6
1875 (52 weeks)	20,356	20,282	3,879	15	6
1885 (52 weeks)	30,450	27,682	5,317	13	6
1895 (52 weeks)	53,280	35,727	7,200	12	6
1896 (53 weeks)	57,444	37,435	7,600	0	6
1897 (52 weeks)	58,064	37,485	7,686	8	6
1898 (52 weeks)	63,825	41,143	8,450	19	6
1899 (52 weeks)	57,670	44,793	8,551	19	6
1900 (52 weeks)	57,895	45,479	8,058	9	6
1901 (52 weeks)	58,445	45,254	8,045	10	0
1902 (53 weeks)	61,437	48,262	9,177	15	0
1903 (52 weeks)	63,519	49,469	9,437	9	6
1904 (52 weeks)	62,270	48,658	9,274	12	0
1905 (52 weeks)	65,142	50,310	9,611	9	0
1906 (52 weeks)	64,340	49,429	9,458	6	0
1907 (52 weeks)	69,249	53,058	10,194	9	0

UNITED KINGDOM.

Population.

The first complete Census of the United Kingdom was taken in 1821, when the population numbered 20,893,584 persons; during the eighty years, 1821-1901, the population nearly doubled itself, the numbers enumerated at the end of March, 1901, amounting to 41,458,721 persons.

From that date until the middle of 1907 the number of births exceeded the number of deaths by 3,023,279; had neither emigration nor immigration occurred this surplus would have raised the population in the middle of the year 1907 to 44,482,000. In the absence of precise information as to migration, the populations of the several divisions of the Kingdom are provisionally estimated as follows :—

POPULATION ESTIMATED TO THE MIDDLE OF THE YEAR 1907.

—	Persons.	Males.	Females.
England and Wales	34,945,600	16,879,509	18,066,091
Scotland	4,776,063	2,331,907	2,444,156
Ireland	4,377,064	2,171,389	2,205,675
United Kingdom	44,098,727	21,382,805	22,715,922

Marriages.

The marriages in the United Kingdom during the year 1907 numbered 332,190, corresponding to a rate of 15·1 persons married per 1000 of the population at all ages.

This rate was 0·2 per 1000 above the corresponding rate in 1906, and was equal to the average rate in the ten years, 1897-1906.

—	Marriages, 1907.	Persons married to 1000 living.	
		Ten years, 1897-1906.	1907.
England and Wales	276,421	15·8	15·8
Scotland	33,260	14·2	13·9
Ireland	22,509	10·2	10·3
United Kingdom	332,190	15·1	15·1

Births.

The births registered in the United Kingdom in the year 1907 numbered 1,148,573 and were in the proportion of 26·0 per 1000 of the population at all ages.

This rate was 0·8 per 1000 below the corresponding rate in 1906, and lower than the rate in any other year on record; compared with the average in the ten years 1897-1906 the birth-rate in 1907 showed a decrease of 1·9 per 1000.

—	Births, 1907.	Births to 1000 living.	
		Ten years, 1897-1906.	1907.
England and Wales	918,042	28·4	26·3
Scotland	128,789	29·2	27·0
Ireland	101,742	23·2	23·2
United Kingdom	1,148,573	27·9	26·0

Deaths.

The deaths registered in the United Kingdom in the year 1907 numbered 678,822, and were in the proportion of 15·4 per 1000 of the population at all ages.

—	Deaths, 1907.	Deaths to 1000 living.	
		Ten years, 1897-1906.	1907.
England and Wales	524,221	16·7	15·0
Scotland	77,267	17·4	16·2
Ireland	77,334	17·9	17·7
United Kingdom	678,822	16·9	15·4

This rate was 0·2 per 1000 below the corresponding rate in 1906; compared with the average in the ten years 1897–1906 the death-rate in 1907 showed a decrease of 1·5 per 1000.

In Tables 55–58, pages 110–113, the population, marriages, births, deaths and principal causes of death are given for each of the years 1881–1907 for the United Kingdom and for each of its three divisions.

MORTALITY IN THE ARMY.

The average regimental strength of the British Army at home and abroad during the year 1907 was 249,890, and the deaths during the year numbered 1,186 giving a death-rate of 4·7 per 1000, as compared with 6·0, 5·6, and 5·5 per 1000 respectively, in the three preceding years. The mortality in the Army abroad was 6·4 per 1000, against 8·5, 8·0, and 7·8 in the three preceding years; whilst the mortality in the Army at home was 3·1 per 1000, against 3·3, 2·9, and 3·1 (Table 46).

MORTALITY IN THE NAVY.

The average strength of the service afloat was 108,740. The deaths during the year numbered 365, being in the proportion of 3·35 per 1000 of the strength, against an average of 4·58 per 1000 in the six years immediately preceding. Of the 365 deaths in 1907, 246 were caused by disease and 119 by violence; the death-rate from disease was therefore 2·26 per 1000, and that from violence 1·09 per 1000. Of the deaths from violence, 100 were accidental, and 19 were suicidal; the accidental deaths included 57 cases of suffocation from submersion, and 3 from heatstroke. (Table 47.)

BIRTHS AND DEATHS AT SEA.

Marine Register Book.—In accordance with the Births and Deaths Registration Act of 1874 and the Merchant Shipping Act of 1894, Commanding Officers of Ships trading to or from British Ports are required, under penalty, to transmit returns of all births and deaths occurring on board their ships to the Registrar-General of Shipping and Seamen, who furnishes certified copies of such returns to the Registrars-General of Births and Deaths for England, Scotland, and Ireland. Similar returns are furnished by persons having charge of His Majesty's Ships directly to the Registrars-General of Births and Deaths. These returns of births and deaths at sea constitute the "Marine Register Book." During the year 1907, this register was increased by the addition of 239 entries of birth and 3086 entries of death.

Mercantile Marine.—A Return received from the Marine Department of the Board of Trade shows the number of, and the mortality among, masters and seamen employed in sea-going vessels (excluding fishing vessels and yachts) registered in the United Kingdom and the Isle of Man under the Merchant Shipping Act in the years 1891–1907. In the year 1906 the

number employed was 242,970, of whom 28,142 were employed in sailing vessels, being 2,062 fewer than in the preceding year, and 214,828 in steam vessels, being 7,221 more than in the preceding year.

The reported deaths from all causes in sailing or steam vessels during the year ended 30th June, 1907, numbered 2,310, of which 1,244 resulted from disease, suicide, &c., 499 from wreck or casualty to ship, and 567 from accident other than wreck or casualty to ship, showing a death-rate from all causes of 9·5 per 1000 of the strength; this rate was 0·9 per 1000 below the mean rate in the previous five years. (Table 48.)

INTERNATIONAL VITAL STATISTICS.

The information given in this section of the Report is based on the statistics so courteously furnished by the Registrars-General of Scotland and Ireland, and by the several Colonial and Foreign Statistical Authorities.

Since the year 1844 it has been customary to publish in these Reports a number of Tables showing for a series of years the population, marriages, births, and deaths in the principal European countries.

In recent Annual Reports the scope of these International Returns has been extended to include particulars relating to infantile mortality, to mortality from the principal epidemic diseases, from pulmonary tuberculosis, and from cancer; while those of our Colonies in which records of such particulars had been kept were asked to contribute similar returns. (See Tables 54–88, pages 108–143.)

Marriages.—The following Table affords the means of comparing the marriage-rates per 1000 of the population in the several countries for a series of quinquennial periods.

Some of the disparities between the rates shown in these Tables are undoubtedly due to differences in the age-constitution, and to variations in the sex proportions of the several countries. Taking as a standard the average marriage rate in England and Wales in the quinquennium 1901–1905, viz., 15·6 per 1000, it will be seen that during this period eight Continental Countries had rates above, and eight below this standard. The extent of the variation was from 4·4 per 1000 living above the English rate in Bulgaria, to 3·8 below in Sweden; the other rates were 4·1 per 1000 above the standard in Servia, 1·6 in Hungary, 0·7 in Roumania, 0·5 in Belgium and in the German Empire, 0·4 in Spain, and 0·1 in Austria; while they were 0·3 below in France, 0·6 in Switzerland, 0·7 in the Netherlands, 0·9 in Italy, 1·3 in Denmark, 2·6 in Finland, and 3·3 in Norway.

In Western Australia, in the Province of Ontario, and in New Zealand the rates were above that recorded in England and Wales; but in all the States of the Australian Commonwealth (except Western Australia) they were below the English rate; this was also the case in Scotland, while in Ireland the rate did not exceed 10·4 per 1000 of total population as compared with 15·6 per 1000 in England and Wales.

ANNUAL MARRIAGE-RATES per 1000 persons living, 1881-1907.

Countries (Arranged in Order of Rates in 1901-5).	Quinquennial Periods					Years.		Rate in 1901-5 com- pared with that in 1881-5 taken as 100.
	1881- 1885.	1886- 1890.	1891- 1895.	1896- 1900.	1901- 1905.	1906.	1907.	
	Bulgaria	18.0	17.4	16.5	16.7	20.0	19.2		—	111
Servia	22.1	21.6	20.2	19.9	19.7	20.4	—	89
Western Australia	14.2	14.3	14.0	19.8	18.4	17.4	16.0	130
Russia (European)	18.0	17.1	17.9	17.8	—	—	—	—
Ontario, Province of	14.2	13.5	13.2	13.9	17.5	18.0	—	123
Hungary	20.4	17.7	18.0	17.0	17.2	17.4	19.6	84
Japan	—	16.6	17.0	18.1	16.3	—	—	—
New Zealand	13.6	12.0	12.2	14.2	16.3	17.0	18.0	120
Roumania	17.9	15.1	15.8	15.2	16.3	20.6	21.3	91
Belgium	13.7	14.2	15.1	16.6	16.1	16.1	—	118
German Empire	15.4	15.8	15.9	16.8	16.1	16.3	—	105
Prussia	15.9	16.2	16.1	16.9	16.1	16.4	16.4	101
Spain	12.6	13.3	16.2	15.3	16.0	14.1	13.9	127
Austria	15.8	15.5	15.8	16.2	15.7	15.8	—	99
England & Wales	15.2	14.7	15.1	16.1	15.6	15.6	15.8	103
France	15.0	14.4	15.0	15.1	15.3	15.6	16.0	102
Tasmania	16.3	13.8	11.9	13.5	15.2	15.5	15.8	93
Switzerland	13.7	14.1	14.5	15.5	15.0	15.6	—	109
The Netherlands	14.3	14.0	14.5	14.9	14.9	14.9	15.0	104
Italy	16.1	15.5	14.8	14.3	14.7	15.5	15.4	91
New South Wales	17.0	14.9	13.3	13.9	14.7	15.3	15.7	86
Denmark	15.4	14.0	13.9	15.0	14.3	14.9	15.3	93
Scotland	13.8	13.0	13.6	14.6	13.9	14.0	13.9	101
Victoria	14.7	16.3	12.9	13.3	13.7	14.6	15.4	93
South Australia	16.9	13.5	12.9	12.5	13.3	14.2	15.9	79
Finland	14.9	14.5	13.0	14.9	13.0	13.6	—	87
Norway	13.4	12.8	12.9	13.7	12.3	11.8	12.1	92
Queensland	17.3	16.3	12.6	12.7	12.2	13.5	15.2	71
Sweden	12.8	12.2	11.5	12.2	11.8	12.2	12.4	92
Ireland	8.7	8.7	9.5	9.9	10.4	10.3	10.3	120
Chili	12.6	7.4	9.2	9.3	10.3	—	—	82

In an earlier section of this Report dealing with the marriages recorded in England and Wales, it is stated that the variations which occur from time to time in the number of marriageable men and women in the population make it desirable, when comparing marriage-rates, to base the proportions upon the number of marriageable persons rather than upon the total population. This course is equally desirable when comparing rates in one country with those in another.

A limited number of countries have furnished returns of the numbers of marriageable persons in their populations at the three past census periods; from these data the table on page lvii has been constructed. Although it has not been possible to correct the figures for variations in the ages of bachelors, widowers, spinsters, and widows in the respective populations, nevertheless they give a fair approximation of the relative marriage-rates, in the several

countries, based on the numbers of the population among whom marriages can take place.

MARRIAGE RATES.

Countries (Arranged in order of rates in 1900-2).	Persons married per 1000 of the unmarried and widowed population, aged 15 years and upwards.		
	Approximate periods.		
	1880-82.	1890-92.	1900-02.
Servia	—	118.7	119.4
Bulgaria	—	—	87.3
Hungary	80.9	73.1	73.1
Spain	—	41.1	59.3
Prussia	50.5	53.7	56.5
German Empire	48.7	51.6	55.0
Austria	46.6	44.3	49.1
Italy	48.5	—	48.8
England and Wales	51.5	49.8	48.7
France	45.4	43.9	47.7
Denmark	47.9	45.0	46.2
The Netherlands	48.6	43.7	46.2
Finland	46.6	45.5	43.3
Switzerland	38.1	39.7	42.2
Norway	46.5	40.6	41.9
Scotland	40.7	40.1	39.7
Sweden	36.6	35.6	35.3
Ireland	21.9	22.0	23.0

Births.—In several previous Reports attention has been drawn to the general decline in the birth-rate that has taken place in the principal European countries, and in New Zealand and the States of the Australian Commonwealth.

If the average crude birth-rates in the quinquennium 1901-05 are compared with those recorded twenty years earlier (1881-85), it will be seen from the Table on page lviii that, with few exceptions, the fall has been most marked. While the decline did not exceed 2 per cent. in Switzerland, 3 per cent. in Ireland, and 4 per cent. in Spain, it reached 14 per cent. in France and in Italy, and as much as 16 per cent. in Hungary, Servia, and in England and Wales.

Among the Australasian Colonies the decline ranged from 13 per cent. in Western Australia to 36 per cent. in South Australia.

Taking as a standard the average crude birth-rate recorded in England and Wales in the quinquennium 1901-05, viz., 28.1 per 1000, it will be seen that twelve Continental countries had rates above, and only three (Belgium, Sweden, and France) below this standard.

The extent of the variation was from 12.9 per 1000 living above the English rate in Bulgaria to 6.9 below in France; the rates were from 11 to 13 per 1000 above the standard in the Balkan

States, 9.1 in Hungary, 7.5 in Austria, 6.9 in Spain, 6.1 in the German Empire, 4.5 in Italy, 3.4 in the Netherlands, 3.2 in Finland, 0.9 in Denmark, and 0.5 in Norway. Although complete birth statistics for Russia are not available, it is of interest to note that the rate in that country in the quinquennium 1896-1900 was 20 per 1000 in excess of that recorded in England and Wales.

In Switzerland the rate was equal to that in England. In Belgium the rate was 0.4 below the standard, in Sweden 2.0, and in France as much as 6.9 per 1000 below it. In Scotland the rate was 0.8 above, while in Ireland it was 4.9 below the English standard. In the province of Ontario the rate was 6.3 below, and in the Australasian Colonies it ranged from 2.2 above in Western Australia to 3.6 below in South Australia.

ANNUAL BIRTH RATES per 1,000 persons living, 1881-1907.

Countries (Arranged in Order of Rates in 1901-5).	Quinquennial Periods.					Years.		Rate in 1901-5 com- pared with that in 1881-5 taken as 100.
	1881- 1885.	1886- 1890.	1891- 1895.	1896- 1900.	1901- 1905.	1906.	1907.	
Russia (European)	49.1	48.2	48.2	49.3	—	—	—	—
Bulgaria ...	37.0	36.2	37.7	41.3	41.0	44.3	—	111
Roumania ...	41.8	40.9	41.0	40.2	39.4	40.5	41.7	94
Jamaica ...	—	36.8	38.6	38.9	39.0	38.1	35.0	—
Ceylon ...	—	30.3	31.7	37.2	38.8	35.7	32.8	—
Servia ...	46.3	43.7	43.3	40.1	38.7	41.3	—	84
Hungary ...	44.4	43.5	41.7	39.4	37.2	36.0	36.0	84
Chili ...	39.1	35.5	37.0	35.0	36.1	—	—	92
Austria ...	38.2	37.8	37.4	37.3	35.6	34.8	—	93
Spain ...	36.4	36.0	35.3	34.3	35.0	33.4	32.9	96
Prussia ...	37.4	37.3	37.0	36.5	34.8	33.7	33.0	93
German Empire ...	37.0	36.5	36.3	36.0	34.2	33.1	—	92
Italy ...	38.0	37.5	36.0	34.0	32.6	31.9	31.4	86
Japan ...	—	28.5	28.6	31.1	31.7	—	—	—
The Netherlands ...	34.8	33.6	32.9	32.1	31.5	30.4	30.0	91
Finland ...	35.5	34.5	31.8	32.6	31.3	31.4	—	88
Western Australia	34.7	36.9	30.7	28.3	30.3	30.0	29.2	87
Denmark ...	32.4	31.4	30.4	30.0	29.0	28.5	28.3	90
Tasmania ...	35.0	34.1	32.7	28.2	29.0	29.5	29.6	83
Scotland ...	33.3	31.4	30.5	30.0	28.9	27.9	27.0	87
Norway ...	31.2	30.8	30.2	30.1	28.6	26.7	26.3	92
England & Wales	33.5	31.4	30.5	29.3	28.1	27.1	26.3	84
Switzerland ...	28.6	27.5	27.7	28.5	28.1	27.4	—	98
Belgium ...	30.7	29.3	28.9	28.9	27.7	25.7	—	90
New South Wales	37.7	36.4	32.9	28.0	26.7	27.0	27.1	71
Queensland ...	36.5	37.4	34.1	29.1	26.7	26.3	26.9	73
New Zealand ...	36.3	31.2	27.7	25.7	26.6	27.1	27.3	73
Sweden ...	29.4	28.8	27.4	26.9	26.1	25.7	25.5	89
Victoria ...	30.8	32.7	30.9	26.2	25.0	25.1	25.2	81
South Australia ...	38.5	34.7	32.0	27.0	24.5	23.7	23.9	64
Ireland ...	23.9	22.8	23.0	23.3	23.2	23.6	23.2	97
Ontario, Province of	22.4	22.0	19.9	20.1	21.8	23.3	—	97
France ...	24.7	23.1	22.3	21.9	21.2	20.6	19.7	86

Legitimate Natality.—While it is recognised that the results of calculating the birth-rate in proportion to total population are of considerable value, it is at the same time very desirable to ascertain the reasons for such wide discrepancies among the crude birth rates in the different countries. These discrepancies are to some extent due to variations in the civil condition and in the sex and age constitution of the several populations; for example, the birth-rate of Ireland, based on the proportion of births to total population, appears among the lowest in the list of countries given on page lviii; whereas if the rate is based on the proportion of legitimate births to the married women aged 15-45 years, it is found that in the period 1900-2, the fertility of Irish wives is only exceeded in three European countries—the Netherlands, Norway, and Prussia.

The countries possessing the requisite data were therefore asked to furnish returns of the numbers of married women aged 15-45 years in their populations, and of the numbers of legitimate births at the three past census periods; from these data the following Table has been constructed.

LEGITIMATE BIRTH-RATES.

Countries (Arranged in order of rates in 1900-02).	Proportion of Legitimate Births per 1000 Wives aged 15-45 years.			Increase (+) or Decrease (—) per cent. in Fertility during 20 years.
	Approximate periods.			
	1880-82.	1890-92.	1900-02.	
<i>European Countries.</i>				
The Netherlands ...	347.5	338.8	315.3	— 9.3
Norway ...	314.5	306.8	302.8	— 3.7
Prussia ...	312.6	307.6	290.4	— 7.1
Ireland ...	282.9	287.6	289.4	+ 2.3
German Empire ...	310.2	300.9	284.2	— 8.4
Austria ...	281.4	292.4	283.7	+ 0.8
Scotland ...	311.5	296.4	271.8	— 12.7
Italy ...	276.2	?	269.4	— 2.5
Sweden ...	293.0	280.0	269.0	— 8.2
Switzerland ...	284.1	274.0	265.9	— 6.4
Denmark ...	287.1	278.1	259.1	— 9.8
Spain ...	257.7	263.9	258.7	+ 0.4
Belgium ...	312.7	285.1	250.7	— 19.8
England and Wales	286.0	263.8	235.5	— 17.7
France ...	196.2	173.5	157.5	— 19.7
<i>Australian Commonwealth.</i>				
Tasmania ...	?	311.0	256.4	?
Queensland ...	329.0	320.6	252.8	— 23.2
Western Australia*	323.9	338.8	246.4	— 23.9
South Australia ...	326.5	307.5	235.0	— 28.0
New South Wales ...	337.8	298.5	234.3	— 30.6
Victoria ...	299.2	297.8	226.8	— 24.2
New Zealand ...	322.1	277.5	243.2	— 24.5

* The legitimate births in Western Australia are not precisely known, but are estimated to be 95 per cent. of the total births.

It has not been practicable to correct these statistics for differences in the age constitution of the wives at reproductive ages; the figures nevertheless form a valuable measure of human fertility in the several countries.

In reviewing these important figures it appears that among the European countries from which it has been possible to obtain returns, there were only two—Austria and Spain—in which the fertility of wives during the 20 years (1881-1901) showed a tendency to increase, and this also applies to Ireland. In all of the remaining countries a decrease in fertility took place in the period under review, ranging from 2.5 to as much as 19.8 per cent. There were two countries, Italy and Norway, in which the fall was only 2.5 and 3.7 per cent. respectively; in five others, Switzerland, Sweden, the German Empire, the Netherlands, and Denmark, the decrease ranged from 6.4 to 9.8 per cent., in Scotland the decrease was 12.7 per cent., in England and Wales 17.7 per cent., in France 19.7 per cent., and in Belgium 19.8 per cent.

In New Zealand and in the States of the Australian Commonwealth, the decrease in legitimate natality in the period 1881-1901 ranged from 23.2 to 30.6 per cent.

It is probable that there is a common cause operating throughout these countries to account for the phenomenon of a general decline in human fertility, and apart from any decrease due to changes in the age constitution of the married women of conceptive ages, there is strong ground for the assumption that in varying degree that cause is the deliberate restriction of child-bearing on the part of the people themselves.

Deaths.—With few exceptions the crude death-rates in all the Countries from which returns have been received have shown a general decline in the period under review. If the average rates in the quinquennium 1901-05 are compared with those recorded 20 years earlier (1881-85) it will be seen from the table on page lxi that among Continental Countries the decrease amounted to 20 per cent. in Austria, Hungary, Italy and Denmark, to 21 per cent. in Spain, to 23 per cent. in the German Empire, and to as much as 25 per cent. in the Netherlands.

In England and Wales and in Scotland the decrease was 18 and 14 per cent. respectively, while in Ireland the decrease was only 2 per cent.

In the Australasian Colonies the fall in the crude death-rate ranged from 9 per cent. in New Zealand to 41 per cent. in Queensland.

Taking as a standard the average crude death-rate in England and Wales in the quinquennium 1901-05, viz., 16.0 per 1000, it will be seen that twelve European Countries had rates above and three below this standard. In the Netherlands the death-rate was equal to that in England and Wales.

The rates were 10.2 per 1000 above the standard in Hungary, 9.8 in Spain, 9.5 in Roumania, 8.2 in Austria, 6.7 in Bulgaria, 6.4 in Servia, 5.9 in Italy, 3.9 in the German Empire, 3.6 in France, 2.6 in Finland, 1.7 in Switzerland, and 1.0 in Belgium. In Scotland the rate was 0.9 and in Ireland 1.6 above the English standard, and in Sweden, Denmark and Norway it was 0.5, 1.2, and 1.5 per 1000 living, respectively, below it. Mortality Statistics for Russia are not available for a later date than 1902, in which year the death-rate was 31.5 per 1000 living—nearly double the rate recorded in England and Wales.

In the Province of Ontario and in the Australasian Colonies the rates ranged from 3.0 to 6.1 below the rate in England and Wales.

ANNUAL CRUDE DEATH-RATES per 1000 persons living, 1881-1907.

Countries (Arranged in Order of Rates in 1901-5).	Quinquennial Periods.					Years.		Rate in 1901-5 com- pared with that in 1881-5 taken as 100.
	1881- 1885.	1886- 1890.	1891- 1895.	1896- 1900.	1901- 1905.	1906.	1907.	
Russia (European) .	35.4	33.2	35.8	31.9	—	—	—	—
Chili	27.8	35.2	32.6	28.8	30.0	—	—	108
Ceylon	—	25.1	28.3	27.0	26.7	34.3	30.1	—
Hungary	32.9	31.9	31.9	27.9	26.2	24.8	25.2	80
Spain	32.6	30.9	30.1	28.8	25.8	25.6	24.0	79
Roumania	26.2	28.7	31.0	27.4	25.5	24.3	26.7	97
Austria	30.1	28.9	27.9	25.6	24.2	22.5	—	80
Bulgaria	17.8	19.1	28.0	24.1	22.7	22.5	—	128
Jamaica	—	23.5	22.0	22.1	22.6	26.2	28.3	—
Servia	24.5	25.9	28.9	24.8	22.4	24.0	—	91
Italy	27.3	27.2	25.5	22.9	21.9	20.8	20.8	80
Japan	—	20.6	21.1	20.7	20.9	—	—	—
German Empire ...	25.7	24.4	23.3	21.3	19.9	18.2	—	77
France	22.2	22.0	22.3	20.7	19.6	19.9	20.2	88
Prussia	25.4	24.0	22.8	21.0	19.6	17.9	17.8	77
Finland	22.2	20.0	20.5	19.0	18.6	17.5	—	84
Switzerland	21.3	20.4	19.8	18.1	17.7	17.0	—	83
Ireland	18.0	17.9	18.5	18.1	17.6	17.0	17.7	98
Belgium	20.6	20.2	20.1	18.1	17.0	16.4	—	83
Scotland	19.6	18.8	19.0	18.0	16.9	16.0	16.2	86
England & Wales	19.4	18.9	18.7	17.7	16.0	15.4	15.0	82
The Netherlands ...	21.4	20.5	19.6	17.2	16.0	14.8	14.6	75
Sweden	17.5	16.4	16.6	16.1	15.5	14.4	14.6	89
Denmark	18.4	18.7	18.6	16.4	14.8	13.5	14.2	80
Norway	17.2	17.0	16.8	15.6	14.5	13.6	14.2	84
Ontario, Province of	11.4	11.0	10.6	11.6	13.0	14.8	—	114
Victoria	14.7	16.1	14.0	13.7	12.7	12.4	11.7	86
Western Australia.	17.3	16.0	16.3	15.1	12.4	11.8	11.1	72
Queensland	19.2	14.9	12.4	12.0	11.4	9.6	10.3	59
New South Wales.	15.7	13.8	12.8	11.9	11.2	9.9	10.6	71
South Australia ...	14.7	12.6	12.3	12.0	10.8	10.3	9.7	73
Tasmania	16.0	14.9	13.3	12.4	10.8	11.2	11.2	68
New Zealand	10.9	9.9	10.1	9.6	9.9	9.3	10.9	91

It has been frequently pointed out in these Reports that crude death-rates, or the proportion borne by deaths from all causes to 1000 of the population at all ages are a fairly trustworthy test of mortality when comparing the death-rates year by year in a particular country, but the comparison of the crude death-rate of one country with that of another may lead to erroneous conclusions because of the differences in sex and age constitution of the respective populations. For example, the relative number of old people in the population of Ireland is considerably greater, while in the Australian Commonwealth it is considerably less than in England and Wales; for comparative purposes, therefore, the crude death-rate over-states the mortality in Ireland and understates it in the Australian Commonwealth.

Statistics are now in course of preparation with a view to comparing the death-rates at the several age groups in those countries that are able to furnish the requisite data; from these particulars comparative tables will be prepared, showing the corrected death-rate in each country, based on the sex and age constitution of the population obtaining in England and Wales at the census of 1901. Owing, however, to the considerable amount of labour involved in such calculations, it has not been possible to complete the figures in time for publication in this Report. These Tables will, however, be inserted in the next issue.

Natural Increase.—Assuming the registration of births and deaths in the countries dealt with to be reasonably complete, the rates of natural increase of population in the several States can be compared by taking the difference between the birth and death-rates. The countries in which the highest birth-rates obtain are not invariably those in which the highest rates of natural increase prevail, the growth of population depending upon the death-rate as well as upon the birth-rate, the two factors being to some extent inter-dependent.

The average rate of natural increase shows wide variations in the several countries.

The average annual rate in England and Wales in the quinquennium 1901-1905 was 12.1 per 1000 of the total population; taking this figure as a criterion it will be seen that in proportion to total population the natural increment was exceptionally high in several of the Australasian Colonies, in the Balkan States, in Russia, in the Netherlands, in the German Empire, in Denmark, and in Norway; while it was about equal to the English average in Scotland and below it in Austria, Hungary, Japan, Italy, Sweden, Switzerland, Spain, Belgium, and the Province of Ontario. In Ireland the rate was exceptionally low, being only 5.6 per 1000 of population. In France the average birth-rate exceeds, but slightly, the average death-rate, and it may be of interest to note that in six of the past seventeen years the number of deaths exceeded the births.

NATURAL INCREASE.—Mean Annual rate of increase, by excess of Births over Deaths, per 1000 living, 1881-1907.

Countries (Arranged in Order of Rates in 1901-5).	Quinquennial Periods.					Years.	
	1881- 1885.	1886- 1890.	1891- 1895.	1896- 1900.	1901- 1905.	1906.	1907.
Bulgaria	19.2	17.1	9.7	17.2	18.3	21.8	—
Tasmania	19.0	19.2	19.4	15.8	18.2	18.3	18.4
Western Australia	17.4	20.9	14.4	13.2	17.9	18.2	18.1
Russia (European)	13.7	15.0	12.4	17.4	—	—	—
New Zealand	25.4	21.3	17.6	16.1	16.7	17.8	16.4
Jamaica	—	13.3	16.6	16.8	16.4	11.9	6.7
Servia	—	17.8	14.4	15.3	16.3	17.3	—
New South Wales	22.0	22.6	20.1	16.1	15.5	17.1	16.5
The Netherlands	13.4	13.1	13.3	14.9	15.5	15.6	15.4
Queensland	17.3	22.5	21.7	17.1	15.3	16.7	16.6
Prussia	12.0	13.3	14.2	15.5	15.2	15.8	15.2
German Empire	11.3	12.1	13.0	14.7	14.3	14.9	—
Denmark	14.0	12.7	11.8	13.6	14.2	15.0	14.1
Norway	14.0	13.8	13.4	14.5	14.1	13.1	12.1
Roumania	15.6	12.2	10.0	12.8	13.9	16.2	15.0
South Australia	23.8	22.1	19.7	15.0	13.7	13.4	14.2
Finland	13.3	14.5	11.3	13.6	12.7	13.9	—
Victoria	16.1	16.6	16.9	12.5	12.3	12.7	13.5
England & Wales	14.1	12.5	11.8	11.6	12.1	11.7	11.3
Scotland	13.7	12.6	11.5	12.0	12.0	11.9	10.8
Austria	8.1	8.9	9.5	11.7	11.4	12.3	—
Hungary	11.5	11.6	9.8	11.5	11.0	11.2	10.8
Japan	—	7.9	7.5	10.4	10.8	—	—
Belgium	10.1	9.1	8.8	10.8	10.7	9.3	—
Italy	10.7	10.3	10.5	11.1	10.7	11.1	10.6
Sweden	11.9	12.4	10.8	10.8	10.6	11.3	10.9
Switzerland	7.3	7.1	7.9	10.4	10.4	—	—
Spain	3.8	5.1	5.2	5.5	9.2	7.8	8.9
Ontario, Province of	11.0	11.0	9.3	8.5	8.8	8.5	—
Chili	11.3	0.3	4.4	6.2	6.1	—	—
Ireland	5.9	4.9	4.5	5.2	5.6	6.6	5.5
France	2.5	1.1	0.0	1.2	1.6	0.7	-0.5

Infantile Mortality.—The accompanying Table shows the relative incidence of infantile mortality in those countries that have been able to furnish returns. With few exceptions those populations in which a high rate of infantile mortality prevails are those in which a high birth-rate obtains. Austria, Hungary, Prussia, and Spain come under this category; while France appears to be a notable exception, the birth-rate being low and the child mortality comparatively high.

In Ireland, in Norway, in New Zealand, and in all the States of the Australian Commonwealth, except Western Australia, the rates of infantile mortality are exceptionally low; and in this connection it is of interest to note that speaking generally the mortality in these countries from measles, scarlet fever, diphtheria, and whooping cough is low.

DIPHTHERIA and CROUP.—DEATH-RATES per 1000 persons living, 1881-1907.

Countries (Arranged in Order of Rates in 1901-5).	Quinquennial Periods.					Years.	
	1881- 1885.	1886- 1890.	1891- 1895.	1896- 1900.	1901- 1905.	1906.	1907.
Servia ...	—	—	—	—	0.66	0.52	—
Hungary ...	—	—	—	0.67*	0.47	0.35	0.35
Austria ...	1.46	1.34	1.22	0.80	0.43	—	—
Prussia ...	1.72	1.57	1.34	0.59	0.40	0.27	0.24
Sweden ...	0.85	0.52	0.61	0.44	0.34	—	—
Ontario, Province of	0.70	0.65	0.44	0.27	0.30	0.19	—
Spain ...	—	—	—	—	0.25	0.18	0.18
Belgium ...	0.78	0.66	0.49	0.27	0.21	0.16	—
Switzerland ...	0.64	0.34	0.46	0.29	0.21	0.15	—
England & Wales†	0.16	0.17	0.25	0.27	0.20	0.18	0.16
Scotland† ...	0.21	0.22	0.22	0.16	0.15	0.17	—
Italy ...	—	0.74*	0.51	0.24	0.14	0.13	0.17
Roumania ...	—	0.19	0.20	0.29	0.13	0.07	0.06
The Netherlands†	0.12	0.15	0.16	0.10	0.10	0.06	0.06
Victoria† ...	0.15	0.41	0.20	0.15	0.10	0.04	0.07
Western Australia†	0.18	0.09	0.11	0.10	0.10	0.23	0.24
Japan ...	0.03	0.04	0.07	0.13	0.09	—	—
Ireland† ...	0.06	0.08	0.07	0.08	0.08	0.08	0.06
New South Wales†	0.24	0.26	0.29	0.09	0.08	0.07	0.09
Queensland† ...	0.17	0.28	0.26	0.11	0.08	0.07	0.10
South Australia ...	0.57	0.50	0.40	0.11	0.07	0.04	0.04
Tasmania† ...	—	0.26	0.27	0.08	0.05	0.02	0.04
New Zealand†	0.20	0.18	0.17	0.08	0.04	0.04	0.06

* 4 years.

† Excluding Croup.

WHOOPIING COUGH.—DEATH-RATES per 1000 persons living, 1881-1907.

Countries (Arranged in Order of Rates in 1901-5).	Quinquennial Periods.					Years.	
	1881- 1885.	1886- 1890.	1891- 1895.	1896- 1900.	1901- 1905.	1906.	1907.
Servia ...	—	—	2.42*	2.27	1.96	1.52	—
Scotland ...	0.60	0.61	0.52	0.51	0.49	0.29	—
Austria ...	1.10	0.97	0.71	0.53	0.44	—	—
Hungary ...	—	—	—	0.59*	0.42	0.40	0.43
Belgium ...	0.68	0.63	0.55	0.48	0.38	0.35	—
Prussia ...	0.52	0.51	0.45	0.42	0.36	0.31	0.23
England & Wales	0.46	0.44	0.40	0.36	0.30	0.24	0.29
Ireland ...	0.30	0.28	0.26	0.27	0.24	0.21	0.18
Spain ...	—	—	—	—	0.23	0.24	0.17
The Netherlands ...	0.35	0.30	0.32	0.26	0.21	0.18	0.18
Italy ...	—	0.37*	0.26	0.23	0.20	0.18	0.18
Switzerland ...	0.24	0.22	0.19	0.17	0.20	0.19	—
Sweden ...	0.19	0.17	0.17	0.20	0.18	—	—
Roumania ...	—	0.04	0.12	0.17	0.16	0.20	0.16
Tasmania ...	—	0.13	0.10	0.11	0.13	0.01	0.26
New South Wales ...	0.15	0.19	0.19	0.14	0.12	0.01	0.38
South Australia ...	0.23	0.17	0.17	0.15	0.10	0.04	0.19
Queensland ...	0.14	0.16	0.18	0.19	0.09	0.02	0.22
Victoria ...	0.15	0.13	0.15	0.08	0.09	0.20	0.10
Western Australia ...	0.12	0.31	0.17	0.10	0.09	0.04	0.39
New Zealand... ..	0.22	0.15	0.23	0.07	0.08	0.03	0.33
Ontario, Province of	0.10	0.09	?	0.07	0.08	0.11	—
Japan ...	—	—	—	—	0.05	—	—

* 4 years.

ENTERIC FEVER.—DEATH-RATES per 1000 persons living, 1881-1907.

Countries (Arranged in Order of Rates in 1901-5).	Quinquennial Periods.					Years.	
	1881- 1885.	1886- 1890.	1891- 1895.	1896- 1900.	1901- 1905.	1906.	1907.
Finland ...	2.20	2.06	2.03	1.69	1.54	1.57	—
Servia ...	—	—	1.53	1.13	0.68	0.16	—
Western Australia ...	0.39	0.28	1.50	1.74	0.57	0.49	0.47
Spain ...	—	—	—	—	0.44	0.42	0.35
Italy ...	—	0.79*	0.51	0.50	0.35	0.28	0.25
Hungary ...	—	—	—	0.38*	0.28	0.27	0.26
Queensland ...	0.96	0.53	0.24	0.31	0.25	0.17	0.16
New South Wales ...	0.51	0.45	0.24	0.30	0.22	0.18	0.12
Ontario, Province of	0.27	0.24	?	0.21	0.20	0.40	—
Austria ...	0.73	0.58	0.44	0.27	0.19	—	—
Belgium ...	0.56	0.40	0.34	0.24	0.17	0.12	—
South Australia ...	0.43	0.37	0.22	0.29	0.16	0.13	0.10
Victoria ...	0.52	0.61	0.27	0.29	0.16	0.13	0.07
Tasmania ...	—	0.58	0.30	0.30	0.15	0.20	0.21
Ireland ...	0.16	0.17	0.17	0.21	0.13	0.09	0.08
Roumania ...	—	—	0.16	0.12	0.13	0.16	0.17
England & Wales	0.22	0.18	0.17	0.17	0.11	0.09	0.17
Scotland ...	0.27	0.19	0.18	0.16	0.11	0.08	—
The Netherlands†	0.18	0.13	0.12	0.10	0.09	0.08	0.07
Prussia ...	0.47	0.25	0.18	0.13	0.09	0.06	0.06
Sweden† ...	0.27	0.23	0.20	0.15	0.09	—	—
New Zealand... ..	0.23	0.22	0.17	0.14	0.08	0.05	0.06
Switzerland ...	0.29	0.16	0.11	0.08	0.06	0.05	—

* 4 years.

† Including Typhus.

‡ Including Brain Fever.

speaking, however, sensible reductions in the rates of mortality from these diseases have taken place in many European countries.

In regard to the death-rate from enteric fever, the figures in the above Table show that in nearly all countries a gratifying diminution in the mortality from this disease has taken place; the reduction being exceptionally marked in Austria, Prussia, and Switzerland.

While the rate is still high in Finland, Servia, Spain, Italy, and Hungary, it is comparatively low in England and Wales, Scotland, the Netherlands, Prussia, Sweden, and Switzerland. Enteric fever is permanently prevalent in nearly all countries, but it is worthy of note that, according to the reports of various sanitary authorities, the decline in the mortality has generally coincided with the introduction of pure public water supplies.

Pulmonary Tuberculosis and Cancer.—Disregarding possible variations in the methods of classification of the deaths, as well as in the sex and age constitution of the populations, it is possible to make a rough comparison among several countries, as regards the relative incidence of mortality from these two important diseases. Several States were unable to furnish complete returns of mortality from phthisis or from cancer. For example, no comparison can be instituted as regards France, Denmark, Sweden, Roumania, or Bulgaria, as the statistics of those countries are limited to towns only; again in Hungary and in Prussia

the returns comprise deaths from all forms of tuberculosis, while in Italy deaths from general tuberculosis are included under pulmonary tuberculosis.

Pulmonary Tuberculosis.—The death-rate from this disease in Austria, Hungary, Servia, and Ireland is still abnormally high, and shows little or no signs of decreasing, but in Prussia, Scotland, the Netherlands, England and Wales, and Belgium a marked diminution in the rate of mortality has taken place in recent years. In proportion to the total population the death-rate from pulmonary tuberculosis in England and Wales in the quinquennium 1901-5 was 1.22 per 1000 living. It appears from the figures in the table that this rate was exceeded in seven continental countries, while in only two others were the average rates below that recorded in this country. In Hungary and in Prussia, as already stated, the returns include deaths from all forms of tuberculosis, the death-rate in those countries, however, is in excess of that from all forms of tuberculosis in England and Wales.

PULMONARY TUBERCULOSIS.—DEATH-RATES per 1000 persons living, 1881-1907.

Countries (Arranged in Order of Rates in 1901-5).	Quinquennial Periods.					Years.	
	1881- 1885.	1886- 1890.	1891- 1895.	1896- 1900.	1901- 1905.	1906.	1907.
Hungary†	—	—	—	3.64*	3.94	3.84	3.84
Austria...	3.90	3.80	3.60	3.45	3.40	—	—
Servia ...	—	—	2.51*	2.31	2.80	2.87	—
Ireland ...	2.08	2.12	2.14	2.13	2.15	2.04	2.02
Prussia†	3.13	2.90	2.47	2.08	1.91	1.71	1.70
Switzerland ...	2.09	2.13	1.99	1.90	1.89	1.84	—
Spain ...	—	—	—	1.46	1.44	1.44	1.38
Japan ...	—	1.01	1.36	1.45	1.46	—	—
Scotland ...	2.11	1.89	1.74	1.65	1.45	1.36	—
The Netherlands ...	—	—	1.89	1.65	1.33	1.34	1.30
Ontario, Province of	1.25	1.16	1.14	1.41	1.29	1.31	—
England & Wales	1.83	1.64	1.46	1.32	1.22	1.15	1.14
Belgium ...	—	—	1.56	1.42	1.18	1.05	—
Italy†	—	1.37*	1.29	1.25	1.16	1.22	1.24
Victoria ...	1.41	1.45	1.33	1.19	1.12	0.99	0.96
Queensland ...	1.74	1.29	1.06	0.87	0.81	0.68	0.64
New South Wales ...	1.14	0.99	0.87	0.80	0.80	0.66	0.62
South Australia ...	1.06†	1.07	1.01	0.89	0.80	0.82	0.76
Western Australia ...	0.87	0.94	0.75	0.67	0.73	0.82	0.78
New Zealand ...	0.91	0.84	0.81	0.78	0.70	0.62	0.67
Tasmania ...	—	0.97	0.87	0.70	0.63	0.66	0.63

* 4 years. † All forms of Tuberculosis.
‡ Including General Tuberculosis.

Cancer.—In comparing the rates of mortality from cancer, it is necessary to bear in mind that the certification of causes of death is more complete or more accurate in some countries than in others, and that in most countries it has probably shown improvement in later years. Thus, in Norway only 50 per cent. of the causes of death were stated in 1881, against 85 per cent. in 1901; in the German Empire the statistics of

cancer were available for ten of the principal federated states previous to 1904, while from that year statistics for 13 other smaller states are added. For Hungary it is probable that the rates are under-stated, and in Ceylon the registration of causes of death is admittedly so imperfect that very little reliance can be placed on the returns; in France, Denmark, Sweden, Roumania, and Bulgaria, deaths from Cancer are tabulated for the towns only, and the mortality is not, therefore, fairly comparable with that in the other states; these countries are consequently not included in the following Table.

Even in those cases where the compilation of statistics may be regarded as fairly trustworthy, it must be borne in mind that cancer is a disease mainly confined to adult life, and variations in the age-constitution of the several populations may therefore considerably affect the crude rates stated in the Table.

Subject to the above important reservations, the general conclusion appears to be that this country occupies an unenviable position with respect to mortality from cancer; the rate in England and Wales being exceeded in only two European countries, viz., Switzerland and the Netherlands. Scotland occupies a slightly better position, and Ireland, notwithstanding its abnormal age constitution, a much better position. The mortality ascribed to this cause varies very considerably in the several Australasian States, ranging from 0.74 per 1000 in Victoria to 0.45 per 1000 in Western Australia in the quinquennium 1901-05.

In all the countries from which returns have been received the proportionate mortality from cancer has shown a general tendency to increase in recent years.

CANCER.—DEATH-RATES per 1000 persons living, 1881-1907.

Countries (Arranged in Order of rates in 1901-5).	Quinquennial Periods.					Years.	
	1881- 1885.	1886- 1890.	1891- 1895.	1896- 1900.	1901- 1905.	1906.	1907.
Switzerland ...	1.03	1.14	1.22	1.27	1.30	1.32	—
The Netherlands ...	0.60	0.70	0.81	0.92	0.97	1.01	1.02
England & Wales	0.55	0.63	0.71	0.80	0.86	0.92	0.91
Scotland ...	0.54	0.62	0.69	0.77	0.84	0.94	—
Austria ...	0.44	0.50	0.59	0.69	0.74	—	—
Victoria ...	0.45	0.53	0.62	0.69	0.74	0.75	0.80
Ireland ...	0.38	0.43	0.49	0.58	0.60	0.79	0.76
New Zealand ...	0.30	0.42	0.52	0.59	0.67	0.70	0.73
South Australia ...	0.32	0.39	0.48	0.56	0.67	0.74	0.70
Prussia ...	0.34	0.41	0.50	0.57	0.65	0.70	0.73
New South Wales ...	0.27	0.36	0.43	0.54	0.64	0.68	0.70
Belgium ...	—	—	—	—	0.58†	0.58	—
Queensland ...	0.25	0.27	0.34	0.44	0.57	0.55	0.65
Tasmania ...	—	0.49	0.49	0.55	0.56	0.52	0.63
Italy ...	—	0.43*	0.44	0.51	0.55	0.62	0.61
Ontario, Province of	0.21	0.29	?	0.44*	0.52	0.64	—
Spain ...	—	—	—	—	0.44	0.48	0.47
Western Australia ...	0.33	0.41	0.31	0.31	0.45	0.59	0.50
Hungary ...	—	—	—	0.30*	0.39	0.40	0.42
Servia ...	—	—	0.06*	0.08	0.10	0.11	—

* 4 years. † 3 years.

FINAL REMARKS.

By way of summarising the progress of civil registration in this country, as set forth in detail in the several annual reports which I have had the honour of presenting to your predecessor and yourself since I first entered on the duties of this Office, I would draw your attention to the following facts:—

The statistical records of the General Register Office respecting the first seven years of the current century indicate a gratifying reduction in the mortality of England and Wales. For the first three of these years the rate fell steadily—the loss of life in each successive year being less than that of its predecessor.

After a slight increase in 1904, the rate again fell in the following year, and was the lowest on record. In 1906 the fall on the unprecedentedly favourable rate of the previous year was temporarily interrupted, but it was again resumed in the year now under review. The death-rate of 1907 was only 15 in each thousand of the population—a rate that was lower than in any previous year, representing a fall of more than 11 per cent. since 1901.

And here I would direct attention to the valuable note (see page cxxxii) contributed by Mr. Alfred Waters, Chief Clerk of this Department, showing a simplification of the method previously devised by him for estimating local populations during the years of a completed intercensal period, and suggesting the feasibility of extending the method to current estimates of population.

The causes of death in the year under notice are fully discussed in Dr. Tatham's letter to me, which forms a most interesting and instructive portion of the Annual Report. See page lxxiv.

The fall in infantile mortality in the year 1907 merits special attention, more particularly as this fall was mainly due to a rate in the third or summer quarter which was so low as to be without precedent. In normal circumstances the infantile mortality is higher in the third quarter than in any other part of the year, and so recently as 1899 the deaths of infants under one year of age in the third quarter averaged 255 to every 1,000 infants born during the same period. In the third quarter of 1907, however, the deaths under one year of age were fewer than in any other quarter of the year and averaged only 99 to every 1,000 infants born.

It is commonly understood that infantile mortality is generally high during hot and dry summers, and low during cool and rainy summers. There have, however, been cooler and more rainy summers than that of 1907, but in none of them has the infantile mortality fallen so low. For example, in the third quarter of 1888 the mean earth temperature at Greenwich was 59°·3, the amount of the rainfall was 11·2 inches, the infantile mortality being 135 per 1,000 births: whereas in 1907, with a mean earth temperature of 59°·2 and a rainfall of 3·5 inches, the infantile mortality was only 99 per 1,000 births. It may, therefore, reasonably be inferred that the favourable result in 1907 is in some part due to increasing care in the feeding and general treatment of infants, and it may be hoped that this inference will before long be confirmed by a comparatively low rate of infantile mortality in a warm and dry summer.

It is a point of considerable interest to note the effect of reduced infantile mortality on the average life-time. The Life Table based on the Mortality Statistics of 1891–1900, which was pub-

lished in the Decennial Supplement, showed an average life-time of 44·13 years for every male child born. But had the mortality of male infants in those ten years been as low as the mortality of male infants was in 1907, this change alone would have raised the average life-time to 46·33 years. And, similarly, had the mortality of female infants been as low in 1891–1900 as it was in 1907, the Life Table would have shown the average female life-time to be 49·77 years instead of 47·77 years. The effect of low infant mortality in counteracting a declining birth-rate may be shown in another way by means of the figures for recent years. The birth-rate in 1907 was 26·3 per 1000, against an average of 28·4 in the ten years immediately preceding. But in those ten years only 855 out of every 1,000 infants lived to be one year of age; that is to say, the birth-rate of 28·4 corresponded to a "one year old rate" of 24·3. In the year 1907 the rate of survival to one year was 882 per 1,000, and therefore the birth-rate of 26·3 per 1,000 corresponded to a "one year old rate" of 23·2. Therefore, although the birth-rate in 1907 showed a falling off of 2·1 per 1,000 of population compared with that of 1897–1906, the "one year old rate" showed a falling off of only 1·1 per 1,000; and I would point out that further calculation shows that if the rate of survival to one year of age could have been raised to 924 per 1,000 in 1907, the "one year old rate" in 1907 would have been 24·3, or precisely the same as in 1897–1906, notwithstanding the reduction in the birth-rate. If, therefore, the rate of infantile mortality should still further fall it will have an important bearing on the effective upkeep of the population.

The Notification of Births Act received the Royal Assent on the 28th August, 1907. It only operates in areas where it has been adopted by a resolution of the local authority, subject to the sanction of the Local Government Board, or has been declared in force by that Board. The areas within which the Act now operates I am glad to note are gradually increasing in number. On 1st December, 1908, the Act had been adopted in the City of London, in 16 metropolitan boroughs, in 43 county boroughs, in 27 municipal boroughs, and in 34 urban districts, making in the aggregate 121 areas in which the Act is operative; and by the 1st January, 1909, it will also run in Wakefield, Mansfield, and Shrewbury municipal boroughs. It is too early, however, to express an opinion on the benefits likely to be derived from its provisions as regards the reduction of infantile mortality; but I trust the system may, as suggested in my Annual Report of 1904, "along with other motive forces serve as a most lasting and effective barrier with which to stem the tide of infantile mortality."

As regards the mortality at later stages of life, it appears that the decline in phthisis fatality which had obtained, with only slight intermissions, for many previous years, has continued in the year under review. In the course of his remarks on the decrease of pulmonary consumption Dr. Tatham has inserted a table showing, for the quinquennium last ended, the corrected mortality from this disease in those counties of England and Wales in which the rates exceed the average. The table shows an enormous difference in the local incidence of fatality from this scourge; and in the absence of local knowledge it is difficult to understand why the phthisis death-rate of Cardiganshire should be almost double that of several other counties in the list. Surely this is a matter that requires the earnest

consideration of the authorities responsible for the care of the public health.

It is encouraging to notice that a break has at length occurred in the sad increase of cancer fatality which has persisted for so many years, the recorded death-rate from cancer in 1907 being slightly lower than that of the preceding year. The serious nature of this increase of cancer mortality for many previous years will be appreciated on reference to the chart facing page cx.

Another satisfactory feature of the year's record is the exceptionally low mortality from enteric fever, the death-rate being the lowest on record. Among other diseases influenza, pneumonia, bronchitis, and circulatory diseases showed a somewhat greater prevalence than usual last year; and among ordinary infectious ailments of children measles has been more fatal than the average, while scarlet fever, diphtheria, and diarrhoeal diseases have been less fatal. With these exceptions the mortality in 1907 has not differed greatly from what has been normal in recent years.

I have once more to tender my best acknowledgments to the Colonial and Foreign Official Statistical Authorities, who have so courteously furnished me with the information from which the International Vital Statistics included in this Report have been compiled, under the special supervision of Mr. Archer Bellingham of the Statistical Branch of this Department. As regards these statistics, I desire to direct particular attention to the improvement which has been made in the comparative tables relating to marriages, births, deaths, infantile mortality, and natural increase, all of which have for the first time been compiled in quinquennial periods dating from 1881 to 1901.

The other fresh and important features of these returns are a set of new tables in connection with the epidemic diseases, namely, measles, scarlet fever, diphtheria and croup, whooping cough, and enteric fever; and quinquennial tables of the death-rates in regard to pulmonary tuberculosis and cancer also appear for the first time. I trust these additions to the International Vital Statistics may be of value, as well as of interest, especially to those statisticians and others who may study them for comparative purposes, always bearing in mind the frequently changing circumstances and environment, social and industrial, of the different countries to which they relate.

To Dr. W. N. Shaw, F.R.S., I am again indebted for the admirable series of quarterly returns, and for the annual report on meteorology relating to 1907, with which he has favoured my Department.

In conclusion, I desire again to offer my thanks to the medical profession throughout the country for the willing and valuable assistance they have rendered Dr. Tatham and myself in our endeavours to improve the vital statistics of England and Wales, and I feel sure that their services in this respect will be fully appreciated by yourself.

I have the honour to be,

Sir,

Your faithful Servant,
WILLIAM COSPATRICK DUNBAR,
Registrar-General.

General Register Office,
Somerset House,
December, 1908.

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ANALYSIS OF THE
CAUSES OF DEATH IN ENGLAND AND WALES.

Letter to the REGISTRAR-GENERAL

By JOHN TATHAM, ESQ., M.A., M.D., Fellow of the Royal College
of Physicians.

SIR,

I HAVE the honour to submit for your consideration the following remarks on English mortality in the year 1907. Amongst other details connected with registration, the incidence of general mortality, with special reference to that of the infant portion of the community, has been fully discussed by you in preceding pages of this Report. The duty which you have entrusted to me, namely, that of supplementing your statistics by an analysis of the causes that are responsible for mortality in the aggregate, has been discharged to the best of my ability in the following pages.

In the course of the accompanying remarks particulars will be found of the changes in 1907 in the fatality of the principal diseases in the official list which, since the beginning of this century, has been employed in these reports. Before going into detail I may remark that the unprecedentedly low mortality of the year under notice was largely due to favourable climatic conditions. This will be clear from the report of Dr. W. N. Shaw, F.R.S., the high value of whose continued assistance you have already suitably acknowledged.* Much of the saving of life represented by the low death-rate of 1907 was due to the lessened fatality of diarrhoeal diseases, which in that year were responsible for only half as many deaths as usual. The mortality from tuberculous diseases was also below the normal. It is an encouraging fact that in the year under notice, for the first time in the last 15 years, the mortality from malignant disease showed a slight decline on that of the year immediately preceding, although it somewhat exceeded that of the quinquennium ended 1906. On the other hand influenza showed increased mortality, which was accompanied by increased mortality from pneumonia and bronchitis, as well as from circulatory diseases. Among familiar epidemic diseases, measles showed increased mortality, but diphtheria was less destructive than usual, whilst the mortality from scarlet fever and from enteric fever was the lowest on record. From other causes the mortality did not vary widely from the average. From what follows it will appear that not only the death-rate at all ages but the infantile death-rate also was the lowest on record. For the present report, as for its predecessor, the deaths of infants have been

* See Remarks on the Conspicuous Meteorological Occurrences in the British Isles in 1907; by W. N. Shaw, Esq., Sc.D., F.R.S., page cxxxv.

abstracted to show the loss of life from the chief causes in each of the first four weeks, and in each month of the first year of life.

Owing to the wide differences revealed by the statistics of 1906 in the mortality of illegitimate as contrasted with that of legitimate children, tables similar to those previously published have been prepared for the present report. While an enormous excess is still apparent in the mortality of children born out of wedlock, it is satisfactory to note that these unfortunates have participated, equally with their more fortunate brothers and sisters, in the general fall of mortality.

In the series of tables and in the letterpress accompanying this report the attempt has been renewed to show the local incidence and the fatality of certain diseases that are most important from a preventive point of view. With respect to those maladies that are fatal at particular ages comparison of the local death-rates, in terms of the living at the same ages, may safely be made. But, in comparing the local prevalence of diseases that are fatal in differing degrees at all stages of life, a difficulty is encountered to which it is necessary yet again to draw attention. The census returns show that the proportion of the living at each age-group varies according as a given locality is mainly urban or mainly rural in character; and, as the mortality from most diseases also varies with the age of the patient, it follows that crude death-rates at all ages computed without allowance for these variations are untrustworthy for comparative purposes. Accordingly, for several years past the death-rates in these reports have been reduced to a common standard; and, in many of the comparative tables in the present volume there are shown the rates that would have prevailed had the age and sex constitution of the population in the several areas been similar to that of England and Wales generally. These are the "corrected" rates frequently referred to in your reports.

Table H on page xxxvii proves that the death-rates of practically all the mainly urban counties have been raised, and those of the mainly rural counties have been reduced, by correction for age and sex constitution of the population. If, for example, the mortality of the essentially urban county of Lancaster be contrasted with that of Cardigan, which is mainly rural, the death-rate of the former county will be found to have been increased by correction from 17.0 to 18.8, whilst that of the latter county has been reduced from 17.8 to 14.1 per 1000. In other words, whilst the crude rate of Lancashire is lower by 45 per cent. than that of Cardiganshire, the corrected rate shows an excess of 33.3 per cent. The explanation of these differences is the following, that whilst Lancashire contains an abnormally small proportion of persons at the more advanced ages when the rate of mortality is exceptionally high, Cardiganshire contains an abnormally large proportion; in the former county less than 3½ per cent. of the population exceeds the age of 65 years, whereas in the latter county the proportion amounts to almost 9 per cent. From this it is evident that crude death-rates cannot properly be used for comparative purposes.

I have pleasure in drawing attention to the progressive improvement that has recently taken place in the medical attestation of

cause of death, a substantial decrease being now apparent in the ill-defined causes enumerated in the official mortality tables. In the quinquennial period commencing with 1875, in which year the medical certification of cause of death was first made compulsory, the deaths of which the cause was insufficiently defined were equal to 12.0 per cent. of the total, whilst, a quarter of a century later, namely, in the quinquennial period last ended, the proportion had fallen to 9.4 per cent. From the view point of vital statistics, as well as from that of scientific medicine, it would be difficult to overrate the importance of accurate certification; for, as long as this remains imperfect it will always be doubtful whether a given change of mortality is real, or whether it depends on transference from one disease heading to another. In this connection I would ask leave to refer, yet again, to the subject of uncertified deaths. You have already stated that the proportion of these deaths has now fallen to 1.45 per cent. of the deaths registered, whilst the proportion of cases in which inquests are held is the highest since the commencement of the current century, amounting to 6.96 per cent. of the whole.

You have further stated that in the year under notice the causes of 91.59 per cent. of the deaths were returned as certified by Registered Medical Practitioners. It is certain, however, that this figure does not fully represent the proportion of cases in which medical assistance had been rendered to the sick in their *last illness*. In cases of inquest on the bodies of persons who had received medical attention during life, the cause of death is copied from the coroner's certificate, which supersedes the medical certificate entirely; but, except in cases where an autopsy has taken place, it is seldom possible to ascertain from the Coroner's certificate whether or not medical evidence has been given, or the purport thereof, if given. Having regard to the importance of securing registration of the actual cause of death, it appears to me essential that in every case where an inquest has been held, and in which medical evidence is available, there should be appended to the certificate of the finding of the jury, either (1) a medical certificate of cause of death, or (2) the substance of any medical evidence given at the inquest.* Substantially this was the deliberate opinion of the Home Office Committee which made a strong recommendation to this effect in their Report to the Home Secretary in the year 1899.†

MORTALITY FROM ALL CAUSES.

As in previous Annual Reports the causes of death of males and females at specified age groups will be found in the abstracts at pages 294 to 309 of the present volume; and in the tables on pages 22 to 63 the deaths are shown at all ages, from the same causes, for a series of 20 years. In the lower part of these tables the facts have been reduced to rates per million living of the

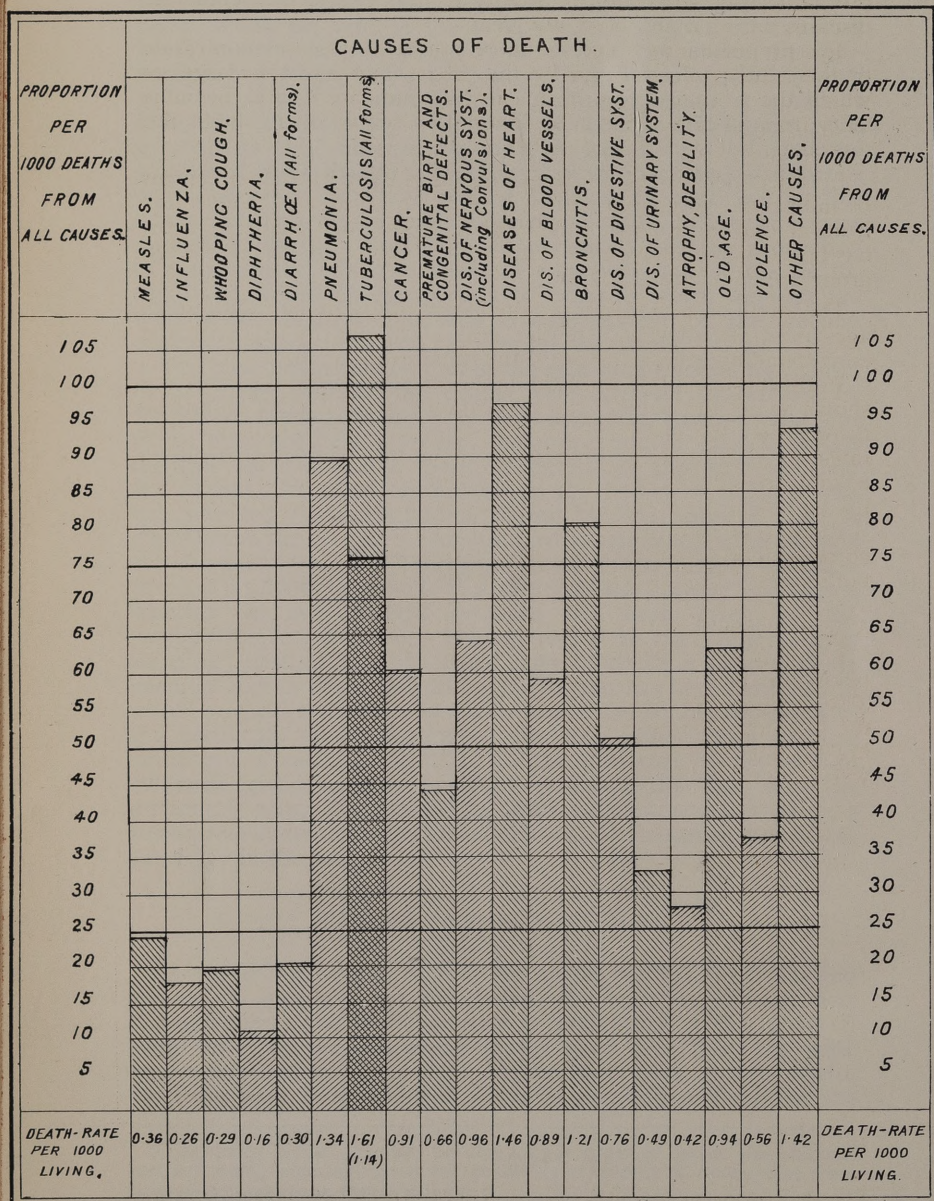
* Legislation would obviously be necessary in order to secure this change; and, in framing such legislation, the possibility of conflict of evidence in some cases would have to be borne in mind.

† Report of the Departmental Committee on the Manufacture of Water Gas, 1899, page xi. (C. 9,164).

ENGLAND & WALES.

CAUSES OF DEATH.

DIAGRAM VII.— DEATHS FROM THE PRINCIPAL CAUSES TO 1000 DEATHS FROM ALL CAUSES: 1907.



Note:—The total shaded portion represents the total deaths and is equal to a single column 40 inches in height. The darker portion of the column for Tuberculosis refers to Phthisis.

respective sexes. At page 21 Table 20 is continued from previous reports; it shows the average mortality from certain causes in each of seven quinquennia, beginning with the year 1871. At page 64 Table 27 is likewise continued from previous reports; this table traces back the mortality from the principal epidemic diseases during a period of fifty years.

The proportion in which the more prevalent diseases contribute to the death roll is shown by the Chart opposite this page, in which the mortality from each cause is compared with the mortality from all causes, the latter being represented by a column the total height of which is 40 inches.

In order to show the incidence of mortality in the chief centres of industry as compared with that of the rural areas, the selection from among the English and Welsh Counties, first made in 1901, has been retained since that date. The counties in each selected group are enumerated at foot.*

The table on p. lxxviii gives the annual rates of mortality at all ages and from all causes in the year 1907, side by side with the corresponding average rates for the quinquennium 1902-06.

In this table, as well as in the table on page lxxix, the rates are shown as per thousand of the population; but if decimal points be disregarded the rates will, of course, read as per million. The rates, corrected for age differences among the living, are set out in columns parallel to the crude rates; and, for the sake of clearness, the figures in the several columns are printed in distinctive type.

In the year 1907 the deaths from all causes in England and Wales corresponded to a rate of 15.001 per 1000 living at all ages and of both sexes. This rate is the lowest on record, and is below the average rate in the five-year period ended 1906, by 4.4 per cent. Among males the rate was equal to 15.952 per 1000 living of that sex, and among females to 14.113 per 1000—these rates being below the quinquennial averages by 5 and 4 per cent. respectively. The table further shows that both in the year 1907 and in the previous quinquennium the urban rates of mortality were higher than the rural, and that in both areas the rates for males were considerably above those for females. In each sex, as

* (i) Urban Registration Counties.

- Glamorgan.
- Lancaster.
- London.
- Middlesex.
- Monmouth.
- Northumberland.
- Nottingham.
- Stafford.
- Warwick.
- East Riding } Yorks.
- West Riding }

(ii) Rural Registration Counties.

- Buckingham.
- Cambridge.
- Cornwall.
- Hereford.
- Huntingdon.
- Lincoln.
- Norfolk.
- North Wales.
- Oxford.
- Rutland.
- Salop.
- Somerset.
- South Wales (less Glamorgan).
- Suffolk.
- Westmorland.
- Wilts.

Estimated population of Urban Counties, middle of 1907—18,945,946.

Estimated population of Rural Counties, middle of 1907—4,371,564.

well as in each county group, there has been a fall in the general death-rate, compared with the average in the previous five years. From this table it appears that correction for age and sex constitution of population has increased the average general death-rate in the urban group of counties by 4·4 per cent., and has reduced the average rate in the rural group by 12·2 per cent.

All Causes.		Crude Rates.	Corrected Rates.*		
			Average, 1902-06.	Year 1907.	Ratio.†
Mortality at All Ages.		Average, 1902-06.	Average, 1902-06.	Year 1907.	Ratio.†
Both Sexes	England & Wales	15·694	15·694	15·001	96
	Urban Counties ...	16·489	17·214	16·429	95
	Rural Counties ...	15·096	13·256	12·768	96
Males	England & Wales	16·763	16·763	15·952	95
	Urban Counties ...	17·669	18·432	17·542	95
	Rural Counties ...	15·866	13·997	13·428	96
Females	England & Wales	14·694	14·694	14·113	96
	Urban Counties ...	15·384	16·074	15·388	96
	Rural Counties ...	14·380	12·561	12·150	97

* These are the death-rates at all ages that would have resulted from the rates prevailing at the separate age-groups, if the sex and age constitution of the populations in the urban and rural areas, severally, had been identical with that of the population of England & Wales, as enumerated at the Census of 1901.

† i.e., the ratio of the corrected death-rates in 1907 to those in 1902-06, the latter taken as 100.

The method of correcting rates of mortality for variation in the age and sex constitution of the living is set forth on page xxxviii of your sixty-eighth Annual Report.

The following table shows the death-rates of each sex per 1000 living at several groups of ages, the areas dealt with being those specified in the preceding table. Speaking generally the rates in 1907 show a reduction, as compared with the average, at all age groups below 55 years, the reduction being greatest among children below the fifth year; this is mainly due to the exceptionally low fatality from diarrhoeal diseases in the autumn of the year. At ages above 55 there appears to have been a slight increase in the fatality of those diseases which ordinarily show excessive prevalence in the later years of life, among which are influenza, pneumonia, bronchitis, and diseases of the circulatory system. In England and Wales as a whole and in the urban county group the changes in mortality, as compared with that of the preceding quinquennium, have been similar in both sexes, but in the rural group the changes have been somewhat irregular.

The experience of 1902-06 confirms that of previous years in showing that in both sexes the mortality in the urban area generally exceeds that in the rural, at the several stages of life. This is especially true respecting children under the age of 10 years, and adults at ages 35-65 years; the greatest difference occurring among children under five years of age. On the other hand, the rates for 1902-06 agree with those of recent

previous years in showing excessive mortality in the rural counties among young adults of both sexes—in men at ages 20-25, and in women at ages 15-25. This feature has been strongly marked in the case of young adults dying of pulmonary tuberculosis.*

All Causes.	Average 1902-1906.			Year 1907.			
	England and Wales.	Urban Counties.	Rural Counties.	England and Wales.	Urban Counties.	Rural Counties.	
Mortality at Age Groups.							
Both Sexes.	0—	47·558	54·067	35·001	40·886	46·583	29·919
	5—	3·576	3·935	2·937	3·366	3·618	2·840
	10—	2·101	2·236	1·905	1·969	2·046	1·869
	15—	2·958	2·998	3·003	2·782	2·825	2·917
	20—	3·785	3·706	4·228	3·488	3·388	4·060
	25—	5·335	5·443	5·308	5·068	5·116	5·188
	35—	8·830	9·645	7·367	8·626	9·338	7·491
	45—	15·025	16·924	11·663	14·916	16·793	11·714
	55—	28·921	32·722	23·412	29·610	33·581	23·376
	65—	85·452	89·938	82·248	89·483	94·718	85·084
	Males	0—	51·885	58·764	38·725	44·770	50·914	33·341
5—		3·514	3·881	2·898	3·326	3·589	2·772
10—		2·041	2·197	1·838	1·929	2·017	1·773
15—		3·059	3·155	2·909	2·861	2·951	2·850
20—		4·143	4·018	4·546	3·816	3·683	4·382
25—		5·792	5·851	5·680	5·568	5·667	5·388
35—		9·699	10·541	7·924	9·480	10·203	8·308
45—		17·063	19·282	12·984	16·930	19·073	13·290
55—		32·870	37·335	26·326	33·682	38·423	26·246
65—		90·845	96·434	86·781	94·141	100·379	88·791
Females		0—	43·250	49·404	31·280	37·024	42·287	26·503
	5—	3·637	3·989	2·976	3·405	3·647	2·907
	10—	2·162	2·275	1·974	2·009	2·074	1·967
	15—	2·858	2·849	3·100	2·704	2·705	2·987
	20—	3·466	3·428	3·946	3·195	3·126	3·776
	25—	4·926	5·072	4·985	4·619	4·615	5·014
	35—	8·018	8·795	6·858	7·829	8·518	6·746
	45—	13·138	14·703	10·481	13·052	14·645	10·306
	55—	25·461	28·688	20·872	26·047	29·348	20·876
	65—	81·295	85·131	78·618	85·896	90·530	82·119

* For further remarks on this point see Registrar-General's 69th Annual Report, page lxxiv.

MORTALITY FROM SPECIFIED CAUSES.

I.—GENERAL DISEASES.

The chief morbid conditions at present included under the head of "General Diseases" are enumerated at pages 296-301: the facts of death, but not the death-rates, being given for each sex at several groups of ages. It is necessary to remember that the present list of general diseases is provisional only. Certain conditions formerly regarded as merely local are now authoritatively pronounced to be either "infections" or "intoxications"; they have accordingly been transferred to this heading, which will probably receive further accessions as the result of scientific research. In the tables numbered 21 to 26 the ages at death are not discriminated; but the deaths, as well as the death-rates at all ages from the several diseases in a series of years are given, for persons and for males and females separately.

Small-pox.—The deaths from small-pox numbered only 10, and were fewer than in any other year since the establishment of civil registration. The deaths from this disease in the previous five years numbered 2,464, 760, 507, 116 and 21 severally. In addition to the 10 deaths definitely referred to small-pox last year, chicken-pox is reported to have been fatal in 120 instances; but it is probable that some at least of the latter were unrecognised cases of the graver malady. And lastly, there were included in the registers 12 deaths under the head of "cow-pox and other effects of vaccination." It should be clearly understood that the 12 deaths referred to cow-pox and other effects of vaccination include not only the deaths which were stated by medical practitioners or by coroners to have been due to vaccination, but also those in which vaccination appeared from the certificates to have been in any way connected with the cause of death.

In the year 1907 the sum of the deaths either certainly or probably due to small-pox and of the deaths alleged to have been caused by means designed for its prevention was 142, corresponding to a rate of four per million of the estimated population. Of the 10 deaths definitely referred to small-pox, two were those of persons stated to have been vaccinated, and two those of persons returned as unvaccinated; whilst, concerning the vaccinal condition of the remaining six, only doubtful information appeared in the certificates. The mortality from the effects of vaccination, in proportion to children vaccinated, cannot yet be given for the year under notice; but from the Annual Report of the Medical Officer of the Local Government Board for the year 1906-07 it appears that the operation of vaccination was successfully performed on 705,040 or 75·8 per cent. of the 929,540 children whose births were returned by the vaccination officers in 1905, the latest year for which particulars are available. Deducting from the total number of births the children returned as having died unvaccinated, the report states that of the remaining 844,828 children 83·5 per cent. were registered as successfully vaccinated, showing the slight decline of 0·1 per cent. from the proportion in the preceding year.

The deaths of children in the same year from cow-pox and other effects of vaccination numbered 26, or one in every 32,493 vaccinated.

In the interest of vital statistics it is much to be desired that when certifying a death from small-pox the medical attendant should specify the patient's condition with respect to vaccination by one or other of the following phrases, according to circumstances:—

- (1) No evidence of vaccination;
- (2) Vaccinated in infancy only—number of scars;
- (3) Vaccinated only after infection by small-pox;
- (4) Stated to have been vaccinated, but no scars visible.
- (5) Re-vaccinated—date of re-vaccination, if possible.

Of the 10 deaths from small-pox in the year 1907, three occurred in Glamorganshire, two in Kent, two in Hampshire, and one apiece in Gloucestershire, Lancashire, and the East Riding of Yorkshire.

Measles.*—In the course of the year under notice there were registered as due to measles 12,625 deaths at all ages and of both sexes. After making the requisite allowance for increase of population, these deaths exceeded by 1,267 the average number in the five years immediately preceding. Of the total deaths from measles not fewer than 11,712 or 93 per cent. were those of children under the age of five years, and of these 2,753 had not attained the first anniversary of their birth. Table 32 on page 72 shows the mortality of infants in the several weeks and months of the first year after birth, and also in each year of the first quinquennium of life. As had been the case in many previous years, so was it also in the year now under review, measles was most destructive to infants between the first and second years of life. Tables 32 to 41 (pages 72-87) show that in the year 1907 measles was somewhat more fatal than usual, the rate of mortality under five years being equal to 293 per 100,000 living at that age, as compared with 266 the average rate in the quinquennium immediately preceding. Measles was much more fatal in the town than in the country, the death-rate being equal to 362 per 100,000 children living in the urban group of counties, against 118 per 100,000 in the rural group. The urban rates were above, but the rural rates were below, the quinquennial averages. The disease was fatal to boys at the rate of 309, and to girls at the rate of 278 per 100,000 of the respective sexes; and in both county groups boys suffered more severely than girls. Measles was most destructive to children under five years in the East Riding of Yorkshire, where it caused the deaths of 415 per 100,000 living at that age, in Glamorganshire 422, in Durham 433, in Staffordshire 465, in the North Riding of Yorkshire 534, and in Nottinghamshire 536. The rates in all these counties considerably exceeded the several averages in the preceding five years.

* Unfortunately, the ambiguous term "Rubeola" is still used, in some parts of the country, to denote the familiar disease measles. This practice gives rise to much uncertainty in the classification of causes of death. "Morbilli" is the only synonym for measles recognised by the Royal College of Physicians; and it would greatly conduce to accuracy in the returns if that name were invariably used where a Latin equivalent for the English name is preferred. In any event it is desirable that the use of the term "Rubeola" should be discontinued.

Infantile mortality from measles in the several counties is shown in Table 40, where the deaths under one year appear in terms of the total births.

Scarlet Fever.—The distinction between scarlet fever and diphtheria was first officially recognised in the Registrar-General's Report for the year 1855; and it is probable that for some years subsequently the two diseases were frequently confused in the death certificates. The deaths referred to scarlet fever in the year 1907 numbered 3,220 at all ages and of both sexes, and corresponded to a rate of 92 per million living. This rate is lower by 27 per million than the average in the five years immediately preceding. By reference to Table 20 on page 21, which shows the average mortality from certain diseases in quinquennial groups of years, it will be seen that ever since the year 1870 there has been a steady and very large decrease in the mortality from scarlet fever—the death-rate in 1901–05 being less than one-sixth of that in 1871–75, the earliest period dealt with in the table. In several previous reports I have discussed the question whether the rapid decline of scarlet fever mortality in recent years was due to a diminished prevalence of the disease or to a milder form of that infection. In the recently issued report for 1907 of the Metropolitan Asylums Board, which mainly relates to London, there appears a table showing the case-fatality among the admissions for scarlet fever in each of the years since the opening of the first hospital in 1870. If the period of 35 years last ended be divided into quinquennia, the following data may be derived from that table:—

Scarlet Fever. (Quinquennia.)	Metropolitan Asylums Board Hospitals.			County of London.
	Admissions.	Deaths.	Ratio per cent. of deaths to admissions.	Mean Annual Mortality per 1,000 living.
1873–1877 ...	3,228	399	12	0·62
1878–1882 ...	7,424	901	12	0·62
1883–1887 ...	12,798	1,238	10	0·32
1888–1892 ...	33,818	2,573	8	0·22
1893–1897 ...	68,512	3,494	5	0·23
1898–1902 ...	64,800	2,234	3	0·11
1903–1907 ...	79,155	2,376	3	0·10

From this table, which gives particulars concerning more than a quarter of a million cases treated in the hospitals of the Metropolitan Asylums Board since the year 1873, we find (1) that within that period the fatality among the admitted cases has been reduced from 12 per cent. to 3 per cent., and that (2) within the same period the annual mortality from scarlet fever in the entire County of London has fallen to less than one-sixth part of its former

rate. It is probable that in earlier years the cases admitted were for the most part severe, with high case fatality; whereas in recent years most of the known cases, including the milder ones, have been treated in hospital.*

In the year 1907 the local distribution of mortality from scarlet fever in England and Wales varied widely. Table 31 on page 70 shows that among the several counties the highest crude death-rates at all ages were 121 per million in Warwickshire, 128 in Essex, 132 in Lancashire, 135 in Lincolnshire, 145 in Staffordshire, and 190 in Middlesex. The above county rates have not been adjusted for deaths in public institutions, otherwise Middlesex would not have appeared as the county with the highest death-rate from scarlet fever. It has been ascertained that of the total deaths from this disease registered in Middlesex 45 per cent. were those of Londoners, occurring in the hospitals of the Metropolitan Asylums Board; when these deaths are subtracted the scarlet fever death-rate of Middlesex does not exceed 105 per million. In recent years nearly all the deaths of Londoners from this disease have occurred in public institutions. In the year 1907, of the 644 deaths registered either in London or in Metropolitan hospitals outside the county, not less than 94 per cent. took place in public institutions. By inclusion of deaths of Londoners in outlying institutions, the scarlet fever rate for London is raised from 115 to 135 per million. Of the counties specified in the above list, Warwickshire, Lancashire, and Staffordshire showed diminished mortality from this disease, as compared with the average, while Essex, Lincolnshire, and Middlesex showed increased mortality.

Of the 3,220 deaths at all ages 1,936 or 60 per cent. occurred in children under the age of five years. Table 37 on page 82 shows that scarlet fever was fatal to 48 out of every 100,000 children living at this age, which is lower by 15 than the average rate in the preceding quinquennium. Table 32 on page 72 shows that scarlet fever is ordinarily much less fatal in the first than in any other year of the first quinquennium of life; it is also less fatal in the first half than in the second half of the first year after birth. It is in populous districts that scarlet fever makes the greatest havoc among young children. From Tables 35 and 36 we learn that whilst the death-rate from this disease at the age group 0–5 years did not exceed 18 per 100,000 in the rural counties, it was as high as 63 per 100,000 in the urban. Both in the town and in the country boys continue to succumb to scarlet fever somewhat more rapidly than girls. Table 41, page 87, shows the incidence of fatal scarlet fever at this age in the several registration counties of England and Wales.

* The incidence of scarlet fever in London cannot be given for periods earlier than 1889, in which year the Infectious Diseases (Notification) Act came into force; but from the last annual report of the County Medical Officer of Health it appears that the proportion of notified cases of scarlet fever in each thousand of the population was as follows:—

1891–1900 ...	4·8 per 1,000 living.	1904 ...	2·9 per 1,000 living.
1901 ...	4·1 " "	1905 ...	4·2 " "
1902 ...	3·9 " "	1906 ...	4·3 " "
1903 ...	2·7 " "	1907 ...	5·5 " "

Influenza.—Ever since 1889, towards the close of which year influenza invaded our ports from the Continent, this disease has claimed annually a considerable number of victims. Previous to that year influenza had not manifested epidemic proportions since 1855, the mortality in the quinquennium ended 1889 averaging no more than three per million of the population. But in the interval subsequently elapsed the mortality attributed to this cause has averaged 288 annually per million living. In the year under notice there were referred to influenza 9,257 deaths, corresponding to a rate of 265 per million, which is higher than that of any other year since 1900. London suffered less severely from this disease than did extra-Metropolitan England and Wales. The difference between town and country, as regards influenza fatality, was again strongly marked—the crude influenza death-rate in the rural group of counties having exceeded that in the urban group by 82 per cent. Among counties containing populations of at least 100,000 the highest rates were 493 per million in the North Riding of Yorkshire, 522 in Shropshire, 609 in Dorsetshire, 610 in Denbighshire, 619 in Carnarvonshire, and 705 in Herefordshire; while the lowest were 175 in Warwickshire, 186 in Leicestershire, 191 in Cheshire, 193 in Northumberland, 196 in London, and 200 in Derbyshire. In the year 1907 influenza was about equally fatal to each sex—the death-rate among males being 263, and among females 267, per million living of the respective sexes.

Whooping cough.—To this disease there were attributed 10,255 deaths at all ages, or more by 272 than the quinquennial average number corrected for increase of population. Of the total deaths 9,918, or 97 per cent. occurred in children under the age of five years. Among children of both sexes in England and Wales generally, whooping cough was responsible for a mortality of 248 per 100,000 living at ages 0-5 years, a rate which is higher by 5 per 100,000 than the average rate in the previous five years. As in recent previous years, so also in 1907, whooping cough has been exceptionally fatal to female children, the death-rate having been 219 per 100,000 for boys and 278 for girls. The experience of the year under notice confirms that of recent previous years in showing that whooping cough is more destructive to child life in large towns than in the country districts. Table 41 on page 87 shows that among counties containing more than 100,000 inhabitants at all ages, the highest death-rates from this disease in each 100,000 children under five years were 302 in Essex, 306 in Lincolnshire, 329 in Nottinghamshire and in Lancashire, 333 in London, and 359 in Bedfordshire. All these rates were above the respective quinquennial averages—the rate in Bedfordshire being more than double the average rate. Table 32 shows that this disease continues to make exceptional havoc among infants from the second to the twelfth month after birth. After the close of the second year the disease becomes far less destructive to child life.

Diphtheria.—The mortality attributed to diphtheria in the death certificates at the present day probably represents more accurately than in former times the actual fatality of the disease in this country. Nevertheless, it is certain that a considerable proportion of the deaths ascribed to “tonsillitis,” to “ulcerated throat,”

or to “catarrhal” or “membranous” laryngitis are really due to this infection; so that the loss of life from diphtheria is still understated in the tables. In the year under notice the deaths referred to diphtheria (exclusive of croup not definitely stated to be membranous) numbered 5,732, and were fewer by 723 than the average number in the preceding five years corrected for increase of population. In this aggregate of 5,732 deaths there are included 35 that had originally been ascribed to membranous laryngitis; but the diphtheritic nature of these cases has since been affirmed by the several medical attendants. The tables still contain 29 deaths under the head of membranous laryngitis, and it is probable that some of these also were due to diphtheria. I desire yet again to draw attention to the fact that in their latest revision of the Nomenclature of Diseases the Royal College of Physicians direct that neither “membranous laryngitis” nor “membranous croup” should be used as a synonym for laryngeal diphtheria.

Diphtheria and Croup.—In the two tables next following the mortality from diphtheria is taken together with that from “croup” to represent as nearly as may be the total sacrifice of life to the disease under consideration; but, in order to afford facilities for further study, the deaths from both diseases are separately shown in the tables on pages 21 to 63. It has frequently been remarked in these reports that the age incidence of fatal diphtheria, in recent years, is nearly the same whether the deaths assigned to that disease alone, or those assigned to diphtheria and croup together are taken as the criterion. In the year under notice the deaths referred to “croup” numbered 371, or less than half the number so referred in the year 1901. These deaths, added to those certified as from diphtheria, corresponded to a rate of 175 per million living at all ages, as against 199 per million the average rate in the previous quinquennium. The rate last year was 177 per million for males, and 173 per million for females.

Diphtheria and Croup. Mortality per Million Living at all Ages.		Crude Rates. — Average, 1902-06.	Corrected Rates.*		
			Average, 1902-06.	Year 1907.	Ratio.†
Both Sexes	England and Wales	199	199	175	88
	Urban Counties ...	216	214	177	83
	Rural Counties ...	163	166	152	92
Males	England and Wales	201	201	177	88
	Urban Counties ...	219	217	180	83
	Rural Counties ...	167	169	151	89
Females	England and Wales	197	197	173	88
	Urban Counties ...	213	211	174	82
	Rural Counties ...	160	163	153	94

* See note to table on page lxxviii.

† *i.e.*, the ratio of the corrected death-rates in 1907 to those in 1902-06, the latter taken as 100.

The following table, condensed from a more extended table in the last hospital report of the Metropolitan Asylums Board, allows of comparison of the case fatality among patients admitted to hospital for diphtheria with the general London mortality from that disease, in the four quinquennia that have elapsed since 1888, in which year diphtheria cases were first admitted to their hospitals.

Diphtheria. (Quinquennia.)	Metropolitan Asylums Board Hospitals.			County of London. Mean Annual Mortality per 1000 living.
	Admissions.	Deaths.	Ratio per cent. of deaths to admissions.	
1888-1892	5,084	1,617	32	0·37
1893-1897	20,330	4,655	23	0·61
1898-1902	37,257	4,749	13	0·35
1903-1907	24,869	2,309	9	0·15

From this, and the corresponding table on page lxxxii, it appears that, as in the case of scarlet fever, there has been a very considerable decline in the ratio of diphtheria deaths to admissions, and also in the general London mortality from that disease—the former having declined from 32 per cent. in 1888-92 to 9 per cent. in 1903-7: and the latter having declined from 0·37 to 0·15 per 1000 of the London population.*

As regards the local incidence of fatal diphtheria and croup, it will be seen from the table on page lxxxv, that speaking generally, the urban rate exceeds the rural, but that the excess in the year 1907 was less than in the quinquennium 1902-06: in other words, diphtheria mortality has declined faster in the town than in the country. From the table on page lxxxvii it will further appear that whilst in that quinquennium the rural rate exceeded the urban at most ages above ten years, in the year 1907 the rural rate showed an excess in the age group 5 to 10 years also. Analysis of the mortality from diphtheria and croup in the first two quinquennia of life shows that since 1901 the rates at ages 5-10 years in the urban counties have changed very

* With respect to the antitoxin treatment of diphtheria, the 1907 report of the Statistical Committee of the Metropolitan Asylums Board contains the following passage:—"At the Brook Hospital it has been the practice to tabulate the results of the antitoxin treatment, with special reference to the day of the disease on which the treatment began. Amongst 230 cases treated during the years 1897-1907 on the first day of the disease, not a single death occurred; whereas, there died of 1,513 cases treated on the second day 4·29 per cent.; of 1,690 cases treated on the third day 11·24 per cent.; of 1,338 cases treated on the fourth day 16·89 per cent.; and of 1,765 cases treated on the fifth day and afterwards 18·58 per cent."

Diphtheria and Croup. Mortality at Age Groups.	Average 1902-1906.			Year 1907.			
	England and Wales.	Urban Counties.	Rural Counties.	England and Wales.	Urban Counties.	Rural Counties.	
Both Sexes	0-	1079	1227	759	905	997	586
	5-	563	560	544	517	464	579
	10-	90	78	119	90	70	131
	15-	18	15	27	19	13	37
	20-	11	9	17	10	8	14
	25-	8	8	10	10	9	15
	35-	8	7	10	7	7	8
	45-	6	6	10	7	7	10
	55-	7	8	6	9	9	6
	65-	8	8	8	4	4	—
Males	0-	1099	1246	800	921	1022	609
	5-	512	516	497	474	421	502
	10-	85	76	111	84	67	98
	15-	19	16	30	18	13	18
	20-	11	10	14	12	9	18
	25-	7	7	10	9	7	—
	35-	7	6	11	8	8	8
	45-	5	5	7	6	6	10
	55-	4	5	1	9	6	14
	65-	8	9	7	6	6	—
Females	0-	1059	1208	718	888	973	504
	5-	614	603	591	560	506	656
	10-	94	81	127	96	73	164
	15-	18	14	25	21	13	57
	20-	10	9	19	7	8	10
	25-	9	9	10	11	10	27
	35-	8	8	9	6	7	7
	45-	7	7	12	8	7	9
	55-	10	10	11	9	11	—
	65-	8	7	8	2	2	—

differently from those in the rural counties. In both areas the death-rate in the first five years of life has declined (with some fluctuations) until in 1907 it was only half of what it had been in 1901. The same remark applies to urban mortality in the second five years of life also; but as regards rural areas, the mortality at this age-group has shown comparatively little decline. The

following table shows the death-rates in both areas for each group of ages in the years 1901-7:—

DIPHTHERIA and CROUP.—DEATH-RATES per MILLION CHILDREN LIVING at AGES 0-5 and 5-10 YEARS in the selected URBAN and RURAL COUNTIES.

—		1901.	1902.	1903.	1904.	1905.	1906.	1907.
<i>Males.</i>								
Age 0-5 years.	Urban Counties	1973	1635	1300	1165	1032	1114	1022
	Rural Counties	1103	933	746	733	851	738	669
Age 5-10 years.	Urban Counties	793	655	509	487	427	508	421
	Rural Counties	587	526	402	497	594	466	502
<i>Females.</i>								
Age 0-5 years.	Urban Counties	1910	1589	1185	1150	1053	1076	973
	Rural Counties	1021	855	729	622	715	674	504
Age 5-10 years.	Urban Counties	940	808	594	594	475	551	506
	Rural Counties	669	689	504	467	598	701	656

Table L. shows that among registration counties with populations exceeding 100,000, there were in the year under notice 21 in which the rates of mortality from diphtheria and croup among children under ten years were above the average for Extra-Metropolitan England and Wales: of these, 11 had experienced in the previous five years also a mortality above the average for that period. In the year under notice the registration counties with the highest rates of mortality at this age were the North Riding of Yorkshire, where the rate was equal to 1,199 per million living, Bedfordshire 1,086, Berkshire 986, Northumberland 957, Dorsetshire 954, and Hampshire 943.

As had been the case in several preceding years, the high death-rate in the North Riding of Yorkshire last year was due to excessive fatality in the contiguous districts of Guisborough and Middlesbrough. The rate in each of these districts amounted to more than 400 per million living at all ages. The district of Middlesbrough in particular had suffered exceptionally from this disease in the previous five years also, the mean rate in that period having been equal to the high rate last mentioned.

The excessive mortality of Bedfordshire last year occurred mainly in Biggleswade and Luton. In both these districts high rates had been experienced in the year 1906 also. On the other hand the district of Bedford where the mortality in the previous year had been excessive showed considerable improvement in the year 1907.

In Berkshire the high mortality was due to continued prevalence of this disease in Reading. According to the local registrars' returns the death-rate in this Borough in 1907 amounted to 474 per million living (See page xc).

TABLE L.—ENGLAND & WALES.—DIPHTHERIA and CROUP. DEATH-RATES per MILLION LIVING among CHILDREN under 10 YEARS OF AGE.

Registration Counties.	Average, 1902-6.	Year, 1907.
Brecknockshire*	1163	1552
North Riding of Yorkshire	1183	1199
Bedfordshire...	701	1086
Berkshire ...	820	986
Rutlandshire*	523	965
Northumberland ...	834	957
Dorsetshire ...	577	954
Hampshire ...	953	943
Huntingdonshire*	263	929
Essex ...	906	902
Monmouthshire ...	953	886
Carmarthenshire ...	958	881
Durham ...	980	852
East Riding of Yorkshire ...	1144	830
Cheshire ...	809	826
Flintshire*	894	814
Derbyshire ...	759	806
Gloucestershire ...	919	777
Middlesex ...	904	775
London ...	761	760
Lancashire ...	1022	750
Lincolnshire ...	837	749
Wiltshire ...	617	748
Norfolk ...	621	746
Warwickshire ...	904	746
<i>England & Wales, less London</i> ...	839	711
Surrey ...	654	699
Nottinghamshire ...	703	688
West Riding of Yorkshire...	843	687
Staffordshire ...	912	685
Glamorganshire ...	1220	642
Somersetshire ...	717	624
Merionethshire*	1151	589
Leicestershire ...	606	557
Shropshire ...	480	549
Anglesey* ...	726	534
Denbighshire ...	938	525
Oxfordshire ...	424	501
Buckinghamshire ...	897	497
Hertfordshire ...	446	490
Cambridgeshire ...	517	476
Kent ...	710	464
Sussex... ...	560	464
Devonshire ...	519	454
Cardiganshire*	780	438
Worcestershire ...	371	433
Cornwall ...	408	422
Herefordshire ...	700	413
Cumberland ...	699	387
Carnarvonshire ...	510	379
Pembrokeshire*	712	327
Montgomeryshire*	338	298
Suffolk ...	487	276
Northamptonshire ...	431	244
Westmorland*	288	229
Radnorshire*	1118	214

* The Counties marked with an asterisk contained, at the last Census, populations of fewer than 100,000 at all ages.

In Northumberland there was excessive diphtheria mortality last year in most of the registration districts on the coast, and in the southern portion of the County. Although these districts form less than half of the area of Northumberland, they contain 95 per cent. of its population.

In Dorsetshire the high mortality of 1907 is accounted for by excessive prevalence of diphtheria in the Borough of Poole, where, according to the returns of the local registrars, the death-rate was equal to 630 per million (See below). It will be seen from Table L that in the quinquennium 1902-06 the average mortality from diphtheria in Dorsetshire was considerably below that of Extra-Metropolitan England and Wales. But, in consequence of excessive prevalence of the disease in the district of Weymouth, the County death-rate in the closing year of that quinquennium rose above the average; the rate has continued practically at the same level in the year 1907, viz., 954 per million.

In Hampshire, the areas of excessive diphtheria mortality were the Borough of Portsmouth, the Isle of Wight, and the registration districts of Fareham, Romsey, and Alton.

In Monmouthshire and South Wales there is an area, the exact boundary of which changes from year to year, in which the inhabitants continue to suffer severely from diphtheria. In the year 1904 this area consisted of the registration district of Bedwelty in Monmouthshire, together with the entire county of Glamorgan except the districts of Bridgend and Gower. In the year 1905 this area changed somewhat, and was divided into two parts. In the following year a further change took place, both of the areas increasing slightly in extent. The first of these areas, which in 1906 had comprised the registration districts of Monmouth, Abergavenny, Crickhowell, Bedwelty, Merthyr Tydfil, and Pontypridd, retained the same constitution in the following year, except that the district of Pontypridd no longer formed part of it. In this area, which contained an estimated population of nearly one-third of a million, the diphtheria death-rate in 1907 exceeded by 70 per cent. the rate in England and Wales outside the Metropolis. In the year 1906 the second of these areas consisted of the registration districts of Pontardawe, Llandilofawr, and Carmarthen; but, in the following year the death-rate in Llandilofawr fell below the average; nevertheless, the districts of Pontardawe and Carmarthen continued to suffer severely from diphtheria throughout 1907, their death-rates being above the mean for Extra-Metropolitan England and Wales by 42 and 140 per cent. respectively.

In the year 1907 the death-rate from diphtheria at all ages in England and Wales averaged 164 per million. But, from information supplied by the local Registrars we find that there are in this country seven towns, each containing more than 20,000 inhabitants, in which the rate exceeded 400 per million. These towns are as follows:—Poole, where, as already stated, the rate was 630 per million; Luton, 591; Chester, 483; Middleton, 477; Reading, 474; Leyton, 435; and Derby, 423. Among these towns Chester, Reading, and Derby had shown death-rates from diphtheria above 400 per million in the year 1906 likewise.

Of the 6,103 deaths at all ages from diphtheria and croup, 3,612, or 59 per cent. occurred within the first five years of life. These deaths correspond to a rate of 90 per 100,000 children living at that age, a rate which is below the average in the previous quinquennium by 18 per 100,000 (Table 37, page 82). Table 41, page 87, shows the distribution of these deaths in the several counties of England and Wales. In the year 1907, as in recent previous years, this disease was less fatal in the first year than in any other year of the first quinquennium of life. Nevertheless, the mortality steadily increased from birth to the fourth year (Table 32, page 72).

Cerebro-Spinal Fever.—To this disease there were ascribed in the year under notice 161 deaths, 93 of which were eventually referred to this heading as the result of medical enquiry respecting deaths originally certified as from cerebro-spinal meningitis. In the five years last ended the deaths classed to cerebro-spinal fever have averaged 102 annually.

Enteric (Typhoid) Fever.—In the course of the year 1907 the deaths of 2,344 persons at all ages and of both sexes were ascribed to enteric fever. The mortality, therefore, was in the proportion of 67 in each million persons living; this is by far the lowest rate on record, and is only two-thirds of the average for the quinquennium immediately preceding. Among males the death-rate was equal to 81 per million of that sex, and among females, to 54 per million.* See table, page xcii. In order to trace the changes of enteric fever mortality for a long series of years a chart was published in the last decennial supplement showing the corrected death-rate of both sexes in each of the 37 years elapsed since the disease was first differentiated, in these reports, from other forms of continued fever. From that chart it appears that within the period named enteric fever mortality fell to less than a quarter of its former amount, namely, from a rate of 384 per million in 1869 to 89 per million in 1905.

Enteric Fever. (Quinquennia.)	Metropolitan Asylums Board Hospitals.			County of London.
	Admissions.	Deaths.	Ratio per cent. of deaths to admissions.	Mean Annual Mortality per 1,000 living.
1873-1877 ...	1,775	335	19	0·25
1878-1882 ...	2,047	407	20	0·24
1883-1887 ...	1,973	316	16	0·19
1888-1892 ...	2,423	377	16	0·14
1893-1897 ...	3,003	545	18	0·14
1898-1902 ...	6,681	1,021	15	0·15
1903-1907 ...	3,542	522	15	0·06

* Since the year 1868 enteric fever has been distinguished from typhus, and from other indefinite forms of continued fever, the latter being now aggregated under the name "pyrexia (origin uncertain)," in the Registrar-General's tables. In the latest revision of their nomenclature of diseases the Royal College of Physicians direct that the names febricula and simple continued fever should no longer be used.

In the preceding table, which is condensed from a more extended table in the last hospital report of the Metropolitan Asylums Board, the ratio of deaths to admissions on account of enteric fever is compared with the general London mortality from that disease in the same period, 1873-1907.

From this and the two companion tables* it will be seen that enteric fever differs from scarlet fever and from diphtheria in this important respect—that, whereas in the case of the two latter diseases the decline of mortality in the metropolis has been accompanied by a corresponding decline of case fatality in those hospitals; in the case of enteric fever, on the contrary, a decline of three-fourths in the metropolitan mortality from enteric fever has been accompanied by only a relatively slight decline in the ratio of deaths to hospital admissions.

As is the case with many other diseases, the fatality of enteric fever varies according as a given area contains a large or a small proportion of urban inhabitants. In the following table, which is continued from previous reports, the death-rates of both sexes in 1907 are compared with the respective averages in the preceding quinquennium. The changes of mortality in recent years are there shown, and the rates in the urban group of counties are distinguished from those in the rural group. Taking both sexes together urban mortality from enteric fever exceeded rural mortality by 47 per cent. Among males the excess was only 34 per cent., whilst among females it amounted to 77 per cent. In this table, which shows the mortality per million living at all ages, correction has been made for age and sex differences of the population.

Enteric Fever. Mortality at all Ages.		Crude Rates. — Average 1902-6.	Corrected Rates.*		
			Average, 1902-6.	Year 1907.	Ratio.†
Both Sexes...	England & Wales	100	100	67	67
	Urban Counties ...	114	113	75	66
	Rural Counties ...	70	73	51	70
Males ...	England & Wales	119	119	81	68
	Urban Counties ...	138	135	90	67
	Rural Counties ...	76	79	67	85
Females ...	England & Wales	82	82	54	66
	Urban Counties ...	93	91	62	68
	Rural Counties ...	64	66	35	53

* See note to table on page lxxviii.

† *i.e.*, the ratio of the corrected death-rates in 1907 to those in 1902-06, the latter taken as 100.

From the last table it would appear that in the year 1907 both urban and rural areas shared almost equally in the saving of life

* For the tables relating to scarlet fever and to diphtheria see pages lxxxii and lxxxvi.

that is represented by the very considerable fall in the death-rate. It is, however, important to note that in the rural area the sexes have not participated equally in this benefit; for, whilst among males the mortality has fallen by not more than 15 per cent., among females it has fallen by 47 per cent.

From Table 31 on page 70 it appears that among registration counties with populations exceeding 100,000, the highest crude rates* from enteric fever were 151 in Monmouthshire, 133 in Carmarthenshire, 120 in Nottinghamshire, 110 in the North Riding of Yorkshire, 99 in Lancashire, and 93 in Glamorganshire. Although the rates in these counties greatly exceed the average for England and Wales, they show in every case an improvement upon the respective decennial averages, the proportionate reduction ranging from 4 per cent. in Monmouthshire to 49 per cent. in Lancashire.

In Monmouthshire excessive fatality from this disease was limited to the registration districts of Bedwellty, Pontypool, and Newport, which form the urban portion of the county. In this area the rate averaged about 180 per million.

In Carmarthenshire three out of the four registration districts of the county showed excessive mortality from enteric fever.

In Nottinghamshire excess of mortality was again limited to the urban part of the county, the rate in the three registration districts of Mansfield, Basford, and Nottingham averaging 144 per million.

In the North Riding of Yorkshire there was excessive mortality in the registration district of Middlesbrough, where the rate was above 200 per million. This district consists mainly of the Boroughs of Middlesbrough and Thornaby-on-Tees, and of the Urban Districts of Eston, South Bank in Normanby, and Ormesby.

In Lancashire, although the mortality from enteric fever in 1907 showed a considerable reduction as compared with previous years, nevertheless there were in the county seven towns of more than 20,000 population, in each of which the death-rate from this disease exceeded a rate of 150 per million living.

In Glamorganshire enteric fever showed exceptional fatality in the registration district of Pontypridd, the high death-rate in that district being mainly due to excessive prevalence of this disease in the urban district of Rhondda.

In the northern area of high enteric fever mortality, which is mainly situated in the county of Durham,† and of which mention has been made in several previous reports, the mean death-rate from enteric fever was 105 per million, against an average rate of 229 per million in the previous ten years. Compared with their respective averages all the districts in this group showed considerable improvement in the year under notice. Nevertheless, in the district of Middlesbrough, and also in the smaller district of Sedgefield, the rates still continued high.

* These county rates are not corrected for differences of age constitution, but the table on page xcii shows that in the case of enteric fever, correction does not greatly modify the death-rates.

† The registration districts now comprising this area are as follows:—Middlesbrough in the North Riding of Yorkshire, Stockton, Sedgefield, Auckland, Lanchester, Durham, Easington, Houghton-le-Spring, Chester-le-Street, Sunderland, and South Shields in the county of Durham, and Tynemouth, Castle Ward, and Morpeth in Northumberland.

Although the death-rate from enteric fever in England and Wales in the year 1907 was only 67 per million and was the lowest on record, it will be seen from the following table that among towns with populations exceeding 20,000 at the last census, there were ten in which the rate exceeded 200 per million:—

1907.—ENTERIC FEVER.—DEATH-RATES per million.*

Tipton	476	Barnsley	245
Workington	446	Gorton	236
Chatham	320	Farnworth	219
Ince-in-Makerfield... ..	265	Grimsby	213
Wigan	260	Ilkeston	206

* These rates are derived from the returns of the local registrars, and are not corrected for age and sex differences of the living.

In the table opposite, the age incidence of fatal enteric fever in recent years is shown for England and Wales, and for the urban and rural groups of counties separately. The rates are given for persons and also for males and females separately.

From this table it appears that both in the year 1907 and in the previous quinquennium the male rates of mortality from enteric fever exceeded the female rates at all periods of life above the age of 15 years. With some exceptions in the rural group, the death-rate at each age under 65 years in 1907 shows a reduction as compared with the corresponding rate in the previous quinquennium. The figures in the present table confirm those in previous reports in showing that enteric fever attains its highest fatality at some time between the ages of 15 and 35 years.

Diarrhœal Diseases.—The several morbid conditions here included under this heading are as follows:—(1) Infective enteritis (*i.e.*, epidemic diarrhœa, including diarrhœa due to food); (2) dysentery and dysenteric diarrhœa; (3) Gastro-intestinal catarrh; and (4) diarrhœa not otherwise defined.

It has previously been contended, on the authority of the Royal College of Physicians, that the term "diarrhœa," being that of a symptom merely, and not of a definite disease, should be stated as a cause of death only where the true cause of that symptom is unknown.* Although a large proportion of these deaths are still certified in one or another of the indefinite forms (3) and (4), nevertheless Table 21 shows that this practice is gradually falling into disuse, the term infective enteritis being substituted for them in an increasing proportion of instances. To the above-named conditions in the aggregate there were referred last year 10,658 deaths at all ages, which is considerably less than half the corrected annual average number in the previous quinquennium. But in addition to the foregoing deaths there were registered last year 6,137 deaths from enteritis or gastro-enteritis, and 3,267 from gastric catarrh. It is certain that a large proportion of these deaths are infective in character, although no mention of the fact is recorded

* See Nomenclature of Diseases by the Royal College of Physicians, 4th Edition, 1906, page 145, under the heading "Diarrhœa."

Enteric Fever. Mortality at Age-Groups.	Average 1902-1906.			Year 1907.			
	England and Wales.	Urban Counties.	Rural Counties.	England and Wales.	Urban Counties.	Rural Counties.	
Both Sexes	0—	33	39	19	20	24	15
	5—	61	72	43	40	51	17
	10—	85	97	63	50	56	30
	15—	127	139	102	78	79	58
	20—	146	156	120	97	96	105
	25—	151	169	96	106	116	89
	35—	126	148	90	85	104	50
	45—	95	110	73	73	90	39
	55—	71	83	58	49	51	48
	65—	33	39	23	25	30	30
Males	0—	34	39	19	19	25	8
	5—	56	68	30	36	41	17
	10—	81	91	61	45	52	26
	15—	148	162	111	89	89	78
	20—	191	207	128	129	128	153
	25—	200	224	111	141	149	128
	35—	156	184	109	111	134	65
	45—	115	133	93	90	107	52
	55—	87	103	61	61	67	68
	65—	37	44	25	37	45	59
Females	0—	33	38	19	21	24	21
	5—	67	75	56	44	61	17
	10—	89	102	65	51	60	35
	15—	106	116	92	68	70	38
	20—	105	111	113	68	67	62
	25—	103	119	84	75	87	54
	35—	93	113	72	62	77	37
	45—	77	89	55	57	73	28
	55—	57	65	55	37	37	30
	65—	30	36	20	16	19	6

in the certificates; moreover, their seasonal distribution is for the most part similar to that of the diseases included in the diarrhœal group. This is especially true respecting the deaths from enteritis, gastro-enteritis, and gastric catarrh among children under five years, whose deaths last year from these causes amounted to about 70 per cent. of the deaths at all ages. In the section

on mortality among infants and young children these deaths are included with the other forms of diarrhoeal diseases.

By reference to the tables on pages 304 and 305 it will be seen that the remaining 30 per cent. of the deaths at all ages from enteritis, gastro-enteritis, and gastric catarrh occurred at ages above five years, mainly among adults; and it is probable that some, at least, of these deaths are due to causes other than those included in the present section. If, then, the deaths of adults from enteritis, gastro-enteritis, and gastric catarrh were included in the present section, the comparability of the diarrhoeal mortality at all ages with that of previous years would be destroyed. For the foregoing, among other reasons, the mortality at all ages in the present section is limited to the deaths from causes specified under numbers (1) to (4), nevertheless the mortality from enteritis, gastro-enteritis, and gastric catarrh can readily be ascertained on reference to the tables on pages 31, 45, and 59.

Brief extracts from the meteorological reports and quarterly returns of Dr. Shaw, F.R.S., may be interesting here, as explaining in some degree the unusual freedom from diarrhoea fatality experienced in this country throughout the year under notice.

Speaking of the extremely low afternoon temperatures of the summer months, Dr. Shaw reports, that from about the middle of July "it was not until an unusually late period in the season that the thermometer again passed 80°" (Annual Report, page cxxxvii.). "With the exception of one fine warm week in July, the weather for more than two-thirds of the (September) quarter was changeable, showery, and exceedingly cool. The rainfall of the quarter was considerably below the average—a result due, in a large measure, to the prolonged drought which occurred in September" (Quarterly Return, September, 1907, pages iii. and iv.).

Table 41 on page 87 shows that in the year 1907, among registration counties containing populations above 100,000, the counties with the lowest death-rates from diarrhoeal diseases were the mainly rural ones of Buckinghamshire, Hertfordshire, Suffolk, Dorsetshire, Herefordshire and Wiltshire, where the rates under five years varied from 144 to 163 per 100,000 living, whilst the mainly urban counties of Warwickshire, the West Riding of Yorkshire, Glamorganshire, Nottinghamshire, and Lancashire experienced rates ranging from 493 in the first case to 581 in the last per 100,000 children living at the same ages.

Rabies (Hydrophobia).—Not a single death from this disease has been reported either in the year 1907 or in any of the four years immediately preceding. In the course of the last nine years only two deaths from hydrophobia have been reported in England and Wales, and these were registered in the year 1902. In the closing ten years of the nineteenth century the deaths from this disease averaged seven annually.

Pyæmia, Septicæmia, Septic Intoxication.—The deaths of 93 males and 69 females were referred to pyæmia, and the deaths of 273 males and 169 females to septicæmia, in the year under notice, the deaths of females from puerperal affections of this nature being excluded from the present list. The parts of the

TABLE M.—DEATHS OF WOMEN IN ENGLAND & WALES, IN 1907, DEFINITELY RETURNED AS EITHER CAUSED BY OR ASSOCIATED WITH PREGNANCY OR CHILDBEARING.*

Cause of Death.	All Ages.	Ages.				
		15—	20—	25—	35—	45 and upwards.
Total	4672	120§	713	2241	1550	48
Measles	3	—	1	2	—	—
Scarlet Fever	9	1	6	6	1	—
Influenza	63	—	6	31	25	1
Diphtheria	2	—	1	—	1	—
Enteric Fever	12	—	2	6	4	—
Diarrhoea	8	—	1	4	3	—
Syphilis	1	—	—	—	1	—
Gonorrhœa	1	—	—	1	—	—
Puerperal Septicæmia†	1056	31§	217	519	284	5
Puerperal Pyæmia†	111	2	19	61	29	—
Phlegmasia Alba Dolens†	84	1	5	49	28	1
Puerperal Fever†	214	5	43	117	47	2
Infective Endocarditis	4	—	1	1	2	—
Lobar Pneumonia	62	2	9	29	20	2
Broncho-Pneumonia	23	1	1	11	10	—
Pneumonia (not defined)	170	3	30	73	62	2
Tuberculous Phthisis	63	—	8	36	18	1
Phthisis (not otherwise defined)	71	—	8	45	17	1
Tuberculous Meningitis	4	—	—	3	1	—
Tuberculous Peritonitis	2	—	—	1	1	—
Other Tuberculous Diseases	16	—	3	8	5	—
Alcoholism	1	—	—	1	—	—
Rheumatic Fever, Rheumatism of Heart	15	—	—	8	7	—
Malignant Disease	5	—	—	2	3	—
Hæmophilia	2	—	—	2	—	—
Anæmia	26	1	—	12	13	—
Diabetes Mellitus	6	—	1	4	1	—
Meningitis, Inflammation of Brain	4	1	1	1	1	—
Chorea	2	1	1	—	—	—
Epilepsy	18	1	5	6	6	—
Other Diseases of Nervous System	8	—	2	1	5	—
Valvular Disease, Endocarditis	85	2	7	43	31	2
Pericarditis	1	—	1	—	—	—
Dilatation of Heart	10	—	1	2	7	—
Fatty Degeneration of Heart	11	—	1	1	9	—
Other Diseases of Heart	102	2	11	45	42	2
Apoplexy, Hemiplegia	12	—	3	4	5	—
Laryngitis	1	—	—	—	1	—
Bronchitis	30	1	1	10	17	1
Emphysema, Asthma	6	—	—	3	2	1
Pleurisy	9	—	1	2	6	—
Other Diseases of Respiratory System	1	—	—	1	—	—
Gastric Ulcer	14	1	1	6	6	—
Other Diseases of Stomach	12	—	2	6	4	—
Enteritis, Gastro-Enteritis, Ulcer Intest..	12	1	2	4	5	—
Appendicitis	5	—	1	3	1	—
Intestinal Obstruction	7	—	—	4	3	—
Diseases of Liver	11	—	—	6	4	1
Diseases of Thyroid Body	6	—	—	1	5	—
Acute Nephritis	76	2	12	36	25	1
Chronic Bright's Disease	108	4	16	50	36	2
Ovarian Tumour	2	—	—	2	—	—
Uterine Tumour and other Diseases of Uterus	12	—	—	7	5	—
Abortion, Miscarriage‡	102	3	8	45	46	—
Puerperal Mania†	70	2	8	39	21	—
Puerperal Convulsions‡	440	32	125	190	97	5
Placenta Prævia, Flooding‡	608	8	38	266	286	10
Other Accidents of Pregnancy and Childbirth.‡	826	11	107	414	286	8
Violence	4	—	1	1	2	—
Other Causes	14	1	1	9	3	—

* These deaths are included under the several headings in the general abstracts and tables of causes of death.

† Of the 1465 deaths attributed to puerperal septic diseases, 133 were further complicated with other diseases.

‡ Of the 2055 deaths classed to accidents of pregnancy or of childbirth, a secondary cause was mentioned in 352 cases.

§ The age of deceased in one of these cases was 14 years.

body medically certified as invaded by infective processes are given in the supplementary tables on pages 310 and 311.

Before the commencement of the present century the deaths from pyæmia were included with those from septicæmia in the returns of the Registrar-General. The death-rate from these diseases does not vary greatly from year to year.

Puerperal Pyæmia, Septicæmia, Septic Intoxication.—Either to one or another of the conditions here specified, or else to the indefinite affection "puerperal fever" there were referred 1465 deaths in the year 1907, the deaths thus returned in the previous year having numbered 1640. The term puerperal fever has been removed from the nomenclature of the Royal College of Physicians, and the college direct that pyæmia, septicæmia, or septic intoxication occurring in puerperal women should be described as puerperal pyæmia, puerperal septicæmia, and puerperal septic intoxication respectively. The number of deaths certified as from "puerperal fever" last year was 214, and reference to Table 25 shows that the deaths thus indefinitely certified are gradually decreasing year by year. Of the deaths referred to puerperal septic affections 133 were further complicated; the complicating cause was stated to be scarlet fever in 5 cases, influenza in 6, pneumonia in 71, tuberculous disease in 5, diseases of the heart and blood vessels in 9, bronchitis in 5, pleurisy in 4, and kidney disease in 10 cases. In addition to the above, there occurred in connection with pregnancy or childbirth 2055 deaths, particulars of which are given on page 307 and also in Table M. on page xcvi. Further remarks on mortality in connection with the puerperal state will be found at page cxxiv.

Pneumonia.—In the year under notice the deaths returned as from one or another of the forms of pneumonia numbered 46,967, namely, 26,413 males and 20,554 females. Of these deaths 5385 were referred to lobar pneumonia, 21,317 to broncho-pneumonia, and 6 to epidemic pneumonia, whilst 20,259 were assigned to "pneumonia," without further qualification, in the case of the deaths of 284 males and 184 females the condition was stated to be septic.

The Royal College of Physicians now class lobar pneumonia as an infective disease, and there is no doubt that all forms of pneumonia are, in their nature, infective. Since the year 1901 pneumonia has been distinguished, in these reports, from other affections of the respiratory system, and has been placed among general diseases.

In the year under notice the deaths from pneumonia of all forms were equal to a rate of 1344 per million of the population at all ages. The rate last year was equal to 1565 per million among males, and to 1137 per million among females. This will be seen by the table on page xcix, which has been continued from previous reports.

Pneumonia.		Crude Rates. — Average 1902-06.	Corrected Rates.*		
			Average, 1902-06.	Year 1907.	Ratio.†
Mortality at all Ages.					
Both Sexes	England & Wales	1283	1283	1344	105
	Urban Counties ...	1485	1515	1588	105
	Rural Counties ...	937	880	871	99
Males	England & Wales	1500	1500	1565	104
	Urban Counties ...	1733	1767	1854	105
	Rural Counties ...	1092	1027	1013	99
Females	England & Wales	1080	1080	1137	105
	Urban Counties ...	1252	1279	1339	105
	Rural Counties ...	793	743	737	99

* See note to table on page lxxviii.

† i.e., the ratio of the corrected death-rates in 1907 to those in 1902-06, the latter taken as 100.

Compared with the average in the quinquennium 1902-6 the mortality from pneumonia in 1907 showed an increase, although it will be seen, on reference to Table 22, that the rate was below that in the year 1902. Urban mortality showed an increase, while rural mortality showed a slight decrease.

The following table shows that the mortality from the principal types of pneumonia varies considerably according to age. From this table we see that in 1907, as in previous years, lobar or croupous pneumonia was most fatal at the later stages, and broncho-pneumonia most fatal in the first few years of life. In that year broncho-pneumonia was also very fatal towards the end of life :—

Pneumonia.	Males.			Females.		
	All forms.	Lobar-Pneumonia.	Broncho-Pneumonia.	All forms.	Lobar-Pneumonia.	Broncho-Pneumonia.
Mortality at Age-groups, 1907.						
All Ages	1565	198	666	1137	113	558
0-5 years	6212	216	4489	5190	172	3800
5-10 "	331	36	129	323	27	149
10-15 "	125	18	23	129	24	34
15-20 "	238	54	20	156	35	18
20-25 "	355	99	20	199	51	23
25-35 "	587	165	43	296	70	39
35-45 "	1028	279	92	552	119	79
45-55 "	1688	378	207	830	164	154
55-65 "	2718	541	502	1572	277	369
65 years and upwards	4732	631	1187	3798	441	1203

Deaths.

Tuberculosis.

To tuberculous affections in the aggregate there were assigned in the year under notice 56,101 deaths, or fewer by 3,539 than the average number in the previous five years, corrected for increase of population. Tuberculosis was therefore responsible for 10·7 per cent. of the mortality from all causes, and for a death-rate of 1,605 per million living, at all ages and of both sexes.* The accompanying chart, which is continued from the previous report, and which relates to tuberculous mortality for a long series of years, is designed to show the incidence of male and female mortality (a) from all forms of tuberculosis (indicated by the entire shaded portion) and (b) from phthisis (indicated by darker shading). The death-rates are stated in terms of a million living of each sex, and are rendered comparable by calculation on the age and sex constitution of the population at the census of 1901. The chart shows that throughout the last 40 years there has been a steady decrease in the fatality of tuberculous diseases in the aggregate, and that the decrease has been greatest in females. Among counties containing populations above 100,000 the uncorrected death-rate from tuberculosis last year was highest in Carnarvonshire, where it was equal to 2,194 per million living, in Carmarthenshire 2,156, in Northumberland 1,946, in Durham 1,881, in London 1,880, and in Lancashire 1,862.

Of the 56,101 deaths from tuberculosis at all ages, 18 per cent. were those of children under the age of five years, who died of it at the rate of 253 per 100,000 living of both sexes. Boys succumbed to this malady in the proportion of 277 per 100,000, and girls in the proportion of 230 in the same number living.

In a letter to you inserted in the 64th Annual Report, I directed particular attention to the difficulties encountered at that time and for several previous years, in our attempts to determine for a given time and place the amount of mischief caused by tubercle, because of uncertainty regarding the nature of the morbid conditions denoted by some of the names used in Medical Certificates, presumably to indicate tuberculous disease. I would again revert to this subject on the present occasion, because the difficulty experienced in the year 1901 still continues. In the absence of necropsies, which are seldom made in cases of this kind except in public hospitals, it is extremely difficult to determine, perhaps after a single inspection in an out-patient room, the exact nature of certain diseases which may nevertheless be suspected to be tuberculous. There is no reason to doubt the substantial accuracy of the returns respecting tuberculous phthisis, for this disease in its fatal form is easily recognised; but as regards the deaths from most other tuberculous affections considerable uncertainty remains. Among these is "tabes mesenterica," an affection which occurs for the most part among the imperfectly-nourished children of the poor, many of whom do not receive medical attention until the later stages of their illness. Although this term has been expunged from the Nomenclature of the Royal College of Physicians, it is

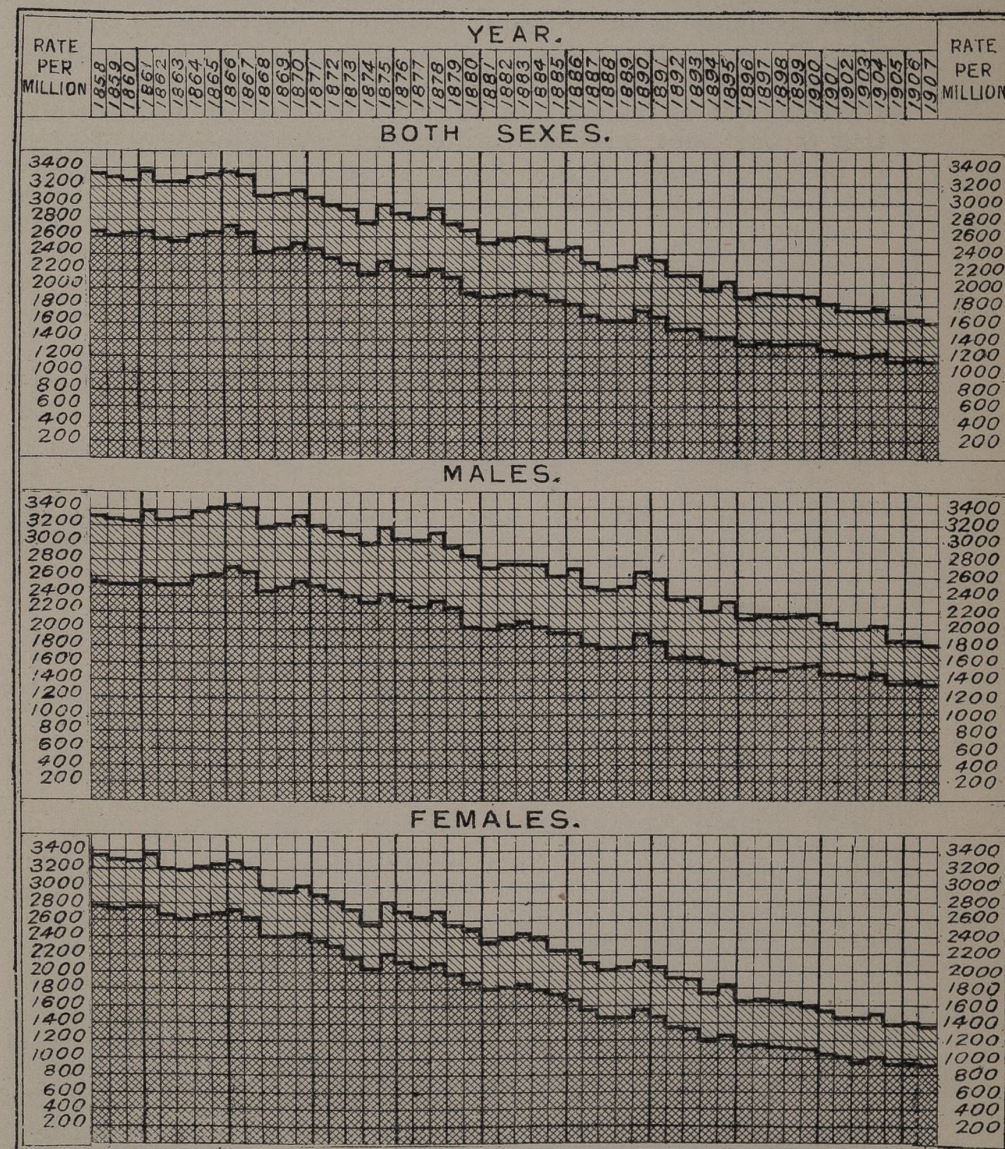
* In the decennium 1851-60 the deaths from tuberculosis were in the proportion of 15·6 per cent. of the deaths from all causes, and corresponded to a rate of 3,457 per million of the mean population.

ENGLAND & WALES.

DEATH-RATES.

DIAGRAM VIII.—ENGLAND & WALES, 1858-1907. (a) TUBERCULOSIS (ALL FORMS), (b) PHTHISIS:—ANNUAL DEATH-RATES PER MILLION LIVING AT ALL AGES, CORRECTED FOR VARIATIONS OF AGE CONSTITUTION.

(NOTE:—THE DARKER SHADING REFERS TO PHTHISIS).



Note:—The death rates throughout the entire period are based upon the age constitution of the population as enumerated in 1901.

still employed by some medical men as a synonym for tubercle of the mesenteric glands, but its use has been entirely abandoned by the staffs of the principal London hospitals. Tuberculous peritonitis being the authorised name for this affection, it is hoped that the term *tabes mesenterica* will shortly disappear from medical certificates. The indefinite terms 'strumous' and 'scrofulous' still occur in medical certificates, although far less frequently than in former years. The correct adjective "tuberculous" is now substituted in a large proportion of the cases.*

Tuberculous phthisis (pulmonary tuberculosis).—In the year under notice tuberculous phthisis accounted for the deaths of 19,368 persons, and "phthisis" not otherwise defined, for the deaths of 20,471 persons, at all ages and of both sexes. Together these deaths were equal to 71 per cent. of the total deaths from tuberculosis, and to a rate of 1,140 per million of the population, which is identical with the rate of the year 1905, and is below the average for the five years 1902-6 by 4 per cent.

Phthisis.	Crude Rates.	Corrected Rates.*			
		Average, 1902-06.	Year 1907.	Ratio.†	
Mortality at all Ages.	Average, 1902-06.	Average, 1902-06.	Year 1907.	Ratio.†	
Both Sexes {	England & Wales ...	1,192	1,192	1,140	96
	Urban Counties ...	1,280	1,274	1,214	95
	Rural Counties ...	1,090	1,124	1,092	97
Males ... {	England & Wales ...	1,408	1,408	1,341	95
	Urban Counties ...	1,553	1,547	1,472	95
	Rural Counties ...	1,195	1,232	1,166	95
Females ... {	England & Wales...	990	990	952	96
	Urban Counties ...	1,025	1,019	972	95
	Rural Counties ...	993	1,022	1,024	100

* See note to table on page lxxviii.

† *i.e.*, the ratio of the corrected death-rates in 1907 to those in 1902-06, the latter taken as 100.

Both in 1905 and in 1907 the mortality from phthisis was the lowest on record. In proportion to the living, the victims of phthisis are now only half as numerous as they were half a century ago. Between the decennium 1851-60 and the quinquennial period last ended there has been a fall of 70 per cent. in the mortality

* In addition to expunging "*tabes mesenterica*" from the authorised list of names of diseases, the college take occasion to impress upon medical men the desirability of discriminating among the various forms of tuberculous infection. (1) Under the head of "phthisis" there is a caution to the effect that where that condition is ascertained to be due to causes other than tuberculous this should be stated. (2) In a note to "*vomica*" it is directed that where this condition is due to tuberculous disease the fact should be stated. (3) To the conditions "*hæmoptysis*" and "*abscess of the lung*" a footnote is appended directing that when the cause is known it should be stated, the local condition also being specified. (4) Under the general heading "*tuberculosis*," there is an instruction that the terms "*strumous*" and "*scrofulous*" should no longer be used.

from this disease among persons of both sexes below the age of 25 years. From that age onward to the close of life the fall has been considerably less marked, and has been more pronounced in females than in males.

Phthisis. Mortality at Age-groups.	Average 1902-1906.			Year 1907.			
	England and Wales.	Urban Counties.	Rural Counties.	England and Wales.	Urban Counties.	Rural Counties.	
Both Sexes	0—	340	402	253	316	374	212
	5—	169	184	139	163	187	99
	10—	280	280	296	256	261	294
	15—	863	839	971	830	824	933
	20—	1,357	1,260	1,738	1,255	1,124	1,690
	25—	1,768	1,738	1,957	1,695	1,648	1,902
	35—	2,139	2,367	1,753	2,026	2,207	1,712
	45—	2,172	2,569	1,531	2,048	2,392	1,524
	55—	1,736	2,051	1,340	1,769	2,132	1,353
65—	941	1,137	761	982	1,219	757	
Males	0—	367	437	265	340	400	198
	5—	143	158	113	126	146	76
	10—	165	174	149	155	157	153
	15—	760	758	776	698	724	671
	20—	1,520	1,406	1,874	1,378	1,232	1,781
	25—	2,000	2,024	2,233	1,954	1,933	2,016
	35—	2,622	2,953	2,051	2,511	2,768	2,068
	45—	2,997	3,627	1,951	2,813	3,343	1,986
	55—	2,476	3,030	1,730	2,545	3,173	1,732
65—	1,308	1,682	928	1,353	1,834	963	
Females	0—	314	367	241	292	348	227
	5—	195	209	164	201	227	122
	10—	395	384	445	356	363	436
	15—	964	916	1,171	953	919	1,202
	20—	1,212	1,130	1,617	1,145	1,028	1,609
	25—	1,505	1,479	1,712	1,462	1,388	1,803
	35—	1,686	1,812	1,481	1,573	1,674	1,442
	45—	1,408	1,572	1,155	1,340	1,496	1,112
	55—	1,087	1,195	1,000	1,090	1,222	1,022
65—	661	735	620	696	764	593	

The two tables immediately preceding show the male and female rates of mortality from phthisis in England and Wales, at all ages

and at several groups of ages, in the year 1907; and, for comparison therewith, the average rates in the quinquennium 1902-06; they further show the distribution of phthisis mortality, at the same age-groups, in the selected urban and rural counties respectively. The rates in the first table are corrected for age and sex differences of the population.

From these tables it may be gathered that, as compared with the rural death-rate from phthisis at all ages, the urban rate was higher by 26 per cent. among males, but lower by 5 per cent. among females. When, however, examination is made of the average mortality at the several ages, it appears that phthisis is more fatal in the rural area than in the urban to young men at ages 20-35, and to young women at ages 10-35; whilst, at all other ages, the reverse holds true. (See Table page cii.)

This table also shows that, as compared with the average in the previous quinquennium, there has been a fall in phthisis mortality at every age-group below 55 years; but that above this age a slight increase has taken place in the mortality of both sexes. In the county groups the fall has been somewhat irregular, probably owing to the fewness of fatal cases in a single year, at certain stages of life.

Phthisis. 1903-1907.	Corrected Death-rates per million.		
	Persons.	Males.	Females.
England and Wales	1,173	1,385	975
Cardiganshire	2,306	2,479	2,143
Merionethshire	1,070	1,680	1,661
Carnarvonshire... ..	1,611	1,707	1,522
Carmarthenshire	1,554	1,479	1,624
Pembrokeshire	1,433	1,498	1,372
London	1,431	1,863	1,026
Northumberland	1,408	1,530	1,293
Anglesey... ..	1,370	1,294	1,441
Lancashire	1,339	1,616	1,080
Cornwall	1,273	1,634	935
Hampshire	1,243	1,511	992
Durham	1,219	1,243	1,195
Montgomeryshire	1,219	1,398	1,050
Warwickshire	1,210	1,577	866

In Tables 29, 30 and 31, the crude rates of mortality from phthisis in 1907 are shown in the several registration counties of England and Wales. On examination, however, it is clear that in some counties the numbers of the living, and therefore the deaths, in a single year are insufficient to furnish reliable rates of mortality for comparative purposes. This remark is particularly in point with respect to the counties of Huntingdon, Rutland, and Westmorland in England, and to the counties of Brecknock, Radnor, and Anglesey in Wales. For the foregoing reason comparison of phthisis fatality in single years was formerly limited to counties with populations exceeding 100,000; but this plan leaves out of account several counties in which phthisis is exceptionally destructive. In view of the increased interest recently shown in the local

incidence of this scourge, examination has now been made of the phthisis mortality in every one of the registration counties, in the quinquennium ended 1907. In the table on page ciii a list is given of those English and Welsh counties where the mortality from phthisis is in excess of the mean for the country generally. These rates are corrected for age differences of the several populations, but not for deaths in public institutions. In all cases correction of this kind is obviously desirable, but it is occasionally found to be impracticable. Hampshire, for example, is a case in point. This county contains a considerable number of hospitals for the treatment of tuberculosis, and in one year alone (1907) as many as 38 deaths occurred in one or another of these institutions, not fewer than 33 of which deaths were those of persons who had previously resided outside the county.

From this table it appears that of the fourteen counties suffering the highest fatality from phthisis, not fewer than seven are Welsh; and that among these Cardiganshire experienced a death-rate which is nearly double the average for England and Wales.

Tuberculous Meningitis.—Under this head, or else under that of acute hydrocephalus, there were returned last year 5,885 deaths at all ages—being fewer by 530 than the average number in the previous five years, after allowance for increase of population. As the deaths from simple meningitis also show a decrease, there is no reason to doubt the reality of the decrease in the mortality from meningeal tuberculosis.

A considerable proportion of the deaths originally certified as from hydrocephalus are found on inquiry to be due to tubercle; and in all such cases the statistical records of this office are corrected accordingly. In certifying deaths from hydrocephalus it would conduce to greater accuracy of classification in these reports if, in all cases believed to be due to tuberculous infection, the term "tuberculous meningitis" were substituted for the former indefinite term.

The Tables on pages 298–299 show that tuberculous meningitis is, for the most part, a disease of early life. Of the deaths at all ages registered last year not fewer than 3,887, or 66 per cent. occurred within the first five years of life—a number corresponding to a rate of 97 per 100,000 living at that age. The deaths under one year were equal to 145 in every 100,000 infants born; 49 of which occurred in the first six months, and 96 in the last six months of that period.

Throughout the last twenty years there has been a steady fall in the recorded mortality from tuberculous meningitis; this will appear on reference to the following table, which gives, for each of the last four quinquennia, the average death-rates from tuberculous meningitis in each hundred thousand living at ages under five years:—

Quinquennia.	Boys.	Girls.	Both Sexes.
1888–92	161	119	140
1893–97	146	116	131
1898–1902	130	108	119
1903–07	115	99	107

In each of the last three reports the mortality from this disease has been abstracted for particular areas; and from these, as well as from a table in Part I. of the Supplement to the 65th Annual Report, p. xcvi., it appears that tuberculous meningitis is generally more destructive to young children in the town than in the country. In the selected urban counties the mortality of infants under one year was equal in 1907 to a rate of 161 per 100,000 births; and, in the rural counties to a rate of 92 in the same number of births.

Tuberculous Peritonitis.—Under this head and that of tabes mesenterica together there were returned last year 4,501 deaths at all ages, or fewer by 1,042 than the corrected average number in the preceding five years. Of this total 3,532 were definitely ascribed to tuberculous peritonitis, the remaining 969 being indefinitely assigned to tabes mesenterica.* Not less than 64 per cent. of the deaths at all ages were those of children under five years. Among 100,000 boys living at this age the deaths were 80 in number; whilst among the same number of girls living the deaths numbered 65. The deaths of infants of both sexes at ages under one year were in the proportion of 171 per 100,000 births, and of these 96 occurred within the first six months, and 75 within the second six months after birth.†

The following table shows, for each of the last four quinquennia, the average death-rates from this disease in each 100,000 living under five years of age:—

Quinquennia.	Boys.	Girls.	Both Sexes.
1888–92	187	150	168
1893–97	163	131	147
1898–1902	138	110	124
1903–07	102	82	92

We thus see that there has been a considerable fall in the mortality from tuberculous peritonitis within the last twenty years. The majority of victims to this disease are boys, but the rate of decrease in mortality since 1888–92 has been nearly equal in children of both sexes.

From tables in the present as well as in previous reports it will be seen that tuberculous peritonitis (in common with tuberculous meningitis) is far more fatal in the town than in the country. In the period under review this disease was fatal to 185 infants under one year in each 100,000 births in the urban counties, and to 124 per 100,000 births in the rural counties.

Other Tuberculous Diseases.—In the year under notice the deaths at all ages returned under this head were 5,876 in number, and corresponded to a rate of 168 per million living, which is slightly below the average rate in the preceding five years (see Table 22). This total consists of 4,061 deaths from general tuberculosis, and of

* In the year 1901 more than half of the deaths under this head were thus indefinitely returned.

† See pages 72–73 under "Infantile Mortality."

1815 deaths from lupus, scrofula, and tuberculous diseases of the bones, joints, and other parts of the body besides those dealt with in previous sections of this report. Of the 5,876 deaths at all ages from 'other tuberculous diseases' 2,073 were those of children under five years of age (*see* pages 298 and 299).

The diseases included in this section are more fatal to males than to females. The mortality from these diseases differs from that of the other specified forms of this infection, inasmuch as it has shown no marked tendency to decrease in recent years. From Table 21, on page 24, it may be gathered that there has been a slight increase since 1901 under the head of tuberculosis of the bones, joints, &c.; but that the deaths from general tuberculosis as well as from lupus and from scrofula have shown no tendency to increase since the commencement of the present century.

Alcoholism.—Under the heading "Alcoholism, delirium tremens," the deaths of 2,201 persons, 1,328 males and 873 females, were returned in the year under notice; of this total 43 had been originally certified as from hæmatemesis, hæmoptysis, peritonitis, mania, paralysis, or some other indefinite cause, the true nature of the fatal malady having been ascertained subsequently in each case by correspondence with the medical attendant. Among males the deaths at all ages were equal to a rate of 79 per million, and among females to a rate of 48 per million, both of which rates are below the average in recent previous years. In the last seven years nine-tenths of the deaths from alcoholism occurred within the main working period of life, *i.e.*, at ages from 25 to 65 years.

Mortality at ages 25 years and upwards.	Males.			Females.		
	Alcoholism.	Cirrhosis of the Liver.	Both Diseases	Alcoholism.	Cirrhosis of the Liver.	Both Diseases.
1896-1900... ..	227	331	558	137	237	374
1901	236	317	553	163	231	394
1902	220	304	524	132	209	341
1903	192	287	479	127	202	329
1904	179	285	464	111	204	315
1905	165	276	441	105	211	316
1906	168	268	436	107	197	304
1907	166	259	425	98	205	303
Ratio per cent. of Mortality in 1907 to that in 1896-1900.	73	78	76	72	86	81

It has been frequently stated in these reports that the deaths actually assigned to alcoholism or to delirium tremens form an imperfect measure of the mortality caused by alcoholic intemperance, and that the best available indication is probably furnished by the combined mortality from alcoholism and cirrhosis of the

liver. Almost the whole of the deaths returned under these two headings occur among persons aged 25 years and upwards; accordingly, in the table on page cvi the deaths of persons above 25 years of age are given in proportion to the number living at those ages.

The mortality ascribed to alcoholism and cirrhosis of the liver, which had been increasing for many years, and especially in the years 1896-1900, reached its highest point in the last year of that quinquennium. In the year 1900 the death-rate from these causes among males at the ages specified reached 623 per million, and among females 449 per million. Since that year, however, there has been a steady decline in the mortality ascribed to these causes—the rate in 1907 being below the mean rate in 1896-1900 by 24 per cent. in the case of males, and by 19 per cent. in the case of females. As a result of medical inquiry by this office the mortality from alcoholism in the years 1900 and 1901 was materially increased by the transference of deaths that had originally been certified as from neuritis. But this addition does not fully account for the excessive mortality in the first-named year.

Rheumatic Fever * (Acute and Sub-acute Rheumatism).—In the year under notice the deaths of 967 males and 1057 females were referred to this disease, these deaths corresponding to rates of 57 and 59 per million of the respective sexes. According to the experience of the last seven years, the age of maximum fatality from this disease is from 10 to 20 years in each sex. At ages under five years boys are slightly more liable than girls to succumb to it, whilst at ages from 5 to 15 years the disease is most fatal to girls. Between the ages of 15 and 25 years the mortality is about equal in both sexes, whilst at ages from 25 to 75 men die of rheumatic fever in larger proportion than do women. The average death-rates per million living at specified ages among males and females in the years 1901-7 are shown by the following table:—

Rheumatic Fever. Mortality at Age-groups.					Average, 1901-07.	
					Males.	Females.
All ages	...	...	...	...	62	59
0—	...	...	...	...	19	17
5—	...	...	...	...	62	70
10—	...	...	...	...	83	98
15—	...	...	...	...	79	81
20—	...	...	...	...	52	54
25—	...	...	...	...	60	49
35—	...	...	...	...	73	56
45—	...	...	...	...	70	66
55—	...	...	...	...	67	59
65—	...	...	...	...	62	55
75 and upwards	...	...	...	...	41	46

* Previous to the beginning of the current century rheumatic fever had been classed together with rheumatism of the heart; consequently the present mortality from rheumatic fever alone cannot be compared with that of periods earlier than 1901.

Gout.—In several previous reports, and for reasons there given, doubts have been expressed whether the actual incidence of fatal gout among the English population can be regarded as accurately shown by the registered mortality from that disease. In the year now under notice the deaths of males from gout were 362 in number at all ages, and the deaths of females were 88, showing a slight decrease in both sexes on the numbers of the previous year.

In your 68th Annual Report (page xcix.) a table was given showing the mortality actually attributed to this disease in two quinquennial periods a quarter of a century apart. The figures both for 1906 and 1907 confirm the statement previously made, that in both sexes gout is now less fatal than it formerly was at most ages above 35 years—this being mainly a disease of middle, or of advanced life.

Malignant Disease.

The deaths ascribed to cancer or malignant disease in the year under notice numbered 31,745 at all ages, and exceeded by 109 the annual average in the previous quinquennium, corrected for increase of population. If the deaths from malignant disease in 1907 be calculated on the aggregate population without reference to the ages of the living, the disease appears to have exacted a death toll of 781 per million among males, and of 1026 per million among females.

For comparative purposes, the chart facing page cxvi is continued from the previous report; it shows a general increase in the recorded mortality of both sexes from malignant disease in the last half century, although in comparison with the previous year there was a slightly reduced mortality in the year under notice. The enormous difference in the mortality of the two sexes from cancer of the generative organs is indicated by appropriate shading.

Cancer.		Crude Rates.	Corrected Rates.*		
			Average, 1902-06.	Average, 1902-06.	Year 1907.	Ratio.†
Mortality per million Living at ages 35 years and upwards.					
Both Sexes	England & Wales ...	2,645	2,645	2,734	103
	Urban Counties ...	2,604	2,760	2,848	103
	Rural Counties ...	2,819	2,449	2,589	106
Males	England & Wales ...	2,285	2,285	2,401	105
	Urban Counties ...	2,230	2,403	2,518	105
	Rural Counties ...	2,495	2,100	2,244	107
Females ...	England & Wales ...	2,969	2,969	3,033	102
	Urban Counties ...	2,942	3,080	3,143	102
	Rural Counties ...	3,103	2,761	2,807	105

* See note to table on page lxxviii.

† *i.e.*, the ratio of the corrected death-rates in 1907 to those in 1902-6, the latter taken as 100.

Uncorrected or "crude" rates of mortality are especially misleading in the case of cancer, because of the restricted age constitution of the victims. But if, instead of computing the crude death-rate in the ordinary way, we apply the deaths at ages above 35 years to the number living at those ages, we obtain the mortality at that stage of life in which cancer is most destructive; and the result, corrected for age constitution of the population, is fairly comparable as between successive periods, or as between different localities. The preceding table has been constructed on this principle. It shows for the year under notice the death-rate from malignant disease in that portion of the population living at ages above 35 years (*a*) in England and Wales as a whole (*b*) in the selected urban counties, and (*c*) in the selected rural counties—the rates in 1907 being compared with the averages in the five years immediately preceding.*

This table shows, as similar tables in previous reports have shown, that the recorded mortality from malignant disease still continues to increase more rapidly among males than among females. The corrected rates in the second column of figures clearly indicate that cancer is more destructive in the town than in the country, although the crude rates in the first column would seem to show the reverse.†

The table on page cxvi shows the mortality from malignant disease per million of each sex at ages from 35 years upwards, at which period of life this disease secures 96 per cent. of its victims. The table further shows that in the year under notice there has been an increase on the quinquennial average rates at every age group in men, and an increase at every age group above 55 years in women.

Tables N. and O. show, for males and females respectively, the frequency with which the various parts of the body are attacked by malignant disease. It is well known that cancer is more fatal to women than to men, but this is accounted for by the fact that the generative and mammary organs of women are much more frequently the seat of disease than are those of men. In the seven year period ending with 1907 the recorded deaths of males from malignant disease, other than that of the generative and mammary organs, were equal to a rate of 730 per million, whilst the deaths of females with the same reservation did not exceed 594 per million. In the same period there died of malignant disease in England and Wales 207,764 persons, of whom 84,800 were males and 122,964 were females. In Tables P. and Q. these numbers have been reduced proportionally to 10,000 total deaths from cancer, among males and females respectively. The numbers in these tables must not be taken as indicating the relative frequency of

* For the composition of these groups see page lxxi.

† But there still remains, even in the corrected rates, an error for which adjustment is impracticable. This error results from the circumstance that in our principal towns a large portion of the beds in hospitals are occupied by patients who have migrated thither from the country. A considerable number of cancer patients die in hospital, and in some of these cases the previous residence of the patients cannot accurately be ascertained. Consequently the complete distribution of hospital deaths is not at present possible,

TABLE N.—ENGLAND and WALES.—DEATHS from MALIGNANT

MALES.

Part of the Body Affected,*	All Ages.	Ages					
		Under 1 Year.	1—	2—	3—	4—	Total under 5 Years.
TOTAL ..	84,800	92	87	103	104	89	475
Skin of—							
Face	1,625	1	2	—	1	2	6
Lip	1,346	—	1	—	—	—	1
Nose	154	—	—	—	—	—	—
Scalp	80	—	2	—	—	—	2
Ear	173	2	—	—	2	—	4
Stomach	18,294	1	—	—	—	—	1
Intestines	6,512	3	2	2	2	2	11
Rectum	8,690	—	1	—	—	—	1
Breast	160	—	—	—	—	—	—
Esophagus	5,403	—	—	—	—	—	—
Liver and Gall Bladder	10,853	7	4	7	10	3	31
Pancreas	1,537	1	1	—	—	—	2
Bladder and Urethra	2,632	—	—	—	7	1	8
Pharynx, Throat	1,902	2	—	—	—	2	4
Larynx and Trachea	1,645	1	—	—	1	—	2
Thyroid	151	—	—	—	—	1	1
Tongue	4,636	—	—	—	—	—	—
Mouth	1,521	—	1	1	2	1	5
Prostate	978	—	—	—	—	—	—
Peritoneum	741	4	3	1	4	4	16
Pleura	61	—	—	—	—	—	—
Brain	759	3	3	5	10	13	34
Spinal Cord	46	1	—	1	—	—	2
Heart and Pericardium	9	—	—	—	—	—	—
Globe of Eye, Orbit	264	2	3	25	17	10	57
Axilla	112	—	—	1	—	1	2
Groin	160	—	—	—	—	2	5
Lymphatic Glands	190	2	—	1	—	1	2
Shoulder	147	—	—	—	1	1	2
Arm, Leg	1,182	5	6	2	2	1	16
Hip	66	—	—	—	—	—	—
Skull	113	—	3	3	4	2	12
Rib, Sternum	141	—	—	—	—	—	—
Spinal Column	202	—	2	—	1	—	3
Jaw	2,486	4	5	2	4	3	18
Buttock	21	1	—	—	—	—	1
Pelvic Bones	445	2	4	1	1	1	9
Kidney and Supra-Renals	920	21	30	31	14	23	119
Testes and Penis	1,242	2	—	2	2	1	7
Parotid Gland	257	2	—	—	1	1	4
Lung	1,072	1	—	3	3	1	8
Mediastinum	845	—	1	1	2	1	5
Mesentery	195	3	—	—	1	—	4
Lymphatic Glands of Neck	2,433	6	1	1	2	4	14
Spleen	178	1	3	2	—	—	6
Abdomen	1,126	3	6	2	7	5	23
Thorax	237	2	1	—	—	3	6
Part not stated	858	9	2	9	3	—	23

* The arrangement of this column has been fixed in consultation

DISEASE, 1901-1907, CLASSIFIED according to AGE, and PART AFFECTED.

MALES.

Part of the Body Affected,*	at Death,											
	5—	10—	15—	20—	25—	35—	45—	55—	65—	75—	85 and upwards.	
TOTAL,	221	205	339	523	1,933	5,926	15,826	25,832	23,385	9,194	941	TOTAL,
Skin of—												
Face, Lip, Nose, Scalp, Ear, Stomach, Intestines, Rectum, Breast, Esophagus, Liver and Gall Bladder, Pancreas, Bladder and Urethra, Pharynx, Throat, Larynx and Trachea, Thyroid, Tongue, Mouth, Prostate, Peritoneum, Pleura,	1	—	6	5	19	84	204	339	453	405	103	103
Brain, Spinal Cord, Heart and Pericardium, Globe of Eye, Orbit, Axilla, Groin, Lymphatic Glands, Shoulder, Arm, Leg, Hip, Skull, Rib, Sternum, Spinal Column, Jaw, Buttock, Pelvic Bones,	—	—	—	1	4	40	116	283	416	386	99	—
Kidney and Supra-Renals, Testes and Penis, Parotid Gland, Lung, Mediastinum, Mesentery, Lymphatic Glands of Neck, Spleen, Abdomen, Thorax, Part not stated,	39	33	40	49	114	145	141	112	47	4	1	1

with Dr. Bashford, Director of the Imperial Cancer Research Fund,

TABLE O.—ENGLAND and WALES.—DEATHS from MALIGNANT

FEMALES.

Table showing deaths by part of the body affected and age group for females. Columns include Part of the Body Affected, All Ages, and sub-columns for ages Under 1 Year, 1-2, 2-3, 3-4, 4-5, and Total under 5 Years.

* The arrangement of this column has been fixed in consultation

DISEASE in 1901-1907, CLASSIFIED according to AGE, and PART AFFECTED.

FEMALES.

Table showing deaths by part of the body affected and age group at death for females. Columns include at Death (5-10, 10-15, 15-20, 20-25, 25-35, 35-45, 45-55, 55-65, 65-75, 75-85 and upwards) and Part of the Body Affected.

with Dr. Bashford, Director of the Imperial Cancer Research Fund.

TABLE P.—ENGLAND and WALES.—MALES.—PROPORTION in 10,000 DEATHS from CANCER, of DEATHS at several AGES from CANCER of specified ORGANS or PARTS of the BODY.

(Based on a total of 84,800 deaths of MALES from Cancer in the seven years 1901-7.)

Table P: Proportion in 10,000 deaths of males from cancer by age group (0-35, 35-45, 45-55, 55-65, 65-75, 75-85, 85+) and organ affected. Includes categories like Skin, Stomach, Intestines, and various organs.

TABLE Q.—ENGLAND and WALES.—FEMALES.—PROPORTION in 10,000 DEATHS from CANCER, of DEATHS at several AGES from CANCER of specified ORGANS or PARTS of the BODY.

(Based on a total of 122,964 deaths of FEMALES from Cancer in the seven years 1901-7.)

Table Q: Proportion in 10,000 deaths of females from cancer by age group (0-35, 35-45, 45-55, 55-65, 65-75, 75-85, 85+) and organ affected. Includes categories like Skin, Stomach, Intestines, and various organs.

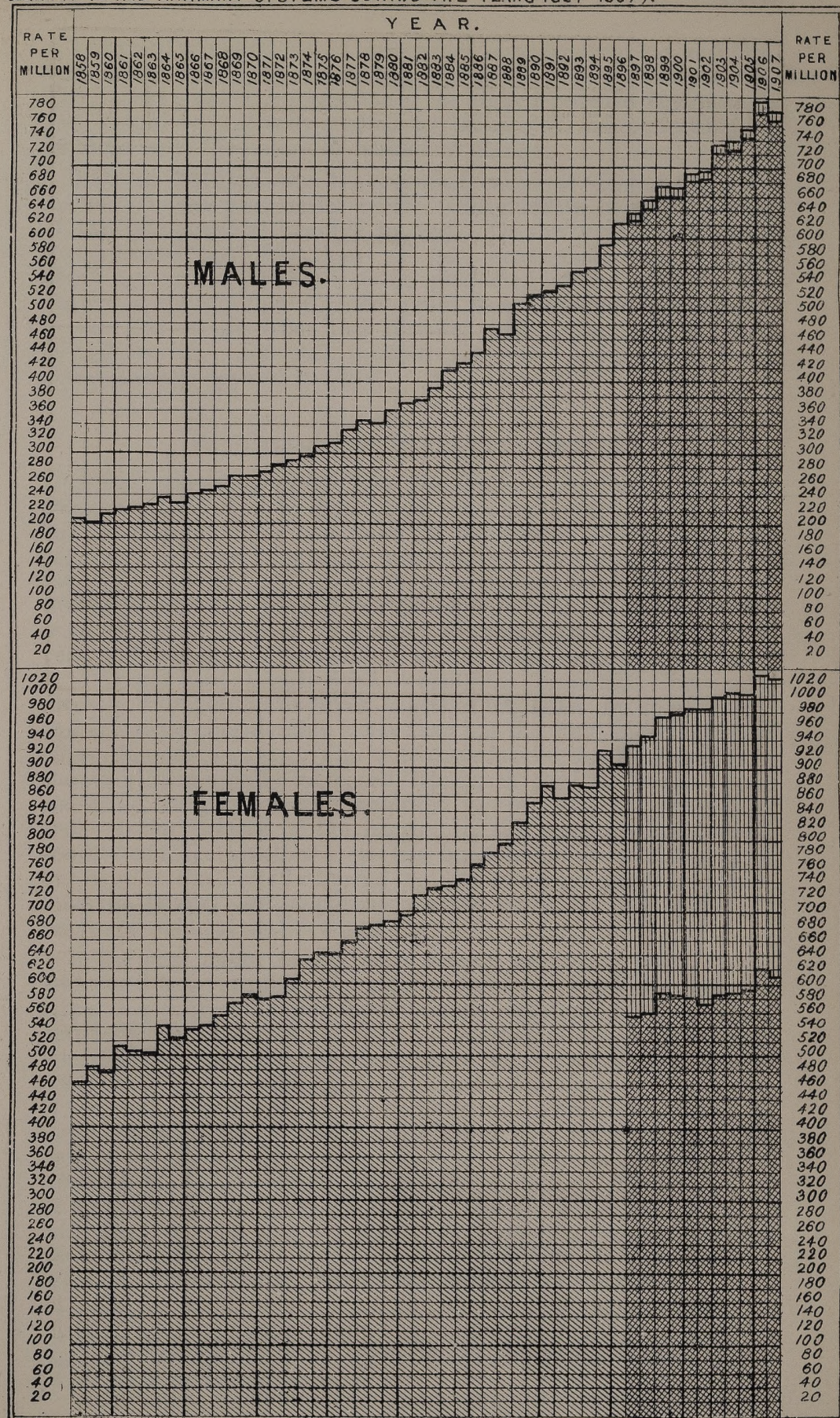
Cancer.	Average 1902-06.			Year 1907.			
	Mortality at Age-Groups.	England and Wales.	Urban Counties.	Rural Counties.	England and Wales.	Urban Counties.	Rural Counties.
Both Sexes	35-	631	717	560	670	707	631
	45-	2,003	2,169	1,739	2,000	2,131	1,926
	55-	4,212	4,431	3,887	4,329	4,576	3,846
	65-	6,812	6,955	6,630	7,205	7,409	7,039
	75-	7,776	7,527	7,769	8,324	8,184	8,346
Males	35-	419	457	353	444	457	438
	45-	1,572	1,758	1,276	1,596	1,738	1,441
	55-	3,912	4,163	3,555	4,147	4,401	3,751
	65-	6,754	6,886	6,666	7,166	7,350	6,886
	75-	7,660	7,427	7,697	8,077	8,282	7,826
Females	35-	888	964	749	881	944	806
	45-	2,401	2,556	2,153	2,373	2,501	2,359
	55-	4,474	4,666	4,177	4,488	4,730	3,928
	65-	6,858	7,007	6,800	7,237	7,454	7,165
	75-	7,858	7,592	7,823	8,499	8,120	8,735

cancer of any particular organ in one sex as compared with the other sex. They nevertheless supply a ready means of determining, for males and females separately, the frequency with which certain parts of the body are invaded. Table P. may be read thus—according to the experience of 1901-7, of 10,000 males dying of cancer 2157 suffered from cancer of the stomach, of which number 37 were under 35 years of age, 149 from 35-45, &c. Table Q. may be read similarly—thus, in the seven years previously specified, of 10,000 females dying of cancer 2241 suffered from cancer of the uterus, of whom 97 were under 35 years old, 398 from 35 to 45, 645 from 45 to 55, &c. The deaths under 35 are so few that in this and some other tables they have been placed together in one group.

Among males the organ most frequently invaded is the stomach, which is the seat of disease in nearly 22 per cent. of the fatal cases; the liver and gall bladder are invaded in nearly 13 per cent. of the whole, the rectum in 10 per cent., and the intestines in 8 per cent. Taken together the parts here specified are attacked in more than half of the fatal cases. Among females the generative and mammary organs are affected in more than two-fifths of the total cases, while a further two-fifths are contributed by affections of the stomach, liver, intestines, and rectum taken together.

In this connection I cannot refrain from making brief reference to the important investigations respecting the nature of cancer which have been carried out since the inauguration of the Imperial Cancer Research Fund under the patronage of His Majesty the King.

DIAGRAM IX:—ENGLAND & WALES 1858-1907. CANCER.—ANNUAL DEATH-RATES PER MILLION LIVING AT ALL AGES, CORRECTED FOR VARIATIONS OF AGE CONSTITUTION. (NOTE.—THE PORTION SHADED VERTICALLY REPRESENTS THE MORTALITY ASCRIBED TO CANCER OF THE GENERATIVE AND MAMMARY SYSTEMS DURING THE YEARS 1897-1907).



NOTE.—The death-rates throughout the entire period are based upon the age constitution of the population as enumerated in 1901.

The third scientific report on cancer investigation has recently been issued by the Superintendent of Research, Dr. E. F. Bashford. This report is full of information of the highest possible significance; and should be carefully studied by those who are concerned in inquiries as to the nature of malignant disease.

Diabetes Mellitus was the certified cause of death in 3,360 instances in the year under notice—this number being in excess of the quinquennial average by 203. Of the total deaths from this disease, not less than 72 per cent. occurred at ages above 45 years. From a table published in the 68th Annual Report, it appears that in recent years there has been an increase in the loss of life from this disease, which has been greatest among women; and that in both sexes the increase has been mainly at ages beyond mid-life.

II.—DISEASES OF PARTICULAR ORGANS.

In the year 1907 rather less than half of the deaths from all causes were referred to diseases of particular organs. Within the last vicennium there has been a remarkable decrease in the recorded mortality from acute inflammatory disorders of the brain, the lung, and the peritoneum;* nevertheless, these disorders in the aggregate still account for about one-ninth of the mortality from definite diseases of all kinds. (Tables 21 to 26). Since the year 1888, the earliest period dealt with in these Tables, the mortality in England and Wales from meningitis, bronchitis, laryngitis, pleurisy, and peritonitis taken together has fallen by 43 per cent., and therefore considerably faster than has the total mortality from other definite diseases. The only disorders of this kind that have shown a substantially increased fatality in the last twenty years are otitis, Bright's disease, enteritis, gastro-enteritis, appendicitis and valvular disease of the heart. In the mortality from these conditions taken together there has been an increase averaging 54 per cent. in the period referred to. To some extent, these variations in fatality are apparent merely, and are the result of improved medical certification.

In the year under notice, as in several preceding years, I have addressed large numbers of letters of inquiry to medical attendants respecting deaths that had been vaguely referred, in the original certificates, to affections of one or another of the organs above specified. Within the last seven years inquiries have been issued concerning 7,000 deaths originally certified as from inflammation of the brain, the larynx, or the peritoneum. From the answers to these inquiries the following information has been derived. Of these 7,000 deaths there were referred to puerperal sepsis 324, to tuberculosis 892, to diphtheria 260, to malignant disease 114, to cerebro-spinal fever 422, and to other definite headings, 2,507. It will thus be seen that of the 7,000 deaths originally returned unsatisfactorily, 4,519 were, on the authority of the medical certifiers, transferred to appropriate headings in the tables.

* There is no doubt that these diseases are for the most part infective in character. The septic nature of many of them has been affirmed in the medical Certificates of the cause of death.

Meningitis.—In the year 1907 there were referred to inflammation of the brain or its membranes 5,429 deaths, or fewer by 1,034 than the average number in the previous five years, corrected for increase of population. In the case of 270 of these deaths the infective nature of the malady was recognised by the medical certifiers. (See Supplementary Table, pages 310-311.) Of the total deaths from meningitis 64 per cent. occurred at ages under five years. Of 100,000 boys living at this age 94 succumbed to this disease, and of the same number of girls 80 succumbed to it.

Softening of the Brain.—In the year under notice there died from softening of the brain 2,279 persons, corresponding to a mortality of 65 per million living at all ages and of both sexes. Among males the rate was 69 per million of that sex, and among females 62 per million, these rates differing only slightly from the respective averages. Not less than 95 per cent. of the total deaths were those of persons beyond the age of 45 years.

General Paralysis of the Insane.—The deaths from this affection in the year 1907 numbered 2,332, and were equal to a rate of 67 per million living at all ages and of both sexes. The male rate was equal to 105 per million living of that sex, and the female rate to 31 per million, both of these rates being almost identical with the quinquennial averages. Few deaths from this disease take place before the age of 25 years; the statistics of the last seven years show that men die of it in much greater numbers than women. The age of maximum fatality among men is from the 35th to the 55th year, when the mortality is at the rate of from 310 to 323 per million living. Among women the most fatal period seems to be towards the end of life, but even then their mortality is considerably less than that of men of the same ages.

Epilepsy.—The fall in the mortality from epilepsy recorded in several recent Reports still continues. In the year under notice there were registered as due to this disease 2,800 deaths, equal to a rate of 80 per million living, as against a mean rate of 115 per million in the ten years ending with 1880. In relation to this decrease it is desirable to note that many deaths which would formerly have been assigned to convulsions, without reference to the cause of that symptom, are now certified as from epilepsy.

Convulsions.—Attached to this heading, in the official Nomenclature of Diseases, is the following instruction—"this term being the name of a symptom, should be used only when more precise information is wanting. When the cause is known, the return should be made under the head of that cause"*. Notwithstanding that the Royal College of Physicians have issued similar instructions in their revisions of the last thirty years, convulsions still appears to cause the death of one in every 14 children dying under the age of five years. In the year 1907 not fewer than 11,562 deaths were referred to this symptom, 10,150 of which were those of infants under the age of one year. The details of mortality from convulsions will be found in the Tables at pages 72-83.

* Nomenclature of Diseases by the Royal College of Physicians of London, third revision, page 31.

Locomotor Ataxy.—The mortality referred to this disease appears to be slowly but steadily increasing—the registered deaths in the year under notice numbering 584, or more by 44 than the average in the preceding quinquennium, corrected for increase of population. In the national returns this disease has been separately abstracted for the last seven years, previous to which period the fatal cases were classed to diseases of the spinal cord. Nevertheless the deaths from locomotor ataxy since 1901 are still too few to justify the publication of rates of mortality respecting them, at the usual groups of ages. The disease appears to be fatal to adults exclusively, and to be more fatal to men than to women.

Neuritis, Peripheral, Poly-neuritis.—In the year under notice the deaths classified under the head of neuritis numbered 475, not fewer than 335 of which were those of females. In all cases where neuritis appears in the Medical Certificate in conjunction with alcoholism as a cause of death, the entry is made under "intemperance" and not under the present heading. Neuritis has been separately classified, in the records of this office, only since the beginning of the present century; but the statistics of the last seven years would appear to indicate that this affection is considerably more fatal to women than to men, and that very few deaths are attributed to it before the age of puberty.

Tumour of the Brain.—According to Tables 21 and 22 the mortality returned under this head has increased slightly since 1901. The deaths referred to this cause in the year 1907 amounted to 753 at all ages, of which 383 occurred in males and 370 in females. It should again be mentioned that in all cases where brain tumour is certified to be due to a specific disease the death is referred to the specific cause, and not to the local affection. In addition to the 753 deaths referred to the present heading there were originally certified as from tumour of the brain 132 deaths, of which 72 were ascertained to be due to malignant disease,* 41 to tuberculosis, and 14 to syphilis.

Diseases of the Heart.—In the year under notice diseases of the heart are reported to have caused the deaths of 50,968 persons, namely, 24,265 males and 26,703 females. Full information concerning these deaths, their age and sex distribution, together with the several conditions included, in this group, will be found in the abstracts on pages 302-303. Tables 21 and 22 indicate that valvular disease, including endocarditis, has been in recent years the most frequent of all the definite forms of this malady. The fact that the mortality from valvular affections is apparently increasing from year to year must be considered in relation to the associated fact that the death-rate from indefinite forms of heart disease is decreasing. As regards the fatality of other varieties of this affection the figures do not reveal any striking differences.

In recent years valvular heart disease has been more fatal to the female than to the male sex up to the age of 55 years, whilst after

* In Tables N and O, on pages cx-cxiii, the deaths from malignant disease of the brain are shown at the several age groups, for the seven year period 1901-7.

that age the reverse has been the case. From childhood until the 20th year the mortality increases gradually, and from the 35th year to the close of life, very rapidly.

Diseases of the Blood Vessels.—To one or another of the conditions included under this head there were referred last year 30,954 deaths, more than half of which were those of females. By far the greater part of the deaths under this heading are referred to cerebral hæmorrhage or to its symptoms apoplexy or hemiplegia. On the average of the last seven years the deaths at all ages from cerebral hæmorrhage correspond to a rate of 665 per million for males, and of 759 per million for females. The mortality from this cause is low until after the stage of puberty, but at ages above 35 years it accounts for the deaths of 2,083 in a million men, and of 2,284 in a million women. In the 20 years intervening between the 35th and the 55th year women fall victims to this disease in greater proportion than do men, whilst at ages above 55 years the highest fatality is among men. Since the year 1900 diseases of the blood vessels have been distinguished from other diseases of the circulatory system; but in previous years cerebral hæmorrhage, apoplexy, and hemiplegia were included among diseases of the nervous system. The recorded mortality from cerebral hæmorrhage has decreased substantially in recent years; but it is important to note that many deaths from this condition which are now properly attributed to Bright's disease or some equally definite cause, would in years gone by have been certified as from apoplexy or hemiplegia simply, without further remark. (Table 21, page 28.)

The time honoured name "paralysis" still frequently appears in medical certificates, without mention of the lesion causing that symptom, although the Royal College of Physicians have condemned this practice, except in cases where the cause of paralysis is unknown. In certifying deaths of this nature brain paralysis should invariably be distinguished from paraplegia, and the terms hemiplegia and apoplexy should be discontinued in favour of the authorized term cerebral hæmorrhage. In cases where the last named condition occurs in association with disease of the kidney, the heart, or other important organ, the fact should be stated in the certificate. The septic nature of a certain portion of the deaths from diseases of the blood vessels is now recognized in the medical certificates (*see* supplementary tables, pages 310-311).

Laryngitis.—In the year under notice 1,141 deaths at all ages were referred to laryngitis; membranous laryngitis, not stated to be diphtheritic, being responsible for 29 of these deaths*.

Table 22 shows that in proportion to population the deaths referred to "laryngitis" are at the present time fewer than they were twenty years since. But, from this statement, it must not be inferred that laryngitis is really less fatal now than it

* The Royal College of Physicians, in their recently issued nomenclature of diseases, recognize two chief forms of "simple laryngitis"; (a) catarrhal, and (b) membranous. But they attach to the form last-mentioned, the warning that cases of diphtheria should not be returned under that heading.

was formerly; because, in the year under notice the deaths originally certified as from this affection exceeded by about 3 per cent. the number eventually classified as such in the official tables. As the specific nature of most of the fatal cases of membranous laryngitis has been ascertained by correspondence with the medical attendants, these are included under the head of diphtheria. It has previously been remarked that the age distribution of laryngitis corresponds somewhat closely to that of the indefinite condition known as "croup," and this was the case in the year 1907, when about two-thirds of the deaths from laryngitis were those of children under the age of five years.

Bronchitis.—Among the several conditions now included under the head of "diseases of the respiratory system" bronchitis claims every year the largest number of victims,* the deaths last year numbering 42,204, and being equal to a crude rate of 1,208 per million living, without distinction of age or of sex. The recorded death-rate from this disease has fallen considerably in the course of the last quarter of a century, the average death-rate in the last five years having been lower than in the first five years of that period, by more than 40 per cent. Relatively to the numbers living at all ages, bronchitis affects both sexes almost equally, the rates last year being 1,210 per million for males and 1,206 per million for females (Tables 24 and 26). At ages under five years boys suffer more severely than girls, the rates at that age being 380 and 301 respectively, per 100,000 living of each sex (Tables 33 and 34, pages 74-77). Except at ages 5 to 15, and above 75 years, the mortality of males from bronchitis is higher than that of females. These Tables show the incidence of this disease in infancy. It appears that the second month after birth is the most liable to fatal attacks of bronchitis, the rate of mortality in the first, third, and subsequent months of the first year being lower than in the second month, and the rates in the second, third, fourth, and fifth years being lower still.

Pleurisy.—Relatively to population, the recorded deaths from pleurisy, not stated to be tuberculous, have decreased considerably within the last seven years. This disease still continues to be more fatal to males than to females; the crude death rate at all ages in the last seven years having averaged 48 and 33 per million living of the respective sexes. The tuberculous nature of some fatal pleurisies is now coming to be generally recognized, and in all cases where pleurisy is authoritatively referred to this infection the death is classified accordingly.† The statistics of the last seven years show that pleurisy is more fatal at ages below five years than at any other age up to about the forty-fifth year; after which age its fatality increases rapidly in both sexes. In the year under notice there were registered 405 fatal cases of pleurisy, of which the infective nature was recognized by the medical attendants. (*See* supplementary tables, pages 310-311.)

* According to the returns pneumonia has, in the last six years, been more fatal than bronchitis; but pneumonia, being regarded as an infection, is now included among general diseases.

† In the recently issued nomenclature of diseases, the Royal College of Physicians have inserted a special instruction that in all cases where pleurisy is known to be tuberculous, the fact should be stated in the certificates.

Gastric Ulcer.—The number of deaths from gastric ulcer does not vary greatly from time to time. In the year 1907 the deaths so returned amounted to 1,775, against 1,747, and 1,745 respectively, in the two years immediately preceding.

Of the 1,775 deaths, 117 that had originally been certified as from peritonitis or some other indefinite cause were transferred to this heading, after correspondence with the medical attendants. In the seven years ended 1907 the death-rate at all ages from gastric ulcer averaged 35 per million for males, and 65 per million for females. In the Sixty-Ninth Annual Report attention was drawn to the remarkable age incidence of this disease, and in the year under notice the same peculiarity is noticeable. Until the approach of puberty the disease seldom appears in the registers as a cause of death. Among women not fewer than seven out of every ten deaths at all ages occurred at ages from 15 to 45 years, whilst among men at the same ages the proportion did not exceed four out of every ten deaths. In the years 1901-7, women experienced the highest fatality from gastric ulcer at ages from 20 to 25, when it accounted for the deaths of 119 in each million living at that age, or just seven times the rate experienced by men at the same time of life. At all ages after the forty-fifth year the male death-rate exceeded the female, the fatality attaining its maximum among men at ages from 65 to 75 years.

Appendicitis.—In the year under notice 1,969 deaths were referred to appendicitis or to perityphlitis. To this total 108 deaths were contributed as the result of medical inquiry respecting deaths originally referred to peritonitis, but the true nature of which has been subsequently acknowledged by the several medical attendants. Since the year 1901, in which year for the first time appendicitis appeared in our tables as a separate cause of death, this disease has accounted for 12,404 deaths, and for an average annual death-rate of 64 per million among males, and of 42 per million among females. The disease appears to attack persons at all ages; but, disregarding the ages above 75 years when the rates are of doubtful value, the period of highest fatality in both sexes appears to be from the tenth year to the twentieth. This will be seen by the following table:—

APPENDICITIS: MORTALITY PER MILLION, 1901-7.

—	Males.	Females.	—	Males.	Females.
All ages ...	64	42	25— ...	59	37
0— ...	17	13	35— ...	51	34
5— ...	68	52	45— ...	61	40
10— ...	92	58	55— ...	64	47
15— ...	101	56	65— ...	59	48
20— ...	78	43	75 and upwards	62	63

This table shows that, at all stages of life except the most advanced, appendicitis is more destructive to males than to females.

Peritonitis.—To this affection, without specification of cause, there were originally returned in the year under notice 1,109 deaths. As the result of inquiries addressed to medical practitioners this number has been reduced to 697, and of these the infective nature has been medically attested in 46 instances (see supplementary tables, pages 310-311). In all cases where this condition is known to depend on hernial or other obstruction, on ulceration of the stomach or intestines, on appendicitis, metritis, or other definite cause, the death is referred to that cause, and not to peritonitis. I am glad to be able to acknowledge that many practitioners now give in their certificates particulars of this kind, and by so doing materially facilitate the classification of deaths in this office.*

The deaths ultimately referred to peritonitis in the year under notice were equal to a rate of 20 per million living, or less than a third of the rate recorded even so recently as the year 1899. It must, however, be remembered that in recent years many of the deaths which ten years ago would have been ascribed to peritonitis are now referred to appendicitis, to enteritis, to intestinal ulceration, or to some other definite disease for which a separate line is provided in the new list of causes of death. This will account for some of the reduction in the deaths now appearing in the tables under the head of peritonitis. Among males peritonitis was fatal last year in the proportion of 18 per million living, and among females in the proportion of 22 per million.

Cirrhosis and other diseases of the liver.—To these diseases in the aggregate there were ascribed in the year under notice 5,924 deaths, corresponding to a rate of 170 per million living at all ages and of both sexes. Tables 24 and 26 show that at the present time both men and women fall victims to liver diseases much more rarely than was the case twenty years ago. In the year 1887, for example, diseases of this organ were fatal in the proportion of 343 per million living among males, and of 313 per million among females; whereas in the year under present notice the proportions were 173 and 166 respectively.

The greater part of the mortality now ascribed to liver disease results from cirrhosis, which affection is regarded as of special import in connection with the subject of intemperance; accordingly, further remarks on cirrhosis will be found under that heading: the table there given shows that men are more liable than women to succumb to cirrhosis of the liver; the deaths in 1907 at ages above 25 years being equal, among men to a rate of 259 per million, and among women to a rate of 205 per million, both of which rates are lower than those in recent years.

Tables N and O indicate that 27,431 deaths were referred to malignant disease of the liver in the seven years 1901-7. In the

* In the latest edition of their nomenclature of diseases, the Royal College of Physicians divide inflammation of the peritoneum under two heads—

(a) Acute infective inflammation—(1) general or local, (2) suppurative, (3) septic, puerperal.

(b) Chronic inflammation—(1) general or local, (2) tuberculous, (3) cancerous.

The College further insist that when the cause of peritonitis is known the return should be made under the head of such cause—the local condition being also specified.

abstracts on pages 304 and 305 the age distribution of deaths from non-malignant liver diseases is shown. According to the experience of the last seven years the mortality from cirrhosis is inconsiderable until after the twenty-fifth year of life; but from the thirty-fifth to the sixty-fifth year the rate rises rapidly in both sexes, ranging from 169 to 730 per million among men, and from 153 to 440 per million among women.

Acute Nephritis, Chronic Nephritis or Bright's Disease.—These conditions together account for the greater part of the mortality from diseases of the urinary system. In the year under notice not fewer than 13,877 deaths were referred to this heading—a number corresponding to a rate of 397 per million living, without distinction of age or of sex.

The age incidence of mortality from these forms of disease in the last seven years is shown by the following table:—

ACUTE AND CHRONIC NEPHRITIS—MORTALITY PER MILLION LIVING.

Ages.	Males.	Females.	Ages.	Males.	Females.
All ages ...	428	340	25— ...	166	169
0— ...	150	121	35— ...	387	362
5— ...	67	54	45— ...	870	649
10— ...	44	50	55— ...	1,812	1,171
15— ...	62	64	65— ...	2,888	1,854
20— ...	94	93	75 and upwards	3,383	2,092

From this table nephritis is seen to be more fatal to males than to females, except at certain ages between the tenth and the thirty-fifth year. The disease appears as a cause of death at all ages, but its fatality is not excessive until towards mid-life. The lowest fatality in both sexes is experienced in the interval between the tenth year and the fifteenth; but from the thirty-fifth year onwards in both sexes the fatality rapidly increases, until at the more advanced ages nephritis accounts for a mortality approaching that of valvular heart disease.

Tumours and other Diseases of the Ovaries and Uterus.—Among affections of the female generative organs there were returned last year 1,054 deaths from diseases of the ovaries or of the uterus. In the aggregate these deaths corresponded to a rate of 59 per million females living at all ages, or slightly less than the quinquennial average rate, which was 62 per million. In addition to these 1,054 deaths, there occurred in the same period 378 deaths from malignant affections of the ovaries, and 3,965 from malignant affections of the uterus.

Diseases or Accidents of Pregnancy or of Childbirth.—From page 299 it will be seen that puerperal sepsis accounted for the deaths of 1,465 women in the year under notice: in addition to which, 2,055 deaths were attributed to other diseases or accidents of pregnancy or of childbirth; particulars of the age distribution of these deaths will be found in Table M on page xcvi. Of this total,

102 deaths were assigned to abortion or miscarriage, 70 to puerperal mania, 449 to puerperal convulsions, 608 to placenta prævia or flooding, and 826 to other accidents of pregnancy or of childbirth. In 224 out of the 826 deaths last-mentioned the cause was precisely stated: this was ectopic gestation in 74 instances, ruptured uterus in 26, inversion of that organ in 7, deformed pelvis in 27, adherent placenta in 27, conditions necessitating Cæsarian section in 16, and mal-presentation in 6 instances. Of the 2,055 cases in the present category, 352 were further complicated,* the complicating cause being embolism in 178 instances, diseases of the heart or blood-vessels in 48, kidney disease in 43, bronchitis or pleurisy in 27, and pneumonia in 6. The 2,055 deaths from other diseases of pregnancy or of childbirth added to those from the puerperal septic diseases enumerated on page 307 numbered 3,520, and were equal to a rate of 3·83 per 1000 births. In the ten years immediately preceding, the average proportion had been 4·39 per 1000. Table M on page xcvi gives particulars of the 4,672 deaths from all causes whatever, either dependent on, or associated with, the puerperal state. By calculating the mortality on this number it will be raised from 3·83 to 5·09 per 1000 births.† That Table shows that of the deaths there enumerated 4,623 occurred at ages between 15 and 45 years. If, then, the preferable method be adopted of computing these deaths on the estimated number of women living within the same limits of age the mortality will be equal to 529 per million, or 38 per million less than that in the year 1906. In this connection it is necessary to intimate that in all cases in which parturition or miscarriage is known to have occurred within one month before the death of a patient, the fact should be noted by the certifying practitioner.

III.—MORTALITY OF INFANTS AND YOUNG CHILDREN.

The detailed tables of previous reports, showing the mortality from certain causes in the earliest stages of life are continued in the present volume. The tables relating to England and Wales as a whole will be found at pages 72–77, and those relating to the urban and rural areas respectively, at pages 78–81. Throughout these reports the term "Infantile Mortality" signifies the proportion of deaths under one year in each thousand births. The table on the following page summarises the chief results shown in detail in the tables on pages 72–85; but, in the course of what follows in the text frequent reference will be made to particular data in the series of tables now referred to.

The most noteworthy features of infantile mortality are the following:—(1) A considerable excess of male over female mortality. (2) A marked excess in the mortality of both sexes in

* These complicating causes do not appear in Table M, the deaths having been classed to other diseases of pregnancy or of childbirth.

† It has previously been explained that this method of calculating these deaths in terms of birth is imperfect, because in England the data are lacking concerning the number of still births, as well as concerning the number of twin, and of multiple births.

MORTALITY OF INFANTS under ONE YEAR of AGE, 1907.

		PROPORTION OF DEATHS TO 1,000 BIRTHS.					
		All Causes,	Common Infectious Diseases,	Diarrhoeal Diseases,	Wasting Diseases,	Tuberculous Diseases,	Other Causes,
BOTH SEXES.							
England and Wales	All Infants ..	117'62	8'67	14'06	43'18	4'54	47'17
	Legitimate ..	113'43	8'63	13'36	41'41	4'37	45'66
	Illegitimate ..	219'76	9'49	31'44	86'13	8'96	83'74
Urban Counties	All Infants ..	127'66	9'77	16'63	44'42	4'97	51'87
	Legitimate ..	123'14	9'71	15'78	42'51	4'75	50'39
	Illegitimate ..	245'49	11'55	38'64	93'87	10'52	90'91
Rural Counties	All Infants ..	98'58	6'58	9'16	39'76	3'30	39'78
	Legitimate ..	94'79	6'59	8'83	38'04	3'16	38'17
	Illegitimate ..	165'76	6'35	15'05	70'26	5'63	68'47
MALES.							
England and Wales	All Male Infants ..	130'26	8'52	15'64	48'19	5'01	52'90
	Legitimate ..	125'73	8'48	14'93	46'29	4'83	51'20
	Illegitimate ..	240'13	9'67	33'44	94'36	9'77	92'89
Urban Counties	All Male Infants ..	141'10	9'62	18'52	49'40	5'46	58'10
	Legitimate ..	136'20	9'54	17'64	47'36	5'23	56'43
	Illegitimate ..	267'93	11'73	41'47	102'15	11'43	101'15
Rural Counties	All Male Infants ..	110'30	6'66	10'42	44'72	3'57	44'93
	Legitimate ..	106'13	6'63	10'08	42'87	3'39	43'16
	Illegitimate ..	184'55	7'15	16'45	77'61	6'80	76'54
FEMALES.							
England and Wales	All Female Infants	104'49	8'80	12'42	37'94	4'08	41'25
	Legitimate ..	100'65	8'79	11'72	36'33	3'90	39'91
	Illegitimate ..	198'43	9'28	29'37	77'52	8'09	74'17
Urban Counties	All Female Infants	113'70	9'92	14'67	39'24	4'46	45'41
	Legitimate ..	109'56	9'87	13'87	37'48	4'26	44'08
	Illegitimate ..	221'94	11'36	35'68	85'17	9'56	80'17
Rural Counties	All Female Infants	86'43	6'50	7'86	34'62	3'01	34'44
	Legitimate ..	83'05	6'55	7'53	33'04	2'93	33'00
	Illegitimate ..	146'39	5'53	13'64	62'68	4'42	60'12

the urban as compared with the rural areas. (3) An enormous excess of mortality among illegitimate as compared with legitimate infants.

The infantile mortality of last year was exceptionally low, and did not exceed 118 per thousand births, being 16 below the average rate in the quinquennium 1902-6. The decline was most favourable to the female sex, amounting to 12 per cent. among boys, and to 13 per cent. among girls. In the selected urban counties the decline was greater than in the rural, which is partly attributable to the fact that the mortality from diarrhoeal diseases showed a greater proportional decline in the town than in the country. Compared with the previous year, 1907 enjoyed unusual immunity from diarrhoeal diseases, for the loss of life from these diseases was reduced by more than half.

The table on the opposite page shows the varying degrees in which infants fall victims to certain groups of disorders. From this it appears that among the infant population generally "wasting diseases" account for the greatest loss of life; next in order come "diarrhoeal diseases," "common infectious diseases" and "tuberculous diseases."*

In the country generally, all except the common infectious diseases are more fatal to boys than to girls; and all of the groups are more destructive in the urban counties than in the rural.

In view of the terrible sacrifice of life that still besets the offspring of unmarried women, the causes thereof have been further studied with the help of recent statistics. It will be remembered that in the year 1904, at the request of my colleagues of the Duke of Devonshire's Committee on Physical Deterioration, I caused to be prepared, for a limited area, a series of tables contrasting the loss of life among illegitimate infants with that among infants born in wedlock. For the present report, as well as for its immediate predecessor, similar tables have been prepared, but these relate to the whole of England and Wales, instead of to a portion only, as did the tables of 1904. (See pages 72 to 85.)

The death-rate of infants born out of wedlock in 1907 was 220 per thousand births, or nearly double that of infants born in wedlock. The changes, from time to time, in the mortality of illegitimate and of legitimate children demand careful study. If the year 1907 be compared with its predecessor, we find that the former class of infants have experienced a greater decline than the latter class in the mortality from all causes, but a less decline in the mortality from diarrhoeal diseases and from tuberculous diseases.

Although in the year under present notice the difference was less conspicuous than in 1906, experience shows that there is a greater excess of mortality among illegitimate infants in populous places than in rural districts. The figures now for the first time available prove that, with few exceptions, the chief causes of death are everywhere more fatal to illegitimate than to legitimate infants of each sex, but that the excess is greatest in the urban counties. Boys suffer an excess of mortality from all causes equal to 97 per cent. in the urban, and to 74 per cent. in the rural areas; whilst, for girls, the corresponding percentages are 103 and 76.

* For the composition of these groups see table on page 72.

As regards the manner in which deaths from diarrhoeal diseases in young children are certified by medical practitioners, great changes have taken place within the last quarter of a century. This is shown by the following table, which gives for England and Wales as a whole the proportion to 100 deaths from both causes combined—of deaths (a) from diarrhoea, and (b) from enteritis and gastro-enteritis.

Quinquennia.	Diarrhoea.		Enteritis and Gastro-Enteritis.	
	0-1 year.	1-5 years.	0-1 year.	1-5 years.
1876-80	93	92	7	8
1901-05	77	78	23	22

From this it will be seen that, whilst in 1876-80 less than one-tenth part of the deaths attributed to diarrhoea or to enteritis were certified as due to the latter cause, in 1901-05 the proportion had reached nearly one-fourth. Of the total deaths in 1907 from diarrhoeal diseases about four-fifths occurred among children under the age of five years. In the following table the deaths from enteritis, gastro-enteritis, and gastric catarrh are included among the deaths from diarrhoeal diseases.* The table shows the mortality from diarrhoeal diseases among children under the age of five years in each thousand estimated to be living at that age.

—	England and Wales.	Urban Counties.	Rural Counties.
Both Sexes { 1907 ...	3.96	4.86	2.40
{ 1902-06 ...	7.44	9.03	3.67
Males ... { 1907 ...	4.43	5.42	2.70
{ 1902-06 ...	8.08	9.76	4.09
Females ... { 1907 ...	3.52	4.31	2.09
{ 1902-06 ...	6.80	8.31	3.25

From this table it will be seen that in the year 1907, as compared with the quinquennium 1902-6, the diarrhoeal mortality of children under five years declined by 46 per cent. in the urban area, and by 35 per cent. in the rural. In the year under notice nearly one-tenth of the total mortality at these ages was due to diarrhoeal diseases.

* It will be noticed that in the section on diarrhoeal diseases at all ages the deaths from enteritis, gastro-enteritis, and gastric catarrh are shown separately from those from other diarrhoeal diseases. (See page xciv.)

ILL-DEFINED OR NOT SPECIFIED CAUSES OF DEATH.

Notwithstanding the efforts made by the Royal College of Physicians in their successive publications to impress upon medical practitioners the importance of accuracy in certifying the deaths of their patients, it is still found that a large proportion of the causes are so vaguely stated as to be worthless for statistical purposes.

In the year 1907 the deaths of 48,979 persons, *i.e.*, 9.3 per cent. of the total deaths, were attributed to causes that do not admit of precise classification. Such deaths would have appeared in larger numbers than they now do, had it not been for the inquiries that are systematically addressed to medical practitioners respecting deaths certified as due to tumour, dropsy, gangrene, hæmorrhage, and many indefinite conditions. In the course of the year 4,166 answers to letters of inquiry were received at this office. The 592 inquiries relating to deaths from peritonitis resulted in the transference of 31 deaths to puerperal sepsis, 47 to tuberculous peritonitis, 15 to malignant disease, 4 to alcoholism, 20 to generative diseases, 52 to gastric ulcer, 44 to ulceration of the intestines, 108 to appendicitis, 61 to other specified diseases of the digestive organs, and 30 to other definite causes. The 697 inquiries regarding tumours of various organs led to the transference of 387 deaths to malignant disease, 16 to syphilis, 46 to tuberculous diseases, 12 to ovarian and uterine affections, and 16 to other definite causes. The 149 inquiries concerning deaths referred to septicæmia, pyæmia, and other septic diseases resulted in the transference of 26 deaths to puerperal sepsis, 4 to tuberculosis, 3 to infective endocarditis, 1 to malignant disease, and 15 to other specified causes. The 208 inquiries relating to hydrocephalus resulted in the addition of 61 deaths to tuberculous meningitis and 124 to congenital hydrocephalus. The 118 inquiries concerning paralysis led to the transference of 65 deaths to cerebral hæmorrhage, 30 to diseases of the spinal cord, 3 to alcoholism, and 13 to other definite causes. The inquiries relating to cerebro-spinal meningitis numbered 196; they resulted in the addition of 93 deaths to cerebro-spinal fever and of 42 deaths to tuberculous meningitis. The 212 inquiries regarding strictures of the œsophagus and pylorus led to the transference of 127 deaths to malignant disease and 21 to gastric ulcer. The inquiries relating to hæmoptysis numbered 191; they resulted in the addition of 93 deaths to tuberculous phthisis. The 55 inquiries concerning membranous laryngitis led to the transference of 35 deaths to diphtheria. The 70 inquiries relating to eclampsia and convulsions resulted in the addition of 48 deaths to puerperal convulsions. The inquiries regarding hæmatemesis and melæna numbered 99, and led to the addition of 15 deaths to alcoholism, 38 to gastric ulcer, 11 to cancer, and 11 to cirrhosis of liver. The deaths due either to carcinoma, sarcoma, or cancer, in which no mention was made of the organ or part affected, numbered 573; as the result of inquiries this information was supplied in 562 cases. The total additions to certain definite headings resulting from these inquiries

were as follows :—To malignant disease 587 deaths, to puerperal septic diseases 117, to venereal diseases 42, to alcoholism 43, to tuberculous diseases 504, to congenital defects 129, to cerebral hæmorrhage 77, to gastric ulcer 117, to ulceration of intestines 52, to appendicitis 113, to cerebro-spinal fever 95, and to diphtheria 41.

VIOLENCE.

The deaths caused by different forms of accident or negligence are enumerated in the abstracts on pages 308 and 309, and also in the special Tables relating to violent deaths on pages 424 to 437. These Tables show that to this heading 15,784 deaths were referred during the year 1907, corresponding to a rate of 452 per million living. Among males the deaths numbered 10,895, and were equal to a rate of 645 per million; the deaths of females numbered 4,889, and were equal to 269 per million. Of the 10,895 deaths of males from accident, 2,197 were stated to be caused by vehicles and horses, 1,888 by drowning, 1,460 by falls, 1,103 by burns, scalds, and explosions, and 1,084 by accidents in mines, quarries and excavations. Of the deaths of females due to accident, 1,507 were caused by burns, scalds, and explosions, and 1,270 by falls. It will be seen that, as in previous years, the deaths of males exceeded those of females under every heading except that of "burns." The deaths caused by "vehicles other than railway" numbered 1,686, being 1,393 males and 293 females. The different kinds of vehicles are shown on pages 426 and 433, together with the number of deaths caused by each.

The coroners' certificates do not in all cases fully describe the vehicles, but simply state that death was caused by "tramcar," "omnibus," "wagon, &c." In the absence of definite information these deaths have been separately abstracted under the heading "others" or "not defined." The tables show that 365 deaths were caused by vehicles (other than railway) propelled by mechanical power, 631 deaths were caused by horse-drawn vehicles, and 690 were caused by vehicles not thus defined.

The deaths from violence of infants under the age of one month numbered 749, *viz.*, 407 males, and 342 females. Of the 749 deaths, the number attributed to suffocation in bed was 445, to other forms of suffocation 84, and to neglect 165. The number of infants at this age returned as "found drowned" was 25.

In the case of 15,469 out of the 15,784 deaths stated to be due to accident or negligence, coroners' inquests were held; the causes of 236 deaths were certified by medical practitioners, and in 79 cases the causes remained uncertified; 6 of these were not reported to the coroner.

The deaths at all ages of 2,632 men, and 901 women were attributed to suicide, details of which will be found on pages 438 and 439.

Of the 265 deaths by homicide, 139 were of males and 126 of females. The Tables on pages 440 to 443 show that 148 of these were returned by coroners' juries as murder, and 117 as man-

slaughter (of which 6 were returned as justifiable homicide). The 265 deaths due to homicide include 50 of infants under one month, 43 of which were described as murder and 7 as manslaughter.

There were 10 executions (9 males and 1 female) during the year, the numbers in the preceding three years having been 18, 17 and 8 respectively.

I am, Sir,

Your obedient Servant,

JOHN TATHAM.

Sir WILLIAM COSPATRICK DUNBAR, Bart., C.B.,
Registrar-General.

NOTE UPON ESTIMATES OF POPULATION.

By ALFRED C. WATERS, Esq., F.S.S., Chief Clerk,
General Register Office.

In a paper which was published in the Journal of the Royal Statistical Society in June, 1901, I explained in detail a method for estimating populations of separate districts in the years of a completed intercensal period. The method was based on two suppositions, one of which was that the population of the whole country changed by geometrical progression during the period. And in a note which appears on pp. cxvii-cxxiv in Part I. of the Supplement to the Registrar-General's Sixty-fifth Annual Report I showed that the supposition of geometrical progression was not essential, but that the method would be equally applicable if any other supposition were made, or if the intermediate populations of the whole country could be ascertained without any supposition whatever, by the help of complete statistics of emigration and immigration.

The method as thus extended may be stated as follows:—

If the proportions which the population of any given district bore to the total population of the country at two successive censuses be denoted by α and β , let it be assumed that the proportion α passed to the proportion β by arithmetical progression in the intercensal period. The population of the district at an intermediate date could then be computed by first ascertaining the proportions α and β , by calculating the proportion at the intermediate date on the supposition of arithmetical progression, and finally by applying that proportion to the number taken as the population of the whole country at the intermediate date. The labour of performing this series of calculations for a number of intermediate dates for every district in the country would be great; but it was shown that the final results could be arrived at in a much simpler manner. Formulæ were deduced for obtaining two factors for each intermediate date; these factors depending only on the decennial rate of increase of the total population and on the estimated or ascertained total population at the date in question. The population of any district at the earlier census being multiplied by the first of these factors, and the population at the later census being multiplied by the other factor, the sum of the two products would give the same figure as would be obtained by the laborious series of calculations indicated above.

It was found, however, that in all cases the sum of the two factors slightly exceeded unity; and, as a necessary consequence, that if the two census populations of any district were equal, the intermediate estimates for that district would all be greater than the census populations. Practically the excess is too small to be of any importance. If, in a country with a decennial increase

of 10·25 per cent., there were a district with a population of 10,000 at each census, the method would show its population midway between the censuses as 10,012, and its mean population through the intercensal period as 10,008. It must, however, be admitted that a supposition which involves even such slight anomalies is not theoretically sound.

Further consideration of the point has led to modified formulæ of extreme simplicity, the results of which differ very little from those of the more elaborate formulæ previously described, and are free from the theoretical blemish noted above. Let it be assumed that the estimated population of any district at an interval measured by t after the first of two censuses may be calculated by multiplying the populations at the two censuses by two factors m and n respectively, and adding the results. As, by hypothesis, this applies to every district in the country, it applies to the sum of all the districts—that is, to the population of the whole country. Let P_0 and P_1 be the populations of the whole country at the two censuses, and P_t the population (estimated or ascertained) at the interval t after the first of the censuses. Then $P_t = m P_0 + n P_1$. But m and n are indeterminate in this equation, and one condition must be introduced in order to give them determinate values. Let the condition be that if any district had equal populations at the two censuses the formula shall give the same number as the population after the interval t ; in other words let $m + n = 1$. We then have

$$P_t = m P_0 + (1 - m) P_1$$

from which it follows that

$$m = \frac{P_1 - P_t}{P_1 - P_0}$$

$$= \frac{\text{Increase of total population in second portion of intercensal period}}{\text{Intercensal increase of population}}$$

$$\text{and } 1 - m = \frac{P_t - P_0}{P_1 - P_0}$$

$$= \frac{\text{Increase of population in first portion of intercensal period}}{\text{Intercensal increase of population.}}$$

By this very simple method, if the populations of a district at the two censuses be π_0 and π_1 , its estimated population after the interval t will be

$$\frac{P_1 - P_t}{P_1 - P_0} \pi_0 + \frac{P_t - P_0}{P_1 - P_0} \pi_1.$$

If the population of the whole country be assumed to have increased by geometrical progression, factors for estimating the mean population of the several districts during the intercensal period or any portion of it may be obtained by integration—

Let $P_1 = r P_0$ and $P_t = r^t P_0$. Then $\frac{P_1 - P_t}{P_1 - P_0}$ becomes $\frac{r - r^t}{r - 1}$,

and $\frac{P_t - P_0}{P_1 - P_0}$ becomes $\frac{r^t - 1}{r - 1}$;

$$\int_t^{t+h} \frac{r - r^t}{r - 1} dt = \frac{rh}{r - 1} - \frac{r^t (r^h - 1)}{\lambda r (r - 1)},$$

$$\text{and } \int_t^{t+h} \frac{r^t - 1}{r - 1} dt = \frac{r^t (r^h - 1)}{\lambda r (r - 1)} - \frac{h}{r - 1};$$

(λr being the hyperbolic logarithm of r)

and the factors for the mean population during any period are found by giving appropriate values to t and h .

For example, by making $t=0$ and $h=1$ we get the factors $\frac{r}{r-1} - \frac{1}{\lambda r}$ and $\frac{1}{\lambda r} - \frac{1}{r-1}$ for the mean population in the whole intercensal period. And, assuming the geometrical progression to have prevailed from the beginning of the earlier census year—the censuses being taken at the end of March or beginning of April—by making $t = -\frac{1}{40}$ and $h=1$, we get the factors $\frac{r}{r-1} - \frac{1}{r^{40} \cdot \lambda r}$ and $\frac{1}{r^{40} \cdot \lambda r} - \frac{1}{r-1}$ for the mean population in the ten calendar years beginning three months before the earlier census and ending three months before the later census.

The method in its most general form is applicable for the current estimates of population that are required in the years following the second of two censuses. In this case the

factor $\frac{P_1 - P_t}{P_1 - P_0}$ is negative, and the formula for the mean popula-

tion of a district becomes $\frac{P_t - P_0}{P_1 - P_0} \pi_1 - \frac{P_t - P_1}{P_1 - P_0} \pi_0$.

METEOROLOGY OF THE YEAR 1907.

REMARKS ON THE CONSPICUOUS METEOROLOGICAL OCCURRENCES IN THE BRITISH ISLES IN 1907.

(Prepared in the Meteorological Office under the direction of
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In the preparation of the following references to the more striking meteorological events of the year 1907, the principal sources of information have been the official daily, weekly, and monthly weather returns, and the observations at numerous rainfall stations:—

1. *Gales.*—There was again during 1907 an almost entire absence of violent gales affecting any considerable portion of the British Isles, and this notwithstanding the numerous occasions when the pressure gradients were very steep. The South-Westerly to North-Westerly gale of February 19th–20th was felt practically all over the country, the force of a strong gale and upwards blowing at about half the telegraphic reporting stations, a whole gale at Scilly, and a storm at Malin Head. This gale was interesting through being associated with the deepest cyclonic system which had visited North-Western Europe for many years. At Skudesnaes the barometer dropped to the very rarely reached level of 27.65 ins. The South-Easterly to Easterly gale between December 25th and 28th was strong in force at only a few places on any one day, but it was notable more for the bitter harshness of the wind than for its violence. The anemometrical records from 24 stations disclose the following instances of wind velocities of 50 or more miles in an hour:—

January 1st–2nd, Pendennis Castle, 54; 22nd, 52; 28th, Deerness, 59; 29th, Fleetwood, 53.

February 19th, Pendennis Castle, 51; 20th, Deerness, 51, Fleetwood, 59, Southport, 53, Holyhead, 54, Scilly, 50.

March 16th, Pendennis Castle, 55, Kingstown, 51, Southport, 60, Fleetwood, 56.

October 18th, Roche's Point, 50, Pendennis Castle, 55; 20th, Pendennis Castle, 50.

November 13th, Fleetwood, 59; 26th, Pendennis Castle, 51.

December 14th, Scilly, 54, Fleetwood, 61, Southport, 53; 26th–28th, Pendennis Castle, 59.

At ten stations there was not a record during the year of a mean velocity exceeding 43 miles an hour. In gusts of short duration the highest equivalent velocities per hour were 79 miles at Southport, 78 at Scilly, and 75 at Holyhead on February 20th, and 81 miles at Southport, and 76 at Holyhead on March 16th.

As bearing upon the very unsettled character of the summer season it may be stated that 42 per cent. of the low pressure systems traversing our area within the year were, in the four months May to August, against 28 per cent. in the earlier, and 30 per cent. in the later months.

2. *Rainfall.*—There was considerable variation in the distribution of precipitation over the country generally. Blacksod Point had an excess of 6.4 ins., Leith and Poltalloch of 7 ins., and Rothesay of 10.3 ins., whereas Scilly had a deficiency of 6.1 ins., Roche's Point of 6.3 ins., Brighton of 7 ins., Killarney of 8.6 ins., and Folkstone of 8.8 ins. The largest aggregates for the year were 87 ins. at Glencarron, 77 ins. at Laudale, 75 ins. at Fort William, 59 ins. at Poltalloch and Rothesay, and 55 ins. at Blacksod Point; the smallest totals, 19 ins. at Folkstone and Spurn Head, 18 ins. at Shoeburyness and Southend-on-Sea, and 17 ins. at Clacton-on-Sea. The number of days on which precipitation was measured ranged from 301 at Foynes, 288 at Blacksod Point, 283 at Cahir, 282 at Stornoway, and 281 at Glencarron, to 150 at Clacton-on-Sea and Whitby, 149 at Tottenham, and 134 at Southend-on-Sea. Falls of an inch or more in a day were less general than usual. Those exceeding 2 ins. were, on January 13th, 2.2 ins. at Glencarron; July 21st, 2.7 ins. at Bath; August 29th, 2.1 ins. at Gruline; October 15th, 2.5 ins. at Glasgow, and 2.6 ins. at Leith and Thornton Hall; 16th, 3 ins. at Lincoln (3.5 ins. in the suburbs), 2.1 ins. at Worksop; November 2nd, 2.2 ins. at Falmouth; 22nd, 2.4 ins., and on the 27th, 2.3 ins. at Gruline. There were some very heavy falls in short periods—on May 9th, 1.1 in. at Southampton in 30 minutes; on June 29th, 1.4 in. at Fulbeck in 75 minutes; on July 21st, 1.8 in. at Llangammarch Wells in 2 hours 40 minutes, 2.6 ins. at Bath in 3 hours, and 1.9 in. at Rochford in 30 minutes; on July 22nd, 1.1 in. at Llangammarch Wells in 45 minutes; and on the 30th, 0.58 in. at Nottingham in 15 minutes.

3. *Snowstorms.*—The only snowfall of the year worthy of special remark occurred early in the morning of April 7th, when the south-eastern counties of England were visited by a considerable fall, the ground being covered to a depth of from an inch to 6 inches, undrifted. The other falls were generally of an insignificant character, so that at both ends of the year the country never presented a really wintry aspect. On Midsummer Day there was a slight fall of snow at Harrogate.

4. *Thunderstorms.*—In every month many parts of the kingdom experienced thunderstorms, the quietest period being from October 26th to November 26th, when hardly any were reported. Those of the first three months, although fairly numerous for the season, were of minor importance. During the four months April to July they were very frequent, and several of them severe, in some cases accompanied by heavy or violent falls of hail. The April Summary contains references to the remarkable disruptive effects of a violent discharge of lightning close to Bidston Observatory, near Birkenhead, on the 9th; the fusing of the steel wire attached to a captive balloon by a flash of lightning at Aldershot on the 11th; and the black darkness, sulphur-coloured sky and black rain water of a thunderstorm at Ridlington on the 17th. The storms of May were characterised by many very heavy falls of rain, while the equally

numerous ones of June were marked by an almost entire absence of violent downpours. As a rule the July storms also did not produce great rainfalls, but the thunderstorms of the 21st and 22nd were the most remarkable of the year. They affected the greater portion of England, Wales, Ireland, and the south of Scotland—very severe in various parts of Ireland and England. The greatest violence of the storms was concentrated within a comparatively small area—the south-eastern quarter of Wales and the neighbouring English counties—where torrential rains and destructive hailstorms occurred. In the Black Mountain neighbourhood of Breconshire roads were damaged and blocked, and the course of the river Monnow temporarily diverted by the enormous quantities of large hail that fell. The thunderstorms of the remaining months showed a considerable reduction in frequency, and presented no unusual feature.

5. *Droughts.*—There were three well-marked periods of dry weather. The first commenced about January 3rd. In some localities it was interrupted by a fall of rain on the 10th, but in various districts there were 15 or more consecutive rainless days, ranging upwards to 20 at Bray (Ireland), with one rainfall of 0.03 in. in 26 days, 24 at Reading, and 29 at Watlington (Oxon). The second covered the later portion of March and the first two days of April, a period of exceptionally fine weather over the country generally. In few places, however, did this drought last over more than 15 days. The September drought was the most decided of the series. Commencing between the 5th and the 8th over an extensive portion of England it lasted uninterruptedly to various dates between the 24th and 30th, the duration exceeding 20 days in many places, and amounting to 25 days at Portsmouth, Bath, Leeds, and Manchester.

6. *Temperature.*—The highest temperatures of the year were registered in three different periods. At a number of stations in the inland and eastern counties of England the thermometer rose to 80° and upwards on May 11th and 12th, to 82° at Greenwich, Camden Square, Bawtry and Fulbeck on the latter date. There were no more readings of 80° until the middle of July, when 86° was reached at Lairg (16th), 85° at Dumfries (16th and 17th), and Killarney (18th), 84° at Crieff (17th), and 83° at Balruddery (16th), Stokesay (18th), and Salisbury (20th), with numerous other records of 80° and above. It was not until an unusually late period in the season that the thermometer again passed 80°. On September 25th it exceeded this level in various parts of England, touching 84° at Epsom, and 83° at Greenwich. This is the maximum for the year at the Royal Observatory, and it is interesting to note that the Greenwich records, which now extend back over 67 years, show that in no previous year has the highest temperature in September occurred on so late a date. But while high afternoon maxima were seldom registered during the summer portion of the year, they were of common occurrence in the winter half. The most striking instances occurred in the second half of March, when the weather was in every way abnormal, calm, dry, bright and warm. At the Irish stations 65° at Killarney was the highest reading; in Scotland 66° was reached at Lairg, Leith, Marchmont, and Nairn; and in England considerably higher values, 70° to 73°, were registered

at a number of stations. The Monthly Summary for March contains a more detailed notice of this period. A feature of the summer months was the frequency of low afternoon temperatures. Both in April and May maxima below 50° , and in June, July and August below 60° , were experienced pretty generally, the highest point reached at Portland Bill throughout the month of June being only 59° , and at Scilly 60° , while on Midsummer day Malin Head had a maximum of 51° , and Darwen 52° .

The lowest night temperatures occurred in the early months, in many places on January 25th, when 5° was registered at Llangamarch Wells, 9° at Buxton, 10° at Hillington, Garforth, Stokesay, Raunds and Hereford, and 12° at Belvoir and Shrewsbury. On January 1st 5° was the minimum at Balmoral, and on February 1st 11° at Nairn, and 12° at Fort Augustus. No station escaped frost.

The annual range of temperature was 74° at Llangamarch Wells, 73° at Stokesay, 72° at Lairg, 71° at Balmoral and Hillington, and thence down to 45° at Sumburgh Head, 44° at Blacksod Point, and 42° at Donaghadee and Scilly.

7. *Bright Sunshine*.—There were some curious anomalies in the distribution of sunshine during the year. The relatively brightest period was in the opening months, culminating in an unprecedentedly brilliant spell in the second half of March, when there were numerous records of from 10 to 12 hours of bright sunshine in a day, the weekly totals at a large number of stations being from 80 to 90 per cent. of the possible duration. For the whole of the month many places returned from 50 to 100 hours more than the average duration, Tunbridge Wells showing an excess of 112 hours. On the other hand May and June were marked by unusual dulness, so that in many localities the totals were from 50 to 90 hours below the average, the deficiency at Scilly during June amounting to 101 hours, and at Falmouth to 106 hours. The records, therefore, show that there was considerably more bright sunshine in the month of the Spring Equinox than in the month of the Summer Solstice, the excess in favour of March ranging upwards to more than two hours per day in various districts. The largest aggregates for the year were 1,860 hours (42 per cent. of the possible duration) at Guernsey, 1,848 (42 per cent.) at Eastbourne, 1,839 (42 per cent.) at Jersey, 1,809 (41 per cent.) at Bognor, and 1,803 hours (41 per cent.) at Hastings; the smallest totals were 894 hours (20 per cent.) at Manchester, 957 (22 per cent.) at Fort Augustus, and 961 hours (22 per cent.) at Hull. The excess above the average at Eastbourne amounted to 109 hours, at Blackpool 111, and at Stonyhurst 175 hours, against a loss of 124 hours at Valencia, 203 at Falmouth, and 223 at Scilly.

8. *Fog*.—In every month there were numerous reports of fog. At the inland stations it was confined almost entirely to the early and late months, a decided increase taking place during the very quiet weather conditions which prevailed during the second half of September. These land fogs were at times very dense and dark, locomotion being considerably delayed, and in some cases railway and other accidents resulted. Along the coasts fogs were experienced in various localities in all seasons, but the frequency was greater in the summer than in the winter half of the year. Some of them were exceedingly thick, and brought about many shipping casualties,

the most notable being the loss of the large mail and passenger steamers "Suevic" and "Jebba" during a dense fog at the western end of the English Channel in the night of March 17th. An unusually bad fog enveloped the southern portion of the Irish Sea throughout the whole of November 30th, completely stopping all shipping movements in the locality of the Mersey.

9. *Barometer*.—The mean atmospheric pressure for the year was remarkably near the average, but the extreme range was appreciably greater than in 1906. Over nearly the whole country the range was more than 2 ins., exceeding 2.5 ins. at all stations in Scotland and the north-east of England. At Aberdeen it amounted to 2.9 inches. Pressure attained its maximum height at all but the English Channel stations on January 23rd during the existence of an anticyclone of unprecedented intensity over Eastern Europe, where many stations reported readings above 31.25 ins., ranging upwards to 31.49 ins. at Riga and Vindau, in the Baltic Provinces. At the home stations the barometer rose a little above 31 ins. at Donaghadee, Shields, Leith, and Aberdeen, 31.06 ins. at the last-mentioned station. Everywhere the mercury fell below 29 ins., but the lowest pressures in various districts occurred at different periods of the year. In Scotland and the extreme north of England and of Ireland readings below 28.5 ins. were recorded on February 19th or 20th, 28.13 ins. at Nairn (27.65 ins. on the neighbouring coast of Norway). Over our western districts the minimum values were not reached until October 16th–18th, 28.52 ins. at Valencia; in the Hebrides not until December 6th, 28.34 ins.; and in the east and south-east of England not until December 13th and 14th, below 28.4 ins. at Spurn Head. On January 2nd and 28th the mercury fell to 28.34 ins. at Sumburgh Head.

There were very few instances of exceptionally rapid pressure oscillations. During the passage of the great depression of February 19th the barometer at Nairn fell from 28.86 ins. at 2 p.m. to 28.13 ins. at 7 p.m., a drop of 0.73 in. in 5 hours, of which 0.24 in. occurred in the last hour. On March 16th there was a rise of 0.1 in. in 20 minutes, and of 0.31 in. in 80 minutes at Valencia. In the 4 hours, 2 p.m. to 6 p.m. of December 2nd, a fall of 0.48 in. was recorded at Blacksod Point; 0.2 in. in 2 hours at the same station on the 7th; and 0.22 in. in 2 hours at Holyhead on the 13th.

10. *High Tide*.—The only destructive tidal flood of the year occurred along the north-west coast of England on March 16th, when, coincident with the normally high equinoctial springtide, there was a deep cyclonic disturbance, the barometer descending to about 28.7 in. on the Irish Sea, accompanied by a strong South-Westerly to Westerly gale, and exceedingly heavy rains over the neighbouring land areas. Much damage was occasioned on the shores of the Solway Firth, Morecambe Bay and elsewhere by the overflowing tide.

11. *Earthquake Shocks*.—Observers reported slight earthquake shocks at Laudale on January 3rd, at Oundle on the 16th, and at Laudale and Fort William on the 17th. [On January 14th, Kingston, Jamaica, was wrecked and great loss of life caused by a very severe earthquake.] At various times during the year the newspapers reported other minor shocks in different parts of the country.

12. *Aurora Borealis*.—On several occasions in the early and late months of the year auroral displays were witnessed in various parts of the kingdom, mainly in the northern districts. With one exception, however, they were of an unimportant character. That of the evening of February 9th was seen in all parts of the country where fog did not interfere with the view, and as far south as Guernsey the reddish glow in the sky was strong enough to make outlying rocks visible. Between 2 p.m., 9th, and 3 a.m., 10th, the greatest magnetic storm since October 31st, 1903, was recorded at Kew Observatory.

In continuation of the remarks given in previous annual reports the following notes refer exclusively to the stations the results from which are included in the tables already printed in the Quarterly Returns.

The highest temperatures of the air were at Barnet, 85° ; the Royal Observatory, Greenwich, Salisbury, and Stokesay, 83° ; and at Bristol and Camden Square, 82° .

The lowest temperatures were at Llangammarch Wells, 5° ; Buxton, 9° ; and at Hillington and Stokesay, 10° .

The heaviest falls of rain at any of the stations were at Stonyhurst, 50.0 ins.; Llangammarch Wells, 48.9 ins.; and at Buxton, 46.6 ins.

The least falls of rain were at Clacton-on-Sea, 16.7 ins.; Spurn Head, 18.7 ins.; and at Westminster, 19.5 ins.

The greatest number of days of rain were at Buxton, 247; Llangammarch Wells, 236; and at Huddersfield and Norwich, 231.

The least number of days of rain were at Tottenham, 149; Clacton-on-Sea, 150; and at Westminster, 162.

The highest temperatures in the sun were at the Royal Observatory, Greenwich, 142° ; Bettws-y-Coed, 141° ; Clacton-on-Sea, Cockle Park, and Dunmow, 140° .

The lowest temperatures on the grass were at Llangammarch Wells, 1° and 4° ; and Birmingham, 5° .

The greatest number of days of temperature on the grass at 30° or below were Coventry, 144; Llangammarch Wells, 129; and Cambridge, 126.
