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#### THE

REGISTRAR-GENERAL'S

# STATISTICAL REVIEW

### ENGLAND AND WALES

FOR THE YEAR

1933



(New Annual Series, No. 13)

TEXT

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#### STATISTICAL REVIEW, 1933.

Note.—Of the tables referred to below, those numbered in Arabic will be found in "Tables, Part I—Medical," and those lettered in "Tables, Part II—Civil," while those numbered in Roman numerals appear in the text of this volume.

#### DEATHS.

The deaths of 496,465 persons were registered in England and Wales during 1933, 250,625 of these being males and 245,840 females.

This number is 2.5 per cent. above that for 1932.

Deaths of non-civilians, which numbered only 377, are now allocated to their administrative area of residence, and are included in all 1933 tables.

**Death-Rate.**—The 496,465 deaths correspond to a rate of  $12 \cdot 3$  per 1,000 of the estimated population. When standardized\* to correct for the deviation of the sex and age distribution of the population, as shown in Table XIX, from that of the standard population of 1901, this death-rate is reduced to  $9 \cdot 8$ .

As the population of this country in 1901 included relatively few infants and old people it forms a standard exceptionally favourable to low mortality. Its use for this purpose accordingly yields comparatively low standardized rates all round. In order to correct any wrong impression which might arise from this fact, and to provide standardized rates for this country comparable with those of countries using the standard recommended by the International Statistical Institute (a composite population made up of those of a large number of European countries in 1900 or 1901), rates calculated upon the latter by the method suggested by the Institute† are shown in Table XIX, as well as those based on the 1901 English standard, which is that always used elsewhere in this Review. It will be seen that use of the less favourable standard increased the rate from  $9\cdot 8$  to  $11\cdot 0$  per thousand.

The rate of 9.8 per 1,000 is seen from Table 3 (Part I) to be only 0.2 above that for 1930 which is the lowest recorded, and is below the standardized rate of 10.3 for the guinguennium 1926-30.

When compared with 1932 the rates were higher at every age shown in Table XIX, except for children under 5 and males aged 65-75 and over 85 years. For most causes of death the stand-

\* The term "standardized death-rate" means the death-rate corrected for differences of sex and age constitution of the population. For a full description of the methods employed for this "standardization" see The Registrar-General's Decennial Supplement—1921, Part III (pages xxxiii—xlii). Standardized death-rates for the sexes separately quoted in this Review are based upon the age distribution of persons of undistinguished sex in the general population of England and Wales in 1901.

† Annuaire International de Statistique, 1917, p. viii.

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ardized rates in Table 8 were below the average for the preceding five years, the comparison on this basis being specially favourable for measles, whooping cough, diphtheria, encephalitis lethargica, respiratory diseases, tuberculosis, valvular disease of the heart, chronic nephritis and cirrhosis of the liver, and for general paralysis and hernia in males. The causes which showed appreciable increases over the preceding five-year average were influenza, scarlet fever, cerebro-spinal fever, acute poliomyelitis, erysipelas, carbuncle and boil, diseases of the nasal sinuses, ear and mastoid, malignant endocarditis, myocardial degeneration; angina pectoris, in both sexes, and diabetes, pernicious anæmia, leukæmia, appendicitis and peritonitis in females.

Mortality at different portions of the year.—Table 4 indicates that the crude death-rate was below the corresponding rate in the decade 1921–30 for the June and September quarters, but was higher than in the preceding three years in the March quarter and higher than in the preceding six years in the December quarter. Table 31 shows that both the second and third quarters were unusually warm when judged by the mean air temperature at Greenwich, the former being the warmest since 1893 and the latter since 1911.

The contributions of the four quarters to the year's mortality in quinquennial periods since 1851, and in 1931, 1932 and 1933, are shown in Table I. It should be noted, however, that the crude quarterly mortalities in Tables I and 4 do not represent the full improvement which would be registered since 1901 if these rates were standardized.

The March quarter of 1933 was characterised by an influenza epidemic similar in extent to that of 1927, that is to say, causing greater mortality assigned to that cause than in any year since 1919, with the single exception of 1929.

The percentage contribution of the March quarter to the year's mortality, which has shown a progressive increase since 1896–1900, was lower in 1933 than in the years 1927 and 1929, but it exceeded the average figure for any quinquennium in the table.

The present stability of the death-rate in the last three quarters of the year is more apparent from the experience during the last ten years (Table 4). The average mortality in these quarters during the decennium ranged only from 10.7 to 11.4, while the death-rate in the March quarter fluctuated between 13.4 in 1930, and 20.9in 1929, an influenza year when the first quarter was exceptionally cold. So long as these tendencies continue, the mortality experienced in the March quarter virtually determines the death-rate for the year.

The numbers of deaths from different causes which occurred in each of the first nine months of the year are set out in Table 23.

**Mortality of each sex.**—The excess of male over female mortality in 1933 was 24 per cent., compared with 26 in 1931 and 25 in 1932. Comparing the sex rates age by age, male excess occurred at each 3

age group, this excess being greater, except at ages 25–45 and 65–75, than in either of the quinquennia 1921–5 or 1926–30. These changes recorded in Table II are derived from Table 5, with substitution for 1911–15 and 1916–20 of rates based on total male population and deaths registered in this country for those in Table 5, which refer to civilian males only.

Table I.—Quarterly Death-rates in each quinquennium 1851-1930

and in 1931, 1932 and 1933 with ratio to yearly rate taken as 100.

			D	eath-rat liv	e per 1,0 ing.	Ratio to yearly rate taken as 100.				
A close from the second			March.	June.	September.	December.	March.	June.	September.	December.
$\begin{array}{c} 1851-55\\ 1856-60\\ 1861-65\\ 1866-70\\ 1871-75\\ 1876-80\\ 1881-85\\ 1886-90\\ 1891-95\\ 1886-90\\ 1891-95\\ 1896-10\\ 1901-05\\ 1906-10\\ 1901-05\\ 1906-10\\ 1911-15\\ 1916-20\\ 1921-25\\ 1926-30\\ \end{array}$			$\begin{array}{c} 25\cdot 3\\ 24\cdot 1\\ 25\cdot 7\\ 24\cdot 7\\ 24\cdot 7\\ 24\cdot 3\\ 23\cdot 2\\ 21\cdot 4\\ 21\cdot 4\\ 21\cdot 7\\ 21\cdot 8\\ 19\cdot 5\\ 17\cdot 9\\ 17\cdot 5\\ 15\cdot 1\\ 15\cdot 9\end{array}$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{c} 21 \cdot 0 \\ 19 \cdot 6 \\ 20 \cdot 4 \\ 21 \cdot 5 \\ 20 \cdot 4 \\ 18 \cdot 8 \\ 17 \cdot 6 \\ 17 \cdot 0 \\ 16 \cdot 4 \\ 17 \cdot 5 \\ 14 \cdot 9 \\ 12 \cdot 6 \\ 12 \cdot 7 \\ 10 \cdot 9 \\ 9 \cdot 6 \\ 9 \cdot 4 \end{array}$	$\begin{array}{c} 21 \cdot 9 \\ 21 \cdot 9 \\ 22 \cdot 3 \\ 22 \cdot 0 \\ 22 \cdot 1 \\ 20 \cdot 6 \\ 19 \cdot 4 \\ 18 \cdot 9 \\ 18 \cdot 1 \\ 17 \cdot 2 \\ 16 \cdot 1 \\ 14 \cdot 7 \\ 14 \cdot 7 \\ 14 \cdot 7 \\ 15 \cdot 8 \\ 12 \cdot 0 \\ 11 \cdot 6 \end{array}$	$\begin{array}{c} 111\\111\\114\\110\\110\\112\\110\\115\\117\\110\\112\\118\\118\\118\\122\\124\\131\\\end{array}$	999 997 96 96 96 96 99 99 99 94 95 96 96 96 94 98 95	93 90 90 96 93 90 91 90 90 93 88 99 93 86 76 79 78	96 100 99 98 100 99 100 100 99 100 100 97 101 100 98 110 98
1022			$   \begin{array}{c}     16 \cdot 5 \\     15 \cdot 4 \\     17 \cdot 1   \end{array} $	$     \begin{array}{r}       11 \cdot 5 \\       11 \cdot 6 \\       10 \cdot 8     \end{array} $	9.6 9.7 9.4	11.7 11.5 12.0	134 128 139	93 97 88	78 81 76	95 96 98

Table II shows that male excess is lowest at ages 10–15 for which age group a female excess was the rule until 1927. At 5–10 a small female excess during 1891–1910 has given place to a male excess of 10 per cent. or greater, and at 10–15 a similar reversal of the sex ratio has occurred since 1916–20. At 15–20 this took place at the end of last century. At 25–35, on the other hand, the male excess, after reaching a maximum in 1911–20, is declining.

In 1933 the maximum disparity in sex mortality is reached at ages 45–55, after which it decreases again with advancing age. Only in extreme old age has the female mortality not declined more than the male since the middle of last century.

The causes of death accounting for this large male excess may be gathered from Table 8, in which the mortality disadvantage of females arising from their greater age is neutralized by reference of the rates for both sexes to a common population basis.

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The causes chiefly accounting for male excess, with the contribution of each to its total of 2,111 per million, are seen to be, in order of importance, accident (313), heart disease (280), pneumonia (260) tuberculosis (194), digestive diseases (177), and arterio-sclerosis (128). These causes jointly contribute 64 per cent. of the total male excess. The principal causes common to both sexes in Table 8, for which female standardized mortality exceeds that of males, are, in order of numerical importance, mitral or unspecified valvular disease, rheumatoid and osteo-arthritis, whooping cough, diabetes, nonmalignant tumours, gall stones, other diseases of the liver and gall bladder (not cirrhosis) and pernicious anæmia.

Table II.—Mortality of Males per cent. of that of Females at Various Ages from 1841–45 onwards. (See Table 5.)

	All Ages Standard- ized.	0-	5-	10-	15-	20-	25-	35-	45-	55-	65-	75-	85- and up- wards
$\begin{array}{c} 1841-45\\ 1846-50\\ 1851-55\\ 1856-60\\ 1861-65\\ 1866-70\\ 1871-75\\ 1876-80\\ 1881-85\\ 1886-90\\ 1891-95\\ 1896-00\\ 1901-05\\ 1906-10\\ 1901-15\\ 1016-10\\ 1911-15\\ 1016-10\\ 1006-10\\ 1006-$	109 108 110 109 111 113 115 116 115 116 116 118 119 120 122 124	117 116 116 115 115 115 115 115 117 118 118 119 119 119 119 119 120	102 103 104 99 102 107 108 107 102 100 98 98 97 97 100	92 95 98 96 98 100 100 97 97 97 96 95 95 95 95 95	88 91 90 90 93 94 97 96 96 98 90 100 106 107 107 111	$\begin{array}{c} 105\\ 104\\ 103\\ 102\\ 105\\ 106\\ 109\\ 108\\ 102\\ 106\\ 108\\ 102\\ 108\\ 120\\ 119\\ 121\\ 122\\ 122 \end{array}$	95 94 97 96 100 105 109 109 104 107 108 116 118 118 118 124	101 99 102 103 109 113 119 117 117 117 117 118 122 121 121 121 121 121	$\begin{array}{c} 114\\ 113\\ 118\\ 122\\ 124\\ 129\\ 127\\ 129\\ 127\\ 129\\ 128\\ 129\\ 130\\ 129\\ 130\\ 129\\ 135\\ \end{array}$	$\begin{array}{c} 111\\ 112\\ 114\\ 115\\ 118\\ 120\\ 121\\ 122\\ 122\\ 122\\ 122\\ 121\\ 124\\ 128\\ 133\\ 137\\ \end{array}$	$\begin{array}{c} 111\\ 111\\ 112\\ 112\\ 115\\ 114\\ 114\\ 116\\ 117\\ 115\\ 117\\ 119\\ 121\\ 124\\ 132\\ \end{array}$	109 109 110 108 109 111 112 113 112 111 113 115 115 115 115 112	106 107 106 107 110 111 111 112 114 110 109 110 113 115 111
$ \begin{array}{r} 1916-20\\ 1921-25\\ 1926-30\\ 1924\\ \dots\\ 1924\\ \dots\\ 1925\\ \dots\\ 1925$	122 124 122	124 125 122	100 104 110 109 104	92 100 105 94 100	100 106 100 104	112 113 108 110 106	114 114 112 111 115	130 134 130 131	132 140 134 135	133 136 132 135	127 130 127 129	119 121 119 121	110 107 109 108
1925         1926         1927         1928         1929         1930	123 123 123 125 122 127	124 124 125 126 122 128	109 109 109 113 110	100 107 113 100 104	104 104 108 108 109	107 110 103 110 112	113 112 112 112 112 111 111	131 133 135 130 139 133	135 137 138 143 144	134 134 136 134 139	129 129 130 126 133	123 120 123 117 121	111 108 110 103 103
1931 1932 1933	126 125 124	128 125 126	115 116 110	100 108 107	108 114 113	114 114 114	106 110 109	129 123 124	140 135 141	135 137 137	$132 \\ 134 \\ 129$	121 123 122	111 110 110

#### Infant Mortality.

Of the 496,465 deaths registered during the year, 36,960, or 7.4 per cent., were those of infants under one year of age.

The rate of infant mortality resulting from these deaths is 64 per 1,000 live births; this rate is 1 per 1,000 below that of the previous year but 4 per 1,000 above the lowest rate recorded, that of 1930.

The rates in the four quarters of the year were 84, 53, 49 and 69 respectively, being lower in the first three quarters and higher in the December quarter than in 1932.

Table III traces the changes in the quarterly incidence of infantile mortality during the last 63 years, and shows, in conjunction with Table I, that until 1901–05, and again, but to a very slight degree, in 1911-15, while the coldest months of the year yielded the highest general death-rate, the hot summer months levied the highest toll on infant life.

Since the beginning of the present century, this experience has undergone a remarkable change. In all four quarters, the infant death-rate has fallen in each successive quinquennium, but with great inequality. Comparing 1933 with 1896–1900, the fall ranges from 41 per cent. in the March quarter, 53 in the December, and 57 in the June, to 77 per cent. in the September quarter. This precipitate decline, due in a large measure to the fall in the mortality from epidemic diarrhea, has so reduced the mortality in the third quarter that it now yields the lowest quarterly rate, while the March quarter yields the highest.

Table III.—Average Rate of Infantile Mortality by Quarters in Quinquennia, 1871–1930, and in 1931, 1932, and 1933.

			Yearly		Quarterl	y Averages.	
			Average.	March.	June.	September.	December
1871-75			153	151	133	180	149
1876-80			145	147	128	161	143
1881-85			139	140	125	152	139
1886-90			145	146	125	163	147
1891-95			151	151	132	169	151
1896-1900	)		156	142	124	212	148
1901-05			138	137	113	162	140
1906-10	1	1	117	124	98	120	128
1911-15			110	119	91	120	109
1916-20			90	116	83	75	91
1921-25			76	94	70	62	77
1926-30			68	91	60	52	69
1931			66	94	59	46	67
1932			65	88	59	50	65
1933			64	84	53	49	69

The changes in the infant mortality rate from all causes and from diarrhœal diseases since 1861-65 are shown in Table IV. The diarrhœal rate for 1933 is above that of the three preceding years and of 1922 and 1927 (see Table 12) but below that of any other year, notwithstanding that the September quarter was the warmest since 1911 when judged by the mean air temperature at Greenwich. Further reference to this is made on p. 23.

Table V shows that the fall during the five quinquennia for which detailed age distinction is now available was continuous at every age-group except 1–7 days, at which age the rate in 1926–30 was slightly in excess of that for the preceding five years. During the first month of life the fall was 21 per cent., but at the later age-groups the average fall was slightly over 50 per cent., reaching a maximum of 56 per cent. at 3–6 months. At ages from 1 week upwards a further

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fall was registered in 1933 on the 1926–30 rates ranging from 3 to 9 per cent. up to 6 months, to 16 at 6–9 months and 20 at 9–12 months.

Table	IV.—Infant Mortality, distinguishing Mortality fr Diarrhœal Diseases, 1861–1933.	om
	Deaths under 1 year of age per 1,000 Live Births.	she oken

Deaths under 1 year of age per 1,000 into into into								
Year.	Diarrhœal Diseases.	Other Causes.	All Causes.	Year.	Diarrhœal Diseases.	Other Causes.	All Causes.	
$1861-65 \\1866-70 \\1871-75 \\1876-80 \\1881-85 \\1886-90 \\1891-95 \\1896-00 \\1901-05 \\1906-10 \\1901-05 \\1906-10 \\1911-15 \\1916-20 \\1921-25 \\1926-30 \\$	$     \begin{array}{r}       15 \\       20 \\       19 \\       16 \\       14 \\       17 \\       20 \\       31 \\       23 \\       18 \\       19 \\       9 \\       8 \\       6 \\     \end{array} $	$\begin{array}{c} 136\\ 137\\ 134\\ 129\\ 125\\ 128\\ 131\\ 125\\ 115\\ 99\\ 91\\ 81\\ 68\\ 62\\ \end{array}$	$\begin{array}{c} 151\\ 157\\ 153\\ 145\\ 139\\ 145\\ 151\\ 156\\ 138\\ 117\\ 110\\ 90\\ 76\\ 68\\ \end{array}$	1921 1922 1923 1924 1925 1926 1927 1928 1929 1930 1931 1932 1933	14 6 7 6 7 8 6 6 7 5 5 6 6 6	69 71 62 69 68 62 64 59 67 55 61 59 58	$\begin{array}{c} 83\\ 77\\ 69\\ 75\\ 75\\ 75\\ 70\\ 65\\ 74\\ 60\\ 66\\ 65\\ 64\\ \end{array}$	

In the first week of life the recent tendency for the rate to increase was continued in 1933, and in seeking a cause for this the increasing proportion of primiparous births to all births should be borne in mind.

**Distribution of Infant Mortality.**—Table VI shows how infant mortality was distributed in 1933 between the sexes and throughout the country.

For convenience in the interpretation of this and similar tables where the regional subdivision is employed, the counties comprising each region are given below.\*

The rates for the aggregates of different classes of area are, as usual, highest for the county boroughs and lowest for rural districts,

\* Regional Summary.—The country was re-divided into regions in 1931, after consultation with other Government Departments, with a view to securing greater homogeneity in the character of the sectional populations than was provided by the old grouping into North, Midlands, South (including London) and Wales. The counties in the various regions are as follow :—

Berkshire. Buckinghamshire. Essex. Hertfordshire. Kent. London. Middlesex. Oxfordshire. Southampton. Surrey. Sussex, East. , West. Wight, Isle of.	North I. Durham. Northumberland. North II. Cumberland. Westmorland. Yorkshire. East Riding. North Riding. North Riding. North III. Yorkshire, West Riding. York C.B. North IV. Cheshire. Lancashire.	Midland I. Gloucestershire. Herefordshire. Shropshire. Staffordshire. Warwickshire. Worcestershire. Midland II. Derbyshire. Leicestershire. Nothamptonshire. Nothamptonshire. Nothinghamshire. Peterborough, Soke of.	East. Cambridgeshire. Ely, Isle of. Huntingdonshire. Lincolnshire— Parts of Holland. " Kesteven. " Lindsey. Norfolk. Rutlandshire. Suffolk, East. " West. South West. Cornwall. Devonshire. Dorsetshire. Somersetshire. Wiltshire.	Wales I. Brecknockshire. Carmarthenshire. Glamorganshire. Monmouthshire. Wales II. Anglesey. Caernarvonshire. Cardiganshire. Denbighshire. Flintshire. Merionethshire. Montgomeryshire. Pembrokeshire. Radnorshire.
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For the constitution of Greater London, see pp. 63-65 of the Preliminary Report on the Census of England and Wales, 1931 7

London occupying an intermediate position together with the smaller towns. In London's outer ring, which comprises almost as great a population as London itself, infant mortality was lower than in the aggregate of all the rural districts outside Greater London, and was

### Table V.—Age Distribution of Infant Mortality, 1881–1933.

#### tes per 1,000 (Live) Births.

Rates per 1,000 (Live) Births.													
D	ays.	1221	We	eks.		i solo		Months	annis Annis	ian an	Total		
0-1	1-7	0–1	1-2	2–3	3-4	Total under four weeks	Four weeks to 3 m'nths	3-6	6–9	9–12	under one year.		
							59 74 74	28 30 31 34		46 46 48	139 145 151 156 138		
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$ \begin{array}{c}     \hline     13 \cdot 0 \\     12 \cdot 7 \\     12 \cdot 4 \\     11 \cdot 3 \\     11 \cdot 5 \end{array} $	$   \begin{array}{r} - \\     24 \cdot 5 \\     24 \cdot 1 \\     23 \cdot 4 \\     21 \cdot 7 \\     21 \cdot 8   \end{array} $	$     5 \cdot 8      5 \cdot 7      5 \cdot 6      5 \cdot 0      4 \cdot 3   $	$   \begin{array}{r}     5 \cdot 7 \\     5 \cdot 3 \\     4 \cdot 7 \\     3 \cdot 9 \\     3 \cdot 2   \end{array} $	$ \begin{array}{c c}     \hline                                $	40·2 39·0 37·0 33·4 31·8	$ \begin{array}{c} 22 \cdot 8 \\ 20 \cdot 2 \\ 16 \cdot 5 \\ 12 \cdot 8 \\ 10 \cdot 9 \end{array} $	$ \begin{array}{c} 28 \\ 22 \cdot 0 \\ 19 \cdot 6 \\ 14 \cdot 6 \\ 11 \cdot 3 \\ 9 \cdot 6 \end{array} $	$   \begin{array}{r}     17 \cdot 3 \\     15 \cdot 9 \\     12 \cdot 0 \\     9 \cdot 2 \\     8 \cdot 1   \end{array} $	$ \begin{array}{c c} 14 \cdot 8 \\ 14 \cdot 1 \\ 10 \cdot 8 \\ 8 \cdot 3 \\ 7 \cdot 5 \end{array} $	$   \begin{array}{r}     138 \\     117 \cdot 1 \\     108 \cdot 7 \\     90 \cdot 9 \\     74 \cdot 9 \\     67 \cdot 9   \end{array} $		
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c c} 13 \cdot 2 \\ 13 \cdot 1 \\ 12 \cdot 8 \\ 13 \cdot 2 \\ 12 \cdot 5 \end{array}$	$\begin{array}{c} 25 \cdot 0 \\ 24 \cdot 4 \\ 24 \cdot 3 \\ 24 \cdot 7 \\ 24 \cdot 7 \\ 24 \cdot 1 \end{array}$	$ \begin{array}{c} 6 \cdot 1 \\ 6 \cdot 0 \\ 5 \cdot 9 \\ 5 \cdot 7 \\ 5 \cdot 4 \end{array} $	$ \begin{array}{c} 6 \cdot 2 \\ 5 \cdot 9 \\ 5 \cdot 8 \\ 5 \cdot 3 \\ 5 \cdot 1 \end{array} $	$ \begin{array}{c} 4 \cdot 6 \\ 4 \cdot 5 \\ 4 \cdot 3 \\ 4 \cdot 0 \\ 3 \cdot 8 \end{array} $	41 · 9 40 · 7 40 · 3 39 · 8 38 · 5	$\begin{array}{c} 25 \cdot 7 \\ 23 \cdot 3 \\ 24 \cdot 2 \\ 20 \cdot 4 \\ 20 \cdot 0 \end{array}$	$\begin{array}{c} 27 \cdot 0 \\ 21 \cdot 3 \\ 23 \ 6 \\ 19 \cdot 2 \\ 18 \cdot 8 \end{array}$	$\begin{array}{c} 20 \cdot 7 \\ 17 \cdot 3 \\ 17 \cdot 7 \\ 15 \cdot 6 \\ 15 \cdot 0 \end{array}$	$   \begin{array}{r}     17 \cdot 2 \\     15 \cdot 1 \\     14 \cdot 6 \\     13 \cdot 8 \\     13 \cdot 2   \end{array} $	$\begin{array}{c} 132 \cdot 5 \\ 117 \cdot 6 \\ 120 \cdot 4 \\ 108 \cdot 7 \\ 105 \cdot 4 \end{array}$		
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$ \begin{array}{c} 12.7 \\ 12.9 \\ 12.7 \\ 12.7 \\ 12.5 \end{array} $	$24 \cdot 3 \\ 24 \cdot 2 \\ 24 \cdot 5 \\ 24 \cdot 1 \\ 23 \cdot 4$	$6 \cdot 0$ $5 \cdot 6$ $5 \cdot 8$ $5 \cdot 5$ $5 \cdot 7$	$ \begin{array}{c} 6 \cdot 0 \\ 5 \cdot 0 \\ 5 \cdot 4 \\ 5 \cdot 0 \\ 5 \cdot 0 \end{array} $	4.5 3.7 3.9 3.9 3.7	40.6 38.4 39.5 38.5 37.7	$\begin{array}{c} 24 \cdot 7 \\ 17 \cdot 7 \\ 20 \cdot 3 \\ 19 \cdot 3 \\ 18 \cdot 6 \end{array}$	$\begin{array}{c} 25 \cdot 9 \\ 14 \cdot 9 \\ 19 \cdot 8 \\ 18 \cdot 7 \\ 18 \cdot 2 \end{array}$	$ \begin{array}{c c} 20 \cdot 6 \\ 12 \cdot 5 \\ 15 \cdot 7 \\ 15 \cdot 0 \\ 16 \cdot 0 \end{array} $	$   \begin{array}{r}     17 \cdot 4 \\     11 \cdot 4 \\     13 \cdot 6 \\     13 \cdot 0 \\     15 \cdot 2   \end{array} $	$\begin{array}{c} 129 \cdot 2 \\ 94 \cdot 7 \\ 108 \cdot 9 \\ 104 \cdot 4 \\ 105 \cdot 8 \end{array}$		
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$ \begin{array}{c c} 12 \cdot 3 \\ 12 \cdot 4 \\ 12 \cdot 1 \\ 13 \cdot 7 \\ 11 \cdot 5 \end{array} $	$\begin{array}{c} 23 \cdot 2 \\ 23 \cdot 4 \\ 23 \cdot 2 \\ 25 \cdot 9 \\ 21 \cdot 9 \end{array}$	$5 \cdot 6$ $5 \cdot 6$ $5 \cdot 5$ $6 \cdot 1$ $5 \cdot 3$	$ \begin{array}{c} 4 \cdot 9 \\ 4 \cdot 8 \\ 4 \cdot 6 \\ 4 \cdot 9 \\ 4 \cdot 6 \end{array} $	3·4 3·4 3·4 3·6 3·3	$36 \cdot 9$ $37 \cdot 1$ $36 \cdot 6$ $40 \cdot 4$ $35 \cdot 0$	$ \begin{array}{c} 16 \cdot 9 \\ 16 \cdot 9 \\ 17 \cdot 1 \\ 16 \cdot 4 \\ 15 \cdot 5 \end{array} $	$ \begin{array}{c c} 15 \cdot 2 \\ 15 \cdot 0 \\ 16 \cdot 1 \\ 14 \cdot 4 \\ 13 \cdot 0 \end{array} $	$ \begin{array}{c} 11 \cdot 7 \\ 11 \cdot 6 \\ 14 \cdot 4 \\ 11 \cdot 8 \\ 11 \cdot 0 \end{array} $	$ \begin{array}{c} 10 \cdot 3 \\ 10 \cdot 6 \\ 13 \cdot 7 \\ 10 \cdot 3 \\ 10 \cdot 0 \end{array} $	$91 \cdot 1$ $91 \cdot 1$ $97 \cdot 9$ $93 \cdot 2$ $84 \cdot 5$		
$   \begin{array}{c c}     10 \cdot 4 \\     10 \cdot 2 \\     10 \cdot 6 \\     10 \cdot 6   \end{array} $	$ \begin{array}{c} 11 \cdot 6 \\ 11 \cdot 6 \\ 10 \cdot 9 \\ 11 \cdot 2 \\ 11 \cdot 1 \end{array} $	$\begin{array}{c} 22 \cdot 4 \\ 22 \cdot 0 \\ 21 \cdot 1 \\ 21 \cdot 8 \\ 21 \cdot 2 \end{array}$	$5 \cdot 4$ $5 \cdot 2$ $4 \cdot 6$ $4 \cdot 8$ $4 \cdot 7$	4.5 4.1 3.6 3.8 3.7	$   \begin{array}{r}     3 \cdot 0 \\     2 \cdot 8 \\     2 \cdot 6 \\     2 \cdot 6 \\     2 \cdot 6 \\     2 \cdot 7   \end{array} $	$35 \cdot 2$ $33 \cdot 9$ $31 \cdot 9$ $33 \cdot 0$ $32 \cdot 3$	$ \begin{array}{c} 14.7 \\ 12.4 \\ 11.4 \\ 12.4 \\ 12.5 \end{array} $	$   \begin{array}{r}     13.7 \\     10.6 \\     10.0 \\     10.8 \\     11.2   \end{array} $	9.7 9.2 8.3 9.3 9.4	7.8 8.6 7.6 8.8 9.0	$\begin{array}{c} 81 \cdot 2 \\ 74 \cdot 7 \\ 69 \cdot 2 \\ 74 \cdot 2 \\ 74 \cdot 2 \\ 74 \cdot 5 \end{array}$		
$   \begin{array}{c cccccccccccccccccccccccccccccccccc$	$ \begin{array}{c c} 11 \cdot 3 \\ 11 \cdot 6 \\ 11 \cdot 2 \\ 11 \cdot 9 \\ 11 \cdot 6 \end{array} $	$\begin{array}{c} 21 \cdot 3 \\ 22 \cdot 2 \\ 21 \cdot 6 \\ 22 \cdot 3 \\ 22 \cdot 0 \end{array}$	$ \begin{array}{r} 4 \cdot 6 \\ 4 \cdot 3 \\ 4 \cdot 1 \\ 4 \cdot 6 \\ 3 \cdot 8 \end{array} $	$     \begin{array}{r}       3 \cdot 6 \\       3 \cdot 4 \\       3 \cdot 0 \\       3 \cdot 3 \\       2 \cdot 9     \end{array} $	$ \begin{array}{c} 2 \cdot 5 \\ 2 \cdot 5 \\ 2 \cdot 4 \\ 2 \cdot 6 \\ 2 \cdot 2 \end{array} $	$\begin{array}{c} 31 \cdot 9 \\ 32 \cdot 3 \\ 31 \cdot 1 \\ 32 \cdot 8 \\ 30 \cdot 9 \end{array}$	$     \begin{array}{r}       11 \cdot 6 \\       10 \cdot 7 \\       10 \cdot 7 \\       11 \cdot 6 \\       9 \cdot 6     \end{array} $	$ \begin{array}{c} 10 \cdot 4 \\ 9 \cdot 7 \\ 9 \cdot 2 \\ 10 \cdot 7 \\ 7 \cdot 8 \end{array} $	8.6 8.7 7.4 9.9 6.1	7.78.26.89.45.5	$   \begin{array}{r}       70 \cdot 2 \\       69 \cdot 7 \\       65 \cdot 1 \\       74 \cdot 4 \\       60 \cdot 0   \end{array} $		
10.6	$ \begin{array}{c} 11.7\\ 11.8\\ 11.8\\ 11.8 \end{array} $	$22 \cdot 1 \\ 22 \cdot 4 \\ 22 \cdot 9$	$4 \cdot 0$ $3 \cdot 8$ $4 \cdot 0$	$3 \cdot 1 \\ 3 \cdot 0 \\ 3 \cdot 1$	$2 \cdot 4 \\ 2 \cdot 4 \\ 2 \cdot 2$	$31.6 \\ 31.6 \\ 32.2$	$     \begin{array}{r}       10.9 \\       10.8 \\       9.9     \end{array} $	9·3 9·1 8·8	7.8 7.2 6.8	6·8 6·3 6·0	$     \begin{array}{r}       66 \cdot 4 \\       65 \cdot 0 \\       63 \cdot 7     \end{array} $		
		Rates	per 1,	000 of 1	those fo	or 1906-	-10.	Service Service	A TOAP	10 173 191.194	REN'		
957 904	1,000 977 954 869 885	1,000 984 955 886 890	1,000 983 966 862 741	1,000 930 825 684 561	1,000 929 810 667 571	1,000 970 920 831 791	1,000 886 724 561 478	$     \begin{array}{r}       1,000 \\       891 \\       664 \\       514 \\       436     \end{array} $	$     \begin{array}{r}       1,000 \\       919 \\       694 \\       532 \\       468     \end{array} $	1,000 953 730 561 507	1,000 928 776 640 580		
922 904 904	869 892 862 915 892	869 906 882 910 898	793 741 707 793 655	632 596 526 579 509	595 595 571 619 524	794 803 774 816 769	509 469 469 509 421	473 441 418 486 355	497 503 428 572 353	520 554 459 635 372	599 595 556 635 512		
922	900 908 908	902 914 935	690 655 690	544 526 544	571 571 524	786 786 801	478 474 434	423 414 400	451 416 393	459 426 405	567 555 544		
	0-1 0-3 11-5 11-6 11-3 11-5 11-6 11-3 11-5 11-6 11-3 11-5 11-6 11-3 11-5 11-6 11-3 11-2 10-9 10-9 10-9 10-9 10-2 10-4	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Days.           0-1         1-7         0-1           -         -         -         -           -         -         -         -           -         -         -         -           -         -         -         -           -         -         -         -           -         -         -         -           -         -         -         -           -         -         -         -           -         -         -         -           -         -         -         -           -         -         -         -           -         -         -         -           -         -         -         -           -         -         -         -           -         -         -         -           -         -         -         -           -         -         -         -           -         -         -         -           -         -         -         -         -           -         -         -         - <td< td=""><td>Days.         We           <math>0-1</math> <math>1-7</math> <math>0-1</math> <math>1-2</math> <math>1</math> <math>7</math> <math>1</math> <math>1-2</math> <math>1</math> <math>7</math> <math>1</math> <math>7</math> <math>1</math> <math>7</math> <math>7</math> <math>-7</math> <math>1</math> <math>7</math> <math>-7</math> <math>-7</math> <math>1</math> <math>-7</math> <math>-7</math> <math>-7</math> <math>-10</math> <math>-7</math> <math>-7</math> <math>-7</math> <math>-10</math> <math>12.42</math> <math>24.5</math> <math>5.8</math> <math>11.412.77</math> <math>24.15</math> <math>5.6</math> <math>10.411.32</math> <math>21.75</math> <math>110.3</math> <math>11.55</math> <math>22.5.0</math> <math>6.11</math> <math>11.512.82</math> <math>24.355.9</math> <math>11.613.22</math> <math>24.755.7</math> <math>5.77</math> <math>11.512.52</math> <math>24.155.84</math> <math>5.858</math> <math>11.412.772.44.155.510.99</math> <math>24.255.66</math> <math>5.2510.96.111.10.12.24</math> <math>23.45.66</math> <math>5.27.996.11</math> <math>10.912.252.32.45.66</math> <math>5.27.996.11</math> <math>10.411.152.21.95.33</math> <math>10.411.152.21.95.33</math> <math>10.611.22.21.884.88</math> <math>10.1411.166.22.02.24.5.44</math> <math>5.48.10.11.11.11.12.12.24.77</math> <math>10.02.10.992.1.14.66</math> <math>10.611.22.21.844.88</math> <math>10.1411.162.22.03.88</math></td><td>Days.         Weeks.           0-1         1-7         0-1         1-2         2-3           <math>1</math> <math>7</math> <math>1</math> <math>2</math> <math>3</math> <math>1</math> <math>-11 \cdot -1</math> <math>-12 \cdot 2 \cdot -1</math> <math>-5 \cdot -5</math> <math>-5</math></td><td>Days.         Weeks.           0-1         1-7         0-1         1-2         2-3         3-4          </td><td>Days.         Weeks.         Total under four weeks           0-1         1-7         0-1         1-2         2-3         3-4         Total under four weeks           -         -         -         -         -         -         -         -           -         -         -         -         -         -         -         -         -           -         -         -         -         -         -         -         -         -           -         -         -         -         -         -         -         -         -         -           -&lt;</td><td><math display="block"> \begin{array}{ c c c c c c c c c c c c c c c c c c c</math></td><td>Days.         Weeks.         Months           0-1         1-7         0-1         1-2         2-3         3-4         Total Four weeks four weeks minths         3-6           <math></math> <math>74</math> <math>31</math> <math></math> <math></math> <math></math> <math></math> <math>74</math> <math>31</math> <math></math> <math>74</math> <math>31</math> <math>174</math> <math>39-0</math> <math>22\cdot0</math> <math>218-6</math> <math>11\cdot5</math> <math>12\cdot7</math> <math>24\cdot5</math> <math>5\cdot8</math> <math>5\cdot7</math> <math>42\cdot2</math> <math>22\cdot8</math> <math>22\cdot0</math> <math>218-6</math> <math>11\cdot4</math> <math>12\cdot7</math> <math>24\cdot5</math> <math>5\cdot8</math> <math>33\cdot4</math> <math>12\cdot8</math> <math>11\cdot3</math> <math>11\cdot5</math> <math>21\cdot8</math> <math>31\cdot3</math> <math>12\cdot4</math> <math>6\cdot0</math> <math>5\cdot9</math> <math>4\cdot5</math> <math>40\cdot7</math> <math>22\cdot7</math> <math>27\cdot0</math> <math>11\cdot3</math> <math>31\cdot2</math> <math>25\cdot0</math> <math>6\cdot1</math> <math>6\cdot2</math> <math>4\cdot6</math> <math>41\cdot9</math> <math>25\cdot7</math> <math>27\cdot0</math> <math>21\cdot3</math> <math>21\cdot3</math> <math>21\cdot3</math></td><td><math display="block"> \begin{array}{ c c c c c c c c c c c c c c c c c c c</math></td><td><math display="block"> \begin{array}{ c c c c c c c c c c c c c c c c c c c</math></td></td<>	Days.         We $0-1$ $1-7$ $0-1$ $1-2$ $1$ $7$ $1$ $1-2$ $1$ $7$ $1$ $7$ $1$ $7$ $7$ $-7$ $1$ $7$ $-7$ $-7$ $1$ $-7$ $-7$ $-7$ $-10$ $-7$ $-7$ $-7$ $-10$ $12.42$ $24.5$ $5.8$ $11.412.77$ $24.15$ $5.6$ $10.411.32$ $21.75$ $110.3$ $11.55$ $22.5.0$ $6.11$ $11.512.82$ $24.355.9$ $11.613.22$ $24.755.7$ $5.77$ $11.512.52$ $24.155.84$ $5.858$ $11.412.772.44.155.510.99$ $24.255.66$ $5.2510.96.111.10.12.24$ $23.45.66$ $5.27.996.11$ $10.912.252.32.45.66$ $5.27.996.11$ $10.411.152.21.95.33$ $10.411.152.21.95.33$ $10.611.22.21.884.88$ $10.1411.166.22.02.24.5.44$ $5.48.10.11.11.11.12.12.24.77$ $10.02.10.992.1.14.66$ $10.611.22.21.844.88$ $10.1411.162.22.03.88$	Days.         Weeks.           0-1         1-7         0-1         1-2         2-3 $1$ $7$ $1$ $2$ $3$ $1$ $-11 \cdot -1$ $-12 \cdot 2 \cdot -1$ $-5 \cdot -5$ $-5$	Days.         Weeks.           0-1         1-7         0-1         1-2         2-3         3-4	Days.         Weeks.         Total under four weeks           0-1         1-7         0-1         1-2         2-3         3-4         Total under four weeks           -         -         -         -         -         -         -         -           -         -         -         -         -         -         -         -         -           -         -         -         -         -         -         -         -         -           -         -         -         -         -         -         -         -         -         -           -<	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	Days.         Weeks.         Months           0-1         1-7         0-1         1-2         2-3         3-4         Total Four weeks four weeks minths         3-6 $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $74$ $31$ $$ $$ $$ $$ $74$ $31$ $$ $74$ $31$ $174$ $39-0$ $22\cdot0$ $218-6$ $11\cdot5$ $12\cdot7$ $24\cdot5$ $5\cdot8$ $5\cdot7$ $42\cdot2$ $22\cdot8$ $22\cdot0$ $218-6$ $11\cdot4$ $12\cdot7$ $24\cdot5$ $5\cdot8$ $33\cdot4$ $12\cdot8$ $11\cdot3$ $11\cdot5$ $21\cdot8$ $31\cdot3$ $12\cdot4$ $6\cdot0$ $5\cdot9$ $4\cdot5$ $40\cdot7$ $22\cdot7$ $27\cdot0$ $11\cdot3$ $31\cdot2$ $25\cdot0$ $6\cdot1$ $6\cdot2$ $4\cdot6$ $41\cdot9$ $25\cdot7$ $27\cdot0$ $21\cdot3$ $21\cdot3$ $21\cdot3$	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		

A 4

10.7 per 1.000 live births less than in the Administrative County. The only region showing a lower rate than this was the surrounding area of South-East England outside Greater London.

It has been noticed almost invariably since 1911 that the Northern county boroughs have had the highest and the rural districts of the South the lowest infant mortality rate, and it was pointed out in Table XXI of the Review for 1931 (Text, p. 27) that when the twelve regional aggregates in use prior to 1931, apart from London, were arranged in order of the mean number of persons per room in 1931, the rates for 1926-30 almost followed the same order.

	Table V	<b>7I.</b> —Distribution	of	Infant	Mortality,	1933.
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		ths per ive) Bir		Mortality per cent. of that in England and Wales.			hs per i ive) Birt		Mortality per cent. of that in England and Wales.
	Males.	Fe- males.	Both Sexes.	Both Sexes.		Males.	Fe- males.	Both Sexes.	Both Sexes.
England and Wales	71.8	55.2	63.7	100	The second for			10	
South-east Greater London Remainder of South-east North I " III " III Midland " II Midland I " II	$\begin{array}{c} 58 \cdot 4 \\ 61 \cdot 3 \\ 53 \cdot 9 \\ 85 \cdot 2 \\ 88 \cdot 0 \\ 79 \cdot 4 \\ 80 \cdot 4 \\ 88 \cdot 1 \\ 73 \cdot 1 \\ 72 \cdot 9 \\ 73 \cdot 5 \end{array}$	$\begin{array}{r} 44\cdot 1\\ 46\cdot 7\\ 40\cdot 2\\ 66\cdot 0\\ 70\cdot 2\\ 60\cdot 8\\ 62\cdot 9\\ 67\cdot 2\\ 57\cdot 0\\ 58\cdot 3\\ 54\cdot 5\\ \end{array}$	$51 \cdot 4  54 \cdot 2  47 \cdot 2  75 \cdot 9  79 \cdot 4  70 \cdot 4  71 \cdot 8  77 \cdot 9  65 \cdot 2  65 \cdot 7  64 \cdot 2 \\ $	81 85 74 119 125 111 113 122 102 103 101	East South-west Wales I , II Other Urban Districts* Rural Districts* Greater (Admin. Co. London (Outer Ring	$\begin{array}{c} 60 \cdot 1 \\ 56 \cdot 8 \\ 82 \cdot 9 \\ 87 \cdot 5 \\ 69 \cdot 3 \\ \hline \\ 84 \cdot 3 \\ 70 \cdot 6 \\ 62 \cdot 9 \\ 66 \cdot 8 \\ 55 \cdot 9 \\ \hline \end{array}$	$\begin{array}{c} 44 \cdot 2 \\ 41 \cdot 9 \\ 65 \cdot 1 \\ 67 \cdot 8 \\ 56 \cdot 5 \\ \hline \\ 65 \cdot 0 \\ 53 \cdot 5 \\ 49 \cdot 4 \\ 52 \cdot 0 \\ 41 \cdot 3 \\ \end{array}$	52·3 49·5 74·2 77·9 63·2 74·9 62·3 56·3 59·5 48·8	82 78 116 122 99 118 98 88 93 77

\* Excluding Greater London

In Table VII of the Review for 1932 it was further shown that when the county boroughs and county aggregates of urban and rural districts were grouped according to their mean densities per room, the infant mortality rates in 1930-32 increased regularly with the density. Thus whilst county boroughs with mean densities less than 0.7 persons per room had an average rate of 57.6 per 1,000 births, those with densities exceeding 1.15 per room had an average rate of 92.7. A similar progression was evident for the county aggregates, but for the Metropolitan boroughs the increase was only noticeable for those with mean densities exceeding 1.3 persons per room. It must be remembered, however, that the mean density per room tends to increase from South to North, as indicated in Table VII of this Review where the county boroughs have been grouped according to the zones of latitude in which they are situated and also according to the percentage of the populations in private families who were living more than two per room in 1931.

The rates progressively increase as the measure of overcrowding rises within each latitude zone. A low average density of occupation of houses as measured by the number of rooms and persons, with all that is implied by that in social well-being, is clearly conducive to a Table VII.-Infant Mortality, 1933, in the County Boroughs grouped according to their Latitude and proportions of their populations living in overcrowded conditions in 1931. (1930-32 rates in parentheses).

Grouping by per cent. of popula- tion living at	torior Scienti Scienti		Degree	s of No	rth Lat	itude.	resured to the contract The form
density of more than 2 per Room.	50°-	51°–	52°-	53°-	54°-	55°-	All.

Infant Mortality (all Causes) per 1,000 Live Births.

$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$52 \cdot 5$ $52 \cdot 3$ $57 \cdot 9$	$\begin{vmatrix} 45 \cdot 7 \\ 59 \cdot 4 \\ 67 \cdot 4 \end{vmatrix}$	$ \begin{array}{c c} 62 \cdot 3 \\ 70 \cdot 0 \\ 69 \cdot 7 \\ 86 \cdot 2 \end{array} $	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{c} - \\ - \\ 64 \cdot 5 \\ 73 \cdot 8 \end{array}$		$57 \cdot 9 (57 \cdot 1)  63 \cdot 9 (62 \cdot 5)  71 \cdot 6 (72 \cdot 3)  89 \cdot 5 (84 \cdot 5)$
12– 15 and over	 -	64.5	101.6	89.0 115.5	$91 \cdot 4$ $82 \cdot 0$	86.3	$\begin{array}{c} 89.5 & (84.5) \\ 91.6 & (85.1) \\ 81.7 & (81.6) \end{array}$
All County Boroughs	 53.5	60.7	70.3	81.2	81.7	86.3	73.9 (72.6)

Infant Mortality (Congenital Causes) per 1,000 Live Births.

9 12 15 and over All County		29.1	43·6 37·9	$     \begin{array}{r}       39 \cdot 3 \\       45 \cdot 9 \\       47 \cdot 4     \end{array} $	$     \begin{array}{r}       37 \cdot 5 \\       41 \cdot 4 \\       36 \cdot 3     \end{array} $	 38·7	$\begin{array}{c} 34 \cdot 9 & (33 \cdot 4) \\ 38 \cdot 9 & (34 \cdot 6) \\ 43 \cdot 4 & (38 \cdot 0) \\ 35 \cdot 9 & (33 \cdot 1) \end{array}$
3- 6- 9-	$ \begin{array}{c c} 35 \cdot 3 \\ 28 \cdot 9 \\ - \\ 34 \cdot 0 \end{array} $	26.7 32.7 31.1	$ \begin{array}{c c} 30 \cdot 9 \\ 35 \cdot 2 \\ 35 \cdot 3 \\ 43 \cdot 6 \end{array} $	$   \begin{array}{r}     35 \cdot 2 \\     37 \cdot 1 \\     35 \cdot 2 \\     39 \cdot 3   \end{array} $	34.6		$\begin{array}{c} 31 \cdot 5 & (30 \cdot 6) \\ 33 \cdot 8 & (31 \cdot 9) \\ 34 \cdot 9 & (33 \cdot 4) \\ 29 & 0 & (24 \cdot 2) \end{array}$

Infant Mortality (other Causes) per 1,000 Live Births.

$\begin{array}{cccccccccccccccccccccccccccccccccccc$	··· ··· ···	$ \begin{array}{c} 17 \cdot 2 \\ 23 \cdot 4 \\ \hline 23 \cdot 9 \\ \hline \end{array} $	$ \begin{array}{c} 19 \cdot 0 \\ 26 \cdot 7 \\ 36 \cdot 3 \\ - \\ 35 \cdot 4 \end{array} $	$ \begin{array}{r} 31 \cdot 4 \\ 34 \cdot 8 \\ 34 \cdot 4 \\ 42 \cdot 6 \\ 53 \cdot 7 \\ \end{array} $	$\begin{array}{c} 29 \cdot 1 \\ 34 \cdot 5 \\ 38 \cdot 1 \\ 54 \cdot 7 \\ 43 \cdot 1 \\ 68 \cdot 1 \end{array}$	$ \begin{array}{c}\\ 29 \cdot 9\\ 36 \cdot 3\\ 50 & 0\\ 45 \cdot 7 \end{array} $		$\begin{array}{c} 26\cdot 4 & (26\cdot 5) \\ 30\cdot 1 & (30\cdot 6) \\ 36\cdot 7 & (38\cdot 9) \\ 50\cdot 6 & (49\cdot 9) \\ 48\cdot 2 & (47\cdot 1) \\ 45\cdot 8 & (48\cdot 5) \end{array}$
All County Boroughs	noten ogilei	22.7	29.3	35.4	43.6	44.7	47.6	38.3 (39.4)

All County Boroughs .78 ·84 ·80 .88 1.09 1.08 ·86

low infant mortality rate, and vice versâ. At the same time this can account only in part for the northward increase, since in passing from the south coast zone to the industrial north (between  $53^{\circ}$  N and  $55^{\circ}$  N) the rates tend in general to rise within each group of towns whether characterised by a high or low percentage of overcrowding. It must be presumed therefore that northerliness is a factor of importance in its effect on infant mortality apart from housing density.

The lower part of Table VII shows that when mortality during the first year of life attributed to congenital causes (Nos. 157–161 of the International List) is separately analysed, the increase with overcrowding within each latitude zone was, in 1933, rather less evident than the increase from South to North in towns of similar overcrowding index. In 1930–32 (see Table VIII, 1932 Review) the former increase was scarcely evident at all. For mortality from causes other than congenital, however, the increase of mortality with overcrowding at a given latitude is very pronounced, as in 1930–32.

In the Review for 1932 (Table IX and p. 12) it was shown that the mean infant mortality rates of the 6 regions for 1931 and 1932 from causes described as premature birth and injury at birth followed the inverse order of the annual hours of sunshine recorded within those regions, and it was suggested that in so far as climate affects infant mortality at all, deficiency of effective solar radiation is probably a more important factor than the greater coldness of the northern towns.

Comparison of the rates in Table VII with the corresponding rates for the preceding triennium indicates that, whilst causes other than congenital showed no important differences, the 1933 mortality attributed to congenital causes was enhanced at all latitudes, and in every compartment of the table except two, the increase being greatest, however, in the towns with high indices of overcrowding, as may be seen by comparing the rates in the last column of the table with the corresponding rates for 1930–32, given in parentheses.

Table VI shows that in 1933 North I gave the highest rate of 79.4 per 1,000 births, this rate being 125 per cent. of the rate in England and Wales. North IV and Wales I followed with 122 per cent., North III with 113, and North II with 111. The Greater London rate was only 85 per cent. of that in England and Wales, that of the Eastern Counties 82, of the South-West 78, and of the South-Eastern region outside Greater London 74.

Compared with the preceding year Greater London, the South East, South West and North III showed substantially lower rates, whereas in Wales I mortality was considerably higher.

The extent of the fall in infant mortality in 1933 below the 1916–20 standard was 34 per cent. in London Administrative County, 28 per cent. in the North, 29 per cent. in the rest of England and 19 per cent. in Wales. Adhering to the density classification hitherto used, it is seen from Table VIII that the Table VIII.—Infant Mortality at Various Stages of Infancy in different Classes of Area compared with that in 1911–15 and 1926–30.

ri . mari		U	nder 4	Weeks.	14 - 200 - 14 - 14 - 14 - 14 - 14 - 14 - 14 -	4 W	eeks to	3 Month	ns.		3-6 M	lonths.	
		15 21	Morta	lity (per	: 1,000	Live Bir	ths) con	mpared	with 19	11–15 t	aken as	1,000.	and here
		London Admin. County.	County Boroughs.	Other Urban Districts.	Rural Districts.	London Admin. County.	County Boroughs.	OtherUrbanDistricts.	Rural Districts.	London Admin. County.	County Boroughs.	Other Urban Districts.	Rural Districts.
1911-15 1916-20 1921-25 1926-30	 	1,000 949 800 728	1,000 943 855 812	1,000 940 862 823	1,000 971 871 841	1,000 834 574 505	$1,000 \\ 810 \\ 640 \\ 548$	1,000 790 627 507	1,000 834 672 582	1,000 793 605 539	1,000 739 604 516	$1,000 \\ 691 \\ 550 \\ 430$	$1,000 \\ 726 \\ 577 \\ 480$
		120	Morta	lity (per	1,000	Live Bir	ths) con	npared	with 19	26–30 ta	aken as	1,000.	ave.
		Ortic	Out	side Gre	eater	08.0		side Gre London				side Gre London.	
		Greater London.	County Boroughs.	Other Urban Districts.	Rural Districts.	Greater London.	County Boroughs.	Other Urban Districts.	Rural Districts.	Greater London.	County Boroughs.	Other Urban Districts.	Rural Districts.
1926-30		1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
1926          1927          1928          1929          1930		1,002 993 994 1,041 969	1,013 1,018 985 1,020 964	1,003 1,032 967 1,027 971	978 1,005 965 1,060 995	1,029 889 1,068 1,091 922	1,079 976 978 1,041 921	$1,083 \\ 1,025 \\ 966 \\ 1,070 \\ 852$	1,069 1,070 928 1,088 837	1,044 931 1,059 1,094 870	1,080 1,004 971 1,117 825	1,129 1,087 888 1,134 754	1,089 1,050 934 1,115 805
1931 1932 1933	 	1,017 1,028 1,041	981 988 1,007	989 990 1,003	1,010 984 1,016	1,075 1,025 869	993 1,011 938	1,003 963 906	937 1,004 927	1,037 1,017 891	980 930 956	946 925 905	910 983 854
and in section		-	5–9 Moi	nths.		ļ	9–12 M	onths.	L. y along a	To	otal und	ler 1 Ye	ar.
			Morta	lity (per	1,000	Live Bir	ths) co	mpared	with 19	11–15 t	aken as	1,000.	
	in the second se	London Admin. County.	County Boroughs.	Other Urban Districts.	Rural Districts.	London Admin. County.	County Boroughs.	Other Urban Districts.	Rural Districts.	London Admin. County.	County Boroughs.	Other Urban Districts.	Rural Districts.
1911-15 1916-20 1921-25 1926-30	  	1,000 735 578 546	1,000 729 604 517	$1,000 \\ 685 \\ 568 \\ 463$	1,000 739 583 506	1,000 738 592 529	1,000 732 643 550	1,000 701 573 478	1,000 736 602 535	1,000 833 655 592	1,000 818 700 626	1,000 800 683 598	1,000 851 721 659
			Morta	lity (per	1,000	Live Bir	ths) con	mpared	with 19	26–30 ta	aken as	1,000.	
				side Gre London			Out	side Gre London	eater			side Gre London	
		Greater London	County Boroughs.	Other Urban Districts.	Rural Districts.	Greater London.	County Boroughs.	Other Urban Districts.	Rural Districts.	Greater London.	County Boroughs.	Other Urban Districts.	Rural Districts.
1926-30          1926          1927          1928          1929          1930	· · · · · · ·	1,000 950 954 1,040 1,213 849	1,000 1,096 1,059 883 1,254 707	1,000 1,087 1,110 880 1,185 736	1,000 1,073 1,154 851 1,186 729	1,000 1,004 921 1,039 1,209 830	1,000 1,038 1,094 885 1,280 703	1,000 1,037 1,172 836 1,241 714	1,000 1,000 1,188 874 1,182 756	1,000 1,007 952 1,028 1,100 913	1,000 1,047 1,024 956 1,100 871	1,000 1,045 1,062 933 1,088 872	1,000 1,017 1,052 936 1,094 900
1931 1932 1933	 	902 915 759	992 897 884	917 824 821	973 925 829	817 937 691	936 791 832	925 795 789	908 910 829	991 1,060 910	978 947 951	971 938 932	974 974 948

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fall from 1911-15 to 1926-30 amounted to 41 per cent. in London, 37 per cent. in the county boroughs, 40 per cent. in the small towns and 34 per cent. in the rural districts. The 1933 rates showed a further improvement on 1926-30 rates amounting to 5 per cent. in the county boroughs, 7 per cent. in the small towns and 5 per cent. in the rural districts, Greater London being excluded in each case.

Distribution of the Fall in Mortality at Various Stages of Infancy.—The reduction of mortality at various stages of infancy in different classes of area is outlined for the period covered by this form of tabulation in Table VIII.

In this table the comparison with 1911–15 is shown up to 1926–30 on the basis of the division previously used, that is to say the aggregates referred to, other than the Administrative County of London, include in each instance some districts comprising London's outer ring, but from 1926–30 onwards the new density summary is used. It was pointed out in the Review for 1931 (p. 10) that the effect of the change on infant mortality rates is only of importance for the "other urban districts," the new aggregate having rates higher than the old, in 1931, by 5 per cent. for the first 4 weeks of life, 3 per cent. at 1–6 months, 8 per cent. at 6–9 months, 7 per cent. at 9–12

#### Table IX.—Infant Mortality (per 1,000 Live Births) at Various Stages of Infancy in Different Regions of England and Wales, per 1,000 of that in 1916-20.

		Under 4	Weeks.		4 V	Veeks to	3 Mon	ths.		3-6 M	onths.	
	England and Wales.	North.	Rest of* England.	Wales.	England and Wales	North.	Rest of* England	Wales.	England and Wales.	North.	Rest of* England.	Wales.
1911-15          1916-20          1921-25          1926-30	1,000	1,032 1,000 915 871	1,074 1,000 898 855	1,051 1,000 928 952	1,232 1,000 782 660	1,194 1,000 813 687	1,262 1,000 771 650	1,310 1,000 826 699	1,370 1,000 799 665	1,322 1,000 812 673	1,425 1,000 789 657	1,540 1,000 850 695
1931 1932 1933	. 853	854 853 865	854 858 373	971 953 1,003	660 660 604	696 704 640	632 633 581	709 644 716	647 634 609	672 642 658	621 620 555	642 624 670
Story	1	6-9 I	fonths.			9-12	Months.		To	otal und	er 1 Ye	ar.
	England and Wales.	North.	Rest of* England.	Wales.	England and Wales.	North.	Rest of* England.	Wales.	England and Wales.	North.	Rest of* England.	Wales.
1916-20 1921-25	. 1,392 . 1,000 . 818 . 698	1,000 834 691	1,000 798 700	1,000 862 719	1,380 1,000 842 721	1,000 876 737	1,000 798 716	1,000 909 710	1,218 1,000 846 755	1,187 1,000 864 764	1,242 1,000 836 755	1,273 1,000 886 808
	. 666 . 619 . 584	691 596 594	633 635 578	696 600 658	655 602 573	711 581 593	613 613 577	779 596 650	738 723 708	756 723 720	727 729 705	814 759 814

\* Excluding London Administrative County.

months and 5 per cent. for the first year as a whole. This effect, however, is eliminated in Table VIII by the change of datum line at 1926–30.

In Greater London and each class of area 1933 rates show improvement over 1926-30 at each group of ages over 4 weeks. In the towns the degree of recent improvement progressively increases from 3 months onwards.

Table IX compares the extent of decline since 1916–20 at different stages of infancy in the North and in Wales with that in the rest of England, excluding London Administrative County. Mortality during the first 4 weeks has fallen to the same extent in the North as in the rest of England, by 13 per cent., but in Wales the improvement up to 1921–25, has not been maintained in more recent years.

In the second and third months the rates were lower in 1933 than in 1926–30 in the English divisions but not in Wales. At 3–12 months they were lower throughout, but the Welsh rates were considerably above the low levels attained in 1932.

The analysis of infant deaths by detail of age, initiated in 1905 with distinction of registration counties mainly urban and mainly rural in character, and expanded in 1917 and again in 1931, is given for each region and class of area in Table 13. Distinctions of sex and legitimacy are shown only for England and Wales as a whole, but are available for each of the populations dealt with. Some of the facts and rates applying to the illegitimate will be found in Table 14. The rates per 1,000 live births appear in Table X, and as percentages of the England and Wales rate in Table XI.

The chance of dying within half an hour of birth reached 2 per 1,000 in North II, Midland I and London, and was lowest in the East. This measure is very dependent upon accuracy of certification which in turn may be correlated with the frequency of the presence of a medical attendant at the birth. When the mortality within the first day as a whole is examined, Wales gives, as in each year since 1927, the highest rate of any of the large regions, the sequence being then as usual from North to South. For the combined mortality from the second to the seventh day Wales II shows the highest rate, 124 per cent. of the rate for England and Wales, closely followed by North I and Wales I, whilst London gives the lowest ratio, 74 per cent. North I gives the highest rates from the 3rd week to the 9th month, and North IV at 9-12 months. The South-West and South-East outside Greater London give the lowest rates after 3 months. The range of relative mortality increases from 86-119 per cent. of that of England and Wales for the first day's mortality, to 55-144 at 3-6 months, 59-141 at 6-9 months, and 57-142 at 9-12 months. In 1931 the regional range was greatest at 9-12, and in 1932 at 6-9 months.

Urban excess is not, as a rule, present from birth, but tends to increase throughout the later months of infancy. This is well shown in 1933 by contrasting London Administrative County with

### Table X.—Infant Mortality at Various Ages, 1933.

Months. Days. 1 Day and under Weeks. 30 Total Total 4 Weeks Total Under Minutes under 4 Weeks. 3Months under under 30 and one Year. 1 Day. 1 Week. Minutes. under 9-12 2 3 4 5 0 2 3 3-6 6-9 6 1 1 1 Day. England and Wales.  $\begin{array}{r}
 10 \cdot 0 \\
 7 \cdot 5 \\
 8 \cdot 8
 \end{array}$  $\begin{array}{r}
 13.7 \\
 9.9 \\
 11.8
 \end{array}$  $\begin{array}{r}
 11 \cdot 5 \\
 8 \cdot 3 \\
 9 \cdot 9
 \end{array}$ 6.5  $12 \cdot 2 \\ 9 \cdot 9 \\ 11 \cdot 1$ 4.0 3.1 3.6  $3 \cdot 9 \\ 2 \cdot 5 \\ 3 \cdot 2$  $2.6 \\ 1.6 \\ 2.1$  $1 \cdot 4 \\ 1 \cdot 1 \\ 1 \cdot 3$  $0.8 \\ 0.7 \\ 0.7 \\ 0.7$  $4 \cdot 4 \\ 3 \cdot 6 \\ 4 \cdot 0$  $3 \cdot 4 \\ 2 \cdot 7 \\ 3 \cdot 1$  $2.6 \\ 1.9 \\ 2.2$ 7.6  $\begin{array}{r}
 10 \cdot 4 \\
 8 \cdot 2 \\
 9 \cdot 3
 \end{array}$ 0.9 25.9  $1.8 \\ 1.7 \\ 1.7 \\ 1.7$ 36.2 { M. F. P.  $71 \cdot 8$  $55 \cdot 2$  $63 \cdot 7$ 19·8 22·9 5·9 6·8  $5.5 \\ 6.0$ 0.9 28.0 All Infants 0.9  $32 \cdot 2$  $6 \cdot 4 \\ 5 \cdot 3 \\ 5 \cdot 9$ 9.6 7.3 8.5 7·5 5·8 6·7  $\begin{array}{r}
 13 \cdot 5 \\
 9 \cdot 7 \\
 11 \cdot 6
 \end{array}$  $25 \cdot 2$ 19 · 0 22 · 1 4·2 3·5 3·9  $3.8 \\ 2.5 \\ 3.2$  $2 \cdot 6 \\ 1 \cdot 6 \\ 2 \cdot 1$  $1 \cdot 4 \\ 1 \cdot 1 \\ 1 \cdot 2$  $3 \cdot 3$  $2 \cdot 6$  $3 \cdot 0$  $2.5 \\ 1.9 \\ 2.2$ 35.2  $11 \cdot 1 \\ 7 \cdot 9 \\ 9 \cdot 5$ 0.9 0.8 11.7 3.9  $69 \cdot 7$   $53 \cdot 2$   $61 \cdot 7$ 10.3 $\begin{cases} M.\\ F.\\ P. \end{cases}$ 1.4 0·6 0·7  $26 \cdot 9$  $31 \cdot 1$  $0.8 \\ 0.9$  $3 \cdot 1 \\ 3 \cdot 5$  $1 \cdot 3$  $1 \cdot 4$ 7·9 9·1  $9 \cdot 3 \\ 10 \cdot 5$ Legitimate 7.6 8.5  $2 \cdot 3$ 1 \cdot 8 2 \cdot 0  $\begin{array}{r}
 19 \cdot 2 \\
 12 \cdot 2 \\
 15 \cdot 7
 \end{array}$ 7·2 6·1 6·7  $5 \cdot 2 \\ 3 \cdot 8 \\ 4 \cdot 5$  $3 \cdot 3$ 2 \cdot 1 2 \cdot 7  $18.4 \\ 14.7 \\ 16.6$  $5 \cdot 1 \\ 2 \cdot 5 \\ 3 \cdot 9$  $59 \cdot 9$  $52 \cdot 3$ 10.0 23·5 23·8 23·7 1.2 41.9  $5.7 \\ 5.1 \\ 5.4$ 21.0 5.4 1.0  $\begin{array}{r}
 117 \cdot 7 \\
 97 \cdot 1 \\
 107 \cdot 5
 \end{array}$ 9.4 14.1 {M. F. P 1.6 1.4 1·3 1·1 ·8·0 9·1  $38.5 \\ 40.2$  $\frac{16\cdot 1}{18\cdot 5}$ 4·2 4·8 10·0 9·7 13·8 13·9 Illegitimate 8.0 56.1  $5 \cdot 2 \\ 6 \cdot 1 \\ 4 \cdot 0$  $0.5 \\ 0.4 \\ 0.6$  $2 \cdot 4$  $2 \cdot 4$  $2 \cdot 5$  $7 \cdot 4 \\ 8 \cdot 7 \\ 5 \cdot 4$ 4.4  $2.5 \\ 2.5 \\ 2.5 \\ 2.5$ 0·7 0·7  $1.6 \\ 1.6 \\ 1.7$  $7 \cdot 7$  $8 \cdot 4$  $6 \cdot 7$  $2 \cdot 9$  $2 \cdot 8$  $3 \cdot 2$  $1.8 \\ 1.6 \\ 2.1$  $3 \cdot 4 \\ 3 \cdot 5 \\ 3 \cdot 3$ 9.7 1.1 9.5 19.226.7  $51 \cdot 4$  $54 \cdot 2$  $47 \cdot 2$ 8.1 1.6 South-East.. 18·8 19·8  $26 \cdot 2$ 27 \cdot 4 .. 9.0 • •  $1 \cdot 0$  $1 \cdot 1$ 4.8 8·0 8·1 9·8 9·6 1.8 Greater London Remainder of South-East 0.8 10.2 3.8 7.7 7.7 6.7 6.8 8.5  $2 \cdot 4$   $2 \cdot 7$   $2 \cdot 3$   $2 \cdot 5$   $2 \cdot 2$  $\begin{array}{c} 0 \cdot 9 \\ 1 \cdot 0 \\ 0 \cdot 7 \\ 0 \cdot 9 \\ 0 \cdot 8 \end{array}$  $13 \cdot 3 \\ 14 \cdot 4 \\ 12 \cdot 1 \\ 13 \cdot 7 \\ 12 \cdot 9$  $2 \cdot 8$   $3 \cdot 1$   $2 \cdot 0$   $2 \cdot 4$   $3 \cdot 0$  $12 \cdot 0 \\ 11 \cdot 0$  $11 \cdot 3 \\ 12 \cdot 7 \\ 9 \cdot 5 \\ 10 \cdot 9 \\ 11 \cdot 4$ 8.6 3.74.32.93.73.6 $4 \cdot 3$  $4 \cdot 4$  $4 \cdot 3$  $4 \cdot 2$  $4 \cdot 3$ 3.73.9 $10.3 \\ 10.5$ 36.2 1.5 25.4 75·9 79·4 70·4 71·8 77·9 12.1 3.9 1.0 1.8 North 1.6 1.6  $26 \cdot 8$  $23 \cdot 8$  $24 \cdot 8$  $25 \cdot 6$ 9.6 8.3 7.7 8.8 ..  $12 \cdot 5$   $11 \cdot 6$   $11 \cdot 0$   $12 \cdot 7$  $3 \cdot 6$  $3 \cdot 8$  $4 \cdot 0$  $3 \cdot 9$ 38.3 1.1 1.9 ··· ·· ·· North ..  $\frac{0.8}{0.8}
 \frac{1.0}{1.0}$ 3·9 3·7 3·5 9.5 9.3 10.9 34.0 12.0 $2 \cdot 2$ 1 · 7 1 · 7 II .. ,, 1·7 1·4  $\begin{array}{c} 35\cdot 0\\ 36\cdot 4\end{array}$  $11 \cdot 4 \\ 12 \cdot 8$ III •• ,, IV ..  $\begin{array}{c}
 6 \cdot 4 \\
 6 \cdot 1 \\
 7 \cdot 0
 \end{array}$  $7 \cdot 0$  $7 \cdot 1$  $6 \cdot 8$  $2 \cdot 1 \\ 2 \cdot 0 \\ 2 \cdot 2$  $0.9 \\ 0.9 \\ 0.9 \\ 0.8$  $3 \cdot 2 \\ 3 \cdot 1 \\ 3 \cdot 5$  $2 \cdot 4 \\ 2 \cdot 4 \\ 2 \cdot 3$ 8.0 8.1 7.8  $9 \cdot 6$  $10 \cdot 2$  $3 \cdot 6 \\ 3 \cdot 9 \\ 3 \cdot 1$  $3 \cdot 3 \\ 3 \cdot 0 \\ 3 \cdot 9$ 12.1  $11 \cdot 6 \\ 12 \cdot 3 \\ 10 \cdot 3$ 1.2 1.0 23.7  $4 \cdot 2$ 33.5 10.32.0 65.2 Midland .. •••  $1 \cdot 3$  $1 \cdot 0$  $\frac{0.9}{1.0}$  $12 \cdot 1$  $12 \cdot 1$  $\begin{array}{c} 24 \cdot 4 \\ 22 \cdot 3 \end{array}$ 4·1 4·4  $34 \cdot 0 \\ 32 \cdot 4$  $10 \cdot 4 \\ 10 \cdot 1$  $2 \cdot 1 \\ 1 \cdot 9$ Midland I 65.7 ··· ··· •• 8.4 64.2 II .. ,, 4.3 4.9 2.5 1.2 1.1 0.7 12.3 21.8 4.1 2.7 1.6 30.1 7.3 5.6 3.9 3.0 8.6 9.5 52.3 0.8 East ... .. 4.8 4.1 3.4 0.8 12.3 22.0 1.9 29.7 7.4  $2 \cdot 4$ 1.3 0.8 3.5 2.3 9.8 3.5 3.6 7.9 1.8 South-West 49.5 .. ..  $\begin{array}{r}
 6 \cdot 6 \\
 7 \cdot 3 \\
 4 \cdot 5
 \end{array}$  $2 \cdot 4 \\ 2 \cdot 3 \\ 2 \cdot 8$  $27 \cdot 2$  $27 \cdot 4$  $26 \cdot 9$  $9.5 \\ 10.0 \\ 8.0$ 2.6 38.2 12.47.5 $13 \cdot 0$  $13 \cdot 2$  $12 \cdot 3$ 1.3 1.1 1.0 14.34.9 3.4 4.0 Wales I ...  $74 \cdot 2$ 77 \cdot 9 63 \cdot 2 11.3 4.5 ··· ···  $14 \cdot 2 \\ 14 \cdot 6$ 1·4 1·1 0·9 1·7  $0.9 \\ 1.0$  $5.5 \\ 3.1$ 3·5 3·2 2·9 1·8  $39 \cdot 3 \\ 34 \cdot 9$  $12.9 \\ 10.8$  $8 \cdot 3$  $5 \cdot 0$ 4·7 3·9 4·0 4·0 1·7 1·7 11.5 ··· ··· 10.6 " II ..  $\begin{array}{r}
 11 \cdot 4 \\
 7 \cdot 7 \\
 6 \cdot 0
 \end{array}$  $2 \cdot 2$  $2 \cdot 4$  $2 \cdot 3$  $2 \cdot 6 \\ 2 \cdot 3 \\ 2 \cdot 1$  $8.8 \\ 6.2 \\ 4.9$ 12.6 12.08.0  $11 \cdot 7$  $11 \cdot 6$  $10 \cdot 6$ 3.2 0.9 0.9 24.3  $4 \cdot 2$ 3.4 34.6  $9 \cdot 9 \\ 9 \cdot 8 \\ 9 \cdot 0$ 1 County Boroughs\* Other Urban Districts\*  $74 \cdot 9 \\ 62 \cdot 3 \\ 56 \cdot 3$ 4.0 1.8 3.6 3.6 3·4 3·7  $\frac{1\cdot 3}{1\cdot 2}$  $0.9 \\ 1.0$ 0.7  $12.3 \\ 12.7$  $23 \cdot 8$  $23 \cdot 3$  $4 \cdot 1$  $4 \cdot 0$ 3·2 3·0  $33 \cdot 4 \\ 32 \cdot 3$ 9·4 8·7  $5\cdot 5$  $4\cdot 4$ 1.8 1.6 ... Rural Districts\* ... .. 5·9 3·8  $2 \cdot 0 \\ 2 \cdot 9$ 8·7 9·3  $\begin{array}{r}
 19 \cdot 2 \\
 18 \cdot 4
 \end{array}$  $2 \cdot 8 \\ 4 \cdot 1$  $2 \cdot 2 \\ 2 \cdot 5$  $1 \cdot 4 \\ 1 \cdot 7$  $25.7 \\ 26.8$ 9·4 7·3 7·4 4·7 2·8 2·7 1.6 1.6 Greater {Admin. County London {Outer Ring ...  $\begin{array}{r}
 10.5 \\
 9.1
 \end{array}$ 1.1 0.7 0.5 11.2  $2 \cdot 0 \\ 1 \cdot 5$ 8·4 7·6 59.5 6.1 1.0 0.7 0.4 48.8

Rates per 1,000 Live Births.

\* Excluding Greater London.

Table XIInfant Mortality at	various Ages, in different parts of the Country, per cent. of that of all Infants of the
	same Age in England and Wales, 1933.

T THERE IT	Total	Under	30 Minutes	Total		R. A.	Day	'S.			1 Day and		We	eks.		Total	4 Weeks	all all	Months	
	under one Year.	30 Minutes.	and under 1 Day.	under 1 Day.	1	2	3	4	5	6	under 1 Week.	0	1	2	3	under 4 Weeks.	to 3Months.	3–6	6-9	9-12
England and Wales $\begin{cases} P. \\ M. \\ F. \end{cases}$	100 113 87	100 106 100	100 112 88	100 110 89	100 111 86	100 122 78	100 124 76	100 108 85	100 100 100	100 114 100	100 116 84	100 113 86	100 110 90	100 110 87	100 118 86	100 112 87	100 116 84	100 114 85	100 112 87	100 108 92
South-East Greater London Remainder of South-East	81 85 74	94 106 88	87 86 87	87 88 86	81 78 89	78 78 78	86 76 100	85 77 85	78 78 89	71 57 86	81 76 86	84 82 86	85 88 83	77 77 81	73 73 77	83 81 85	78 85 68	84 99 61	76 90 59	73 80 63
North North I "II "III "III "IV	119 125 111 113 122	106 112 129 100 100	111 113 102 100 117	109 113 105 99 114	108 100 106 111 108	116 134 91 116 113	114 129 110 119 105	115 123 123 131 108	111 122 89 89 111	129 143 100 129 114	113 122 103 116 109	111 117 104 108 112	108 110 108 105 108	119 126 126 119 113	127 141 91 109 136	112 119 106 109 113	121 111 121 115 129	128 144 108 124 130	126 141 122 113 129	128 128 112 113 142
Midland Midland I ,, II	102 103 101	118 124 112	103 110 90	105 111 93	100 108 86	103 94 122	100 95 105	92 100 77	111 100 111	129 129 114	103 103 103	103 107 97	105 103 110	103 100 113	109 109 105	104 106 101	104 105 102	91 92 89	103 104 100	107 102 117
East	82	47	92	86	108	94	119	92	122	100	104	95	103	87	73	93	74	64	72	72
South-West	78	106	85	88	97	113	114	100	89	114	104	96	88	74	86	92	75	55	60	57
Wales Wales I " II	116 122 99	$100 \\ 100 \\ 100 \\ 100$	$122 \\ 124 \\ 114$	117 119 111	125 131 108	125 125 125	114 110 133	100 108 85	122 100 189	143 129 143	121 120 124	119 120 117	123 138 78	$     \begin{array}{r}       110 \\       113 \\       103     \end{array}   $	118 132 82	119 122 108	125 130 109	108 114 91	110 122 74	110 122 75
County Boroughs* Other Urban Districts* Rural Districts*	118 98 88	$     \begin{array}{r}       106 \\       106 \\       94     \end{array} $	106 105 97	105 105 95	111 100 100	100 106 116	105 114 110	108 100 92	100 100 111	129 100 114	107 104 108	106 104 102	105 103 100	110 103 97	118 105 95	107 104 100	121 95 88	130 88 68	129 91 72	133 92 73
Greater {Admin. County London {Outer Ring	93 77	118 88	90 82	95 82	78 75	63 91	76 76	85 77	78 78	71 57	74 79	84 80	70 103	71 81	64 77	80 83	95 74	127 69	109 69	98 63

14

15

\* Excluding Greater London.

its outer ring of suburbs. At 1–7 days and in the 2nd, 3rd and 4th weeks the rate was actually higher in the outer ring, but at 4 weeks to 3 months the rate for the outer ring was only 78 per cent. of that for London itself, and at 3–12 months less than 65 per cent. Outside Greater London the rates during the first few weeks are only slightly affected by urbanization, but the divergence between the county boroughs and rural districts rapidly increases to 62 per cent. of the rate for England and Wales at 3–6 months, 57 per cent. at 6–9 months and 60 per cent. at 9–12 months.

#### Table XII.-Mortality of the first 30 Minutes of Life 1933.

7 2				1	Under 30	Minutes	•	
International List Numbers	Cause of Death.	All Infants.	Leg	gitimate.		11	e.	
List N			Males.	Fe- males.	Both Sexes.	Males.	Fe- males.	Both Sexes.
			1		Deaths.			THE
86 157 158 159 160 161 ( <i>a</i> ) 161 ( <i>b</i> &c 194 : 1 182 172–175	Convulsions						$ \begin{array}{r} \\ 4 \\ 3 \\ 14 \\ 10 \\ 3 \\ 2 \\ 58 \\ 10 \\ 15 \\ 83 \\ 7 \\ 126 \\ \end{array} $	7 4 33 17 9 2 113 1 19 29 29 162 14 248
			Morta	lity per l	Million L	ive Birth	s.	
86 157 158 159 160 161 (a) 161 (b&c 94: 1 82 172-175	Convulsions	$\begin{array}{r}\\ 134\\ 47\\ 696\\ 284\\ 202\\ 16\\ 243\\ 5\\ 33\\ 55\\ 336\\ 31\\ \end{array}$	$ \begin{array}{c}$	$ \begin{array}{c}\\ 177\\30\\634\\258\\166\\18\\48\\48\\4\\\\11\\63\\4\end{array} $	$\begin{array}{c}\\ 128\\ 41\\ 668\\ 267\\ 195\\ 13\\ 50\\ 4\\\\ 5\\ 59\\ 7\end{array}$	$\begin{array}{r}$		276 157 1,299 669 354 79 4,447 39 748 1,141 6,376 551
	All Causes	1,745	1,405	1,350	1,378	9,502	10,025	9,761
		1	Percent	tage of T	otal unde	er 24 Ho	urs.	1
86 157 158 159 160 161 (a) 161 (b& 194: 1 182 172-175	Convulsions	$ \begin{array}{c c}\\ 20\\ 11\\ 9\\ 30\\ 20\\ 24\\ 88\\ 18\\ 86\\ 89\\ 83\\ 31\\ -16\\ 16\\ \end{array} $	$ \begin{array}{c c} - \\ 13 \\ 11 \\ 9 \\ 26 \\ 20 \\ 11 \\ 79 \\ 11 \\ - \\ 57 \\ 10 \\ 12 \\ \end{array} $	24 8 10 33 20 31 87 20 	$ \begin{array}{c c}$	33 17 12 41 46 	50 38 10 43 21 67 92 	41 29 111 43 33 350 90 33 90 88 88 88 88 88 88

Comparison of Table X with 1932 reveals increases in the rates for the first month of life in each region except North II, III, decreases at the 2nd and 3rd months except in Midland I and Wales, decreases at 3–6 months except in North I, II, III and Wales I, and decreases at 6–9 months except in North I and II, South West and Wales I. At 9–12 months there were increases in North I, II, IV, Midland II, East and Wales I, but decreases elsewhere.

**Deaths occurring immediately after birth.**—The separate tabulation of deaths registered as occurring within 30 minutes of birth according to sex, cause and legitimacy, first published in the Review for 1928, is repeated for 1933 in Table XII.

The table shows that this very early mortality displays in 1933 the same startling differential incidence upon the illegitimate as in previous years, especially for those causes of death which imply, or are likely to mask, violence or neglect. For violence and lack of care as a whole a rate of 6,376 per million for illegitimate infants compares with one of 59 for the legitimate; 83 per cent. of all such deaths under 24 hours occurred within this first half hour, as against 16 per cent. for mortality generally, so that the risk represented by violence and lack of care is one applying especially to this first half-hour of life. The rate of mortality among legitimate infants from all causes in 1933 was 1,405 per million live born males and 1,350 for females, the corresponding rates in the preceding 5-year period being 1,419 and 1,224 respectively. Comparison with the preceding years reveals a progressive increase since 1929 in deaths of female infants during the first half-hour attributed to congenital malformations, but no corresponding rise for male infants. Thus in 1931-33, 131 legitimate female infants died from congenital malformations in the first half hour compared with 85 in the preceding triennium, the corresponding totals for males being 74 and 86. On the other hand, male deaths attributed to injury at birth have increased, whereas those of female infants have decreased. The rates per million live births in each triennium 1928-30 and 1931-33 from various causes are given below. They show that atelectasis has also increased for infants of both sexes as a stated cause of death.

Legitimate Infants.	Ma	les.	Females.			
a see to see of the second sec	1928–30.	1931–33.	1928–30.	1931–33		
Congenital malformations .	90	83	93	154		
Congenital debility	87	85	62	56		
Promoture birth	700	715	583	570		
	262	297	235	211		
	148	192	145	161		
Other diseases of early infancy.	7	8	3	11		

Of the 162 deaths of illegitimate infants assigned to violence and lack of care 107 or 66 per cent. relate to abandoned infants of unknown parentage.

Causes of Infant Mortality.—The causes of infant mortality are set forth in Tables 11-15, which compare the records of 1933 with those of previous years, and show the incidence of mortality from each cause upon infants distinguished by sex, age, legitimacy, class of area, and section of the country. From these tables has been prepared the comparison in Table XIII between the mortality from the chief causes distinguished at various ages in 1933 and 1928-32, and from all causes in 1933 and 1932.

#### Table XIII.—Comparison of Infant Mortality Rates (per 100,000 Live Births) in 1933 with those of immediately preceding years.

For violence and in for illegitimate the S3 per cent	Under 4 Weeks.	4 Weeks to 3 Months.	3-6 Months.	6-9 Months.	9–12 Months.	Under 1 Year.	Under 4 Weeks.	4 Weeks to 3 Months	3–6 Months.	6–9 Months.	9-12 Months.	Under 1 Year.
Man terih sida mid					m Vario th 1928					ase or 1928-	Decrea 32.	ise as
Measles (7) Whooping cough (9) Influenza (11) Tuberculosis, all forms (23-32) Convulsions (86) Bronchitis and pneumonia (106-109) Diarrhoea and enteritis (119) Developmental and wasting diseases (157-159, 161 a, b) Congenital defects (malfor- mations and atlectasis) (157, 161a) Congenital deficitiy and icterus (158, 161b) Premature birth (159) Injury at birth (160) Suffocation-in bed or not stated how (182 part) Other causes	$\begin{array}{r} - \\ + & 2 \\ + & 3 \\ - & 18 \\ - & 14 \\ - & 10 \\ + & 103 \\ + & 52 \\ + & 23 \\ + & 75 \\ + & 18 \\ - & 6 \\ - & 17 \\ \hline + & 61 \end{array}$	$ \begin{array}{r} -1 \\ -12 \\ +5 \\ -2 \\ -13 \\ -36 \\ +3 \\ -3 \\ +11 \\ -9 \\ -5 \\ -4 \\ -13 \\ -78 \end{array} $	$ \begin{array}{r} -7 \\ -12 \\ +3 \\ -5 \\ -7 \\ -34 \\ +12 \\ +2 \\ +7 \\ -6 \\ +1 \\ -1 \\ -47 \\ \end{array} $	$ \begin{array}{c} -15 \\ -23 \\ +7 \\ -5 \\ -3 \\ -56 \\ +5 \\ -4 \\ +4 \\ -2 \\ -1 \\ +1 \\ +1 \\ +2 \\ -86 \\ \end{array} $	$ \begin{array}{r} -35 \\ -13 \\ +7 \\ -6 \\ -6 \\ -43 \\ +4 \\ +2 \\ +4 \\ +2 \\ +4 \\ -2 \\ +1 \\ -9 \\ -97 \\ \end{array} $	$\begin{array}{c} - 57 \\ - 59 \\ + 24 \\ - 18 \\ - 45 \\ + 18 \\ + 15 \\ + 105 \\ + 78 \\ - 42 \\ + 69 \\ + 19 \\ - 9 \\ - 39 \\ - 247 \end{array}$	$ \begin{array}{r} - \\ + 40 \\ + 50 \\ - \\ - 15 \\ - \\ 11 \\ - \\ 17 \\ + 4 \\ + \\ 11 \\ - \\ 9 \\ + \\ 5 \\ + 9 \\ - \\ 27 \\ - \\ 7 \\ + 2 \end{array} $	$ \begin{array}{r} -33 \\ -27 \\ +42 \\ -29 \\ -30 \\ -12 \\ +2 \\ -1 \\ +9 \\ -10 \\ -3 \\ -25 \\ -10 \\ -7 \\ \end{array} $	$ \begin{array}{r} -78 \\ -23 \\ +27 \\ -19 \\ -23 \\ +6 \\ +2 \\ +14 \\ -13 \\ +7 \\ * \\ -5 \\ \end{array} $	$\begin{array}{c} -42\\ -37\\ +44\\ -15\\ -14\\ -17\\ +4\\ -\\ +19\\ -15\\ -50\\ *\\ +33\\ +2\\ -11\end{array}$	$ \begin{array}{r} -49 \\ -20 \\ +47 \\ -18 \\ -40 \\ -15 \\ +6 \\ +10 \\ +33 \\ -29 \\ \hline * \\ -8 \\ -14 \\ \end{array} $	$\begin{array}{r} -47 \\ -25 \\ +37 \\ -19 \\ -19 \\ +3 \\ +4 \\ +11 \\ -10 \\ +4 \\ +9 \\ -17 \\ -5 \\ -4 \end{array}$
	Inc				f Mortal with 193						Mortal t in 19	
All Causes	+62	-91	-37	-40	- 30	-136	+ 2	- 8	- 4	- 6	- 5	- 2

Note.—The percentages in this Table being based on rates per 100,000 live births may differ on this account from those derivable from the rates in Table V.
\* Numbers too small to provide significant comparison.

The decrease from the previous year is seen to have applied to each period of age subsequent to the first month, which showed a slight increase. The same is true when comparison is made with the average rates for the preceding five years. Mortality of infants from influenza, diarrhœa and congenital defects increased at each age period, however, the first being attributable to the severe epidemic in the first quarter of 1933, and the second to the hot summer. Deaths attributed to congenital defects and injury at birth per 1,000 live births have progressively increased since 1923, their rate in 1933 again being the highest recorded in Table 12.

Mortality from premature birth, which has since 1922 risen and fallen each year with the influenza rate, was higher than in any year since 1924. Arranging the 12 years 1922-33 in ascending order of their infant mortality from influenza, the following correspondence is found between the rates per 100,000 live births from these causes.

No. of		
years.	Influenza.	Premature Birth.
5	20 to 58	1749 to 1768
2	69, 81	1820, 1830
5	89 to 125	1855 to 1882

Notwithstanding the influenza epidemic, bronchitis mortality was the lowest recorded, and pneumonia the lowest except in 1921, 1923 and 1930. The measles rate was the lowest recorded except in 1921, and for whooping cough it was the lowest except in 1930 and 1919. Record low levels were also reached for tuberculosis of the nervous system, syphilis, convulsions, respiratory diseases other than bronchitis and pneumonia, inflammation of the stomach, pemphigus neonatorum, suffocation in bed and inattention at birth, out of the causes distinguished in Table 12.

The extent of the decline in infant mortality during the 20 years from 1912-14 to 1933 is analysed for the principal causes in Table XIV and the result is summarized in Table XV.

#### Table XIV.-Infant Mortality in 1933 per cent. of that in 1912-14, by cause, sex, age and legitimacy.

List		Under	1-3	3-6	6-12	es a constru	Under	1 year.	
No		month.	months.	months.	months.	Total.	Male.	Female.	Illegiti mate.
	ALL CAUSES	83	52	49	47	62	63	61	54
7	Measles	23	41	13	26	25	26	24	27
9	Whooping Cough	61	43	44	44	44	44	44	37
10	Diphtheria and Croup	59	110	47	48	51	48	55	108
îi	Influenza	248	246	281	417	321	325	316	5
15	Erysipelas	143	159	250	395	222	228	216	?
24	Tuberculosis of Ner-								
(Arrent Arrento arriver	vous System	An extension	20	35	43	39	39	38	15
25	Tuberculosis of In-								
STERENT ST	testines and Peri-			C. MARKERS	NOR THEFT	Sector Con			
	toneum	19	8	10	16	12	14	10	9
23, 26-	Other tuberculous		and the Child	CAN DO DANK	CARLE L	190000			10
32	diseases	21	19	43	42	39	40	38	19
34	Syphilis	35	25	25	19	28	27	29	25
79	Meningitis	47	38	31	27	30	35	24	23
86	Convulsions	32	16	15	15	22	23	21	17 31
106	Bronchitis	41	34	34	27	32	32	32	31
07-109	Pneumonia (all		100	100		01	00	88	85
	forms) Other diseases of the	145	109	100	76	91	93	80	60
46.7.25	Respiratory sys-	GALLES STATE			and the second	See March 19			
	tem	48	46	37	22	34	31	38	5
119-20	Diarrhœa and Enter-						and the second second	and successful	
	itis	51	45	43	36	41	44	38	42
118 (1)	Inflammation of			100					
	stomach	33	18	23	17	21	19	24	18
122	Hernia and Intesti-			a surger of the second	ALL THE REAL PROPERTY AND A	Section 1		11	
	nal obstruction	124	67	106	121	110	108	114	?
157	Congenital Malfor-				*	Section in a		122.502.222	
and the second se	mations	149	177	146	151	154	154	154	113
158	Congenital debility	30	26	23	14	26	27	25	?
159	Premature birth	96	89	70	43	95	95	94	99
160	Injury at Birth	195	223	1.28 - 60 6		196	198	194	112
161(a)	Atelectasis	111	58			108	110	105	89

The risk of dying in the first month of life has fallen by 17 per cent., in the next two months by 48 per cent., at 3–6 months by 51 per cent., at 6–12 months by 53 per cent., or within the first year by 38 per cent. When the causes are considered separately

Table XV.—Change	from	1912	2-14	to	1933	in	Infant	Mortality
	assigne	ed to	Vario	us	Causes	5.		

Amount o	f change.	DECR	EASE, probably attributat	ble to
Per cent. of 1912–14.	Per 1,000 live births.	A. Improved hygiene, biological changes and preventive measures.	A and B combined.	B. Changes in terminology and medical certification.
- 88 - 79 - 78 - 75 - 74 - 72 - 70 - 68 - 66 - 61 - 59 - 56 - 49	$\begin{array}{c} - 1 \cdot 0 \\ - 1 \cdot 2 \\ - 6 \cdot 7 \\ - 1 \cdot 9 \\ - 8 \cdot 7 \\ - 1 \cdot 0 \\ - 0 \cdot 9 \\ - 5 \cdot 4 \\ - 1 \cdot 1 \\ - 8 \cdot 7 \\ - 2 \cdot 2 \\ - 0 \cdot 1 \end{array}$	The Long Poor State	Tuberculosis of intes- tines, etc. Convulsions. Bronchitis. Laryngitis, etc. HABLE CHANGE (10 per o	Inflammation of stomach. Congenital debility. Meningitis.
$   \begin{array}{r}     - & 9 \\     - & 5 \\     + & 8 \\     + & 10   \end{array} $	$ \begin{array}{c} - \ 1 \cdot 0 \\ - \ 1 \cdot 0 \\ + \ 0 \cdot 1 \\ + \ 0 \cdot 1 \end{array} $	Pneumonia. Premature birth. Atelectasis. Hernia and intestinal obstr	ruction.	
1		- AND	INCREASE.	•
+ 54 + 96 + 122 + 221	$+ 2 \cdot 1 + 1 \cdot 1 + 0 \cdot 2 + 0 \cdot 6$	Congenital malformations. Injury at birth. Erysipelas. Influenza.		
- 38	-39.0		ALL CAUSES combined.	

they fall into three distinct groups, (a) those showing a definite reduction in mortality under 1 year of age, ranging from 49 to 88 per cent. of the 1912-14 rate per 1,000 live births; (b) those showing no appreciable change, the rate in 1933 being within 10 per cent. of that 20 years earlier; and (c) those showing a definite increase ranging from 54 to 221 per cent.

Considering first the group of declining causes, tuberculous enteritis and peritonitis registers the greatest fall of 88 per cent., the real decline being probably obscured to some extent by changes in medical certification; inflammation of the stomach, congenital debility and meningitis owe most of their decline to the latter cause. In the case of bronchitis and laryngitis, transfer to pneumonia and diphtheria respectively has doubtless contributed to the decline of registered mortality, and more careful inquiry into deaths where 21

convulsions formed the terminal condition has led to assignment of many of these deaths to other causes. It should be pointed out, however, that in 1912–14 the three causes placed in column B of Table XV were responsible for a rate of 14.7 per 1,000 live births and that this fell by no less than 10.8 by 1933, of which fall 8.7 was due to congenital debility. The causes placed in the central column contributed a reduction of 13.5, so the amount of mortality transferred to other causes must presumably have been between 10 and 20 per 1,000 births.

Of the causes showing a definite increase over the rate of 20 years previously, influenza contributed an increase owing to the epidemic of 1933, no increase being noticeable in 1930. Congenital malformations and injury at birth were together responsible for a rise of  $3 \cdot 2$  (from  $5 \cdot 0$  to  $8 \cdot 2$ ) in the rate, so only a small portion of the mortality supposed to have been transferred from "congenital debility" and other causes in the B column can have gone to these headings. The very large decline in congenital debility as a registered cause of death, if it does not represent a real change, must be accounted for by transfer to causes other than congenital malformations or injury at birth, thereby masking a part of the decline which has really taken place for some of those causes.

#### Table XVI.—Infant Mortality by Sex and Legitimacy, 1933.

			Deaths	per 1,0	00 Live	Births.			Morta	ality per	cent.	
10-		All In	All Infants.		imate ints.		imate ints.	Male of F Infant			Illegitimate of Legitimate Infants.	
		Male.	Fe- male.	Male.	Fe- male.	Male.	Fe- male.	All In- fants.		Illegi- timate.	Male.	Fe- male.
$\begin{cases} Under four4 weeks-33-6 month6-9 ,9-12$ , Total under	months	36·23 11·50 9·99 7·64 6·47 71·82	$\begin{array}{r} 27 \cdot 98 \\ 8 \cdot 29 \\ 7 \cdot 50 \\ 5 \cdot 92 \\ 5 \cdot 47 \\ 55 \cdot 16 \end{array}$	$\begin{array}{r} 35\cdot 16\\ 11\cdot 07\\ 9\cdot 57\\ 7\cdot 53\\ 6\cdot 42\\ 69\cdot 75\end{array}$	$26 \cdot 85 \\ 7 \cdot 93 \\ 7 \cdot 29 \\ 5 \cdot 82 \\ 5 \cdot 33 \\ 53 \cdot 22$	$59 \cdot 90 \\ 20 \cdot 95 \\ 19 \cdot 24 \\ 10 \cdot 05 \\ 7 \cdot 56 \\ 117 \cdot 69$	$52 \cdot 27 \\ 16 \cdot 07 \\ 12 \cdot 17 \\ 8 \cdot 04 \\ 8 \cdot 51 \\ 97 \cdot 06$	129 139 133 129 118 130	131 140 131 129 120 131	115 130 158 125 89 121	170 189 201 133 118 169	195 203 167 138 160 182
Measles (7 Whooping Tubercul forms (2 Syphilis (3 Convulsion	cough (9)         osis, all         3-32)         4)            s (86)	$ \begin{array}{r} 0.67 \\ 1.61 \\ 0.95 \\ 0.43 \\ 2.21 \end{array} $	$ \begin{array}{r} 0.57 \\ 1.88 \\ 0.70 \\ 0.36 \\ 1.51 \\ \end{array} $	0.67 1.61 0.97 0.37 2.16	0.55 1.88 0.69 0.26 1.47	0.70 1.56 0.55 1.87 3.27	$     \begin{array}{r}       1 \cdot 11 \\       1 \cdot 67 \\       1 \cdot 03 \\       2 \cdot 55 \\       2 \cdot 39     \end{array} $	118 86 136 119 146	122 86 141 142 147	63 93 53 73 137	104 97 57 505 151	202 89 149 981 163
Bronchitis monia (1 Diarrhœa teritis (1 Developme wasting	06-109) and en- 19) ental and	13·67 7·25	10·26 4·96	13∙39 6∙79	10·06 4·67	19·86 17·29	14·72 11·30	133 146	133 145	135 153	148 255	146 242
(157–159 Congenit (malfo and (157, 1	, 161a & b) al defects ormations atelectasis)	33.66 8.68	26·44 6·77	32·95 8·69	25·65 6·77	49 · 54 8 · 49	43.60 6.84	127 <i>128</i>	128 <i>128</i>	114 <i>124</i>	150 98	170 <i>101</i>
scleren terus	na and ic- 158, 161b) re birth(159)	4·30 20·69 11·37 71·82	2.95 16.73 8.48 55.16	4 · 16 20 · 09 10 · 84 69 · 75	$2 \cdot 82$ 16 \cdot 06 7 \cdot 99 53 \cdot 22	7 · 24 33 · 80 23 · 05 117 · 69	$5 \cdot 57$ $31 \cdot 19$ $18 \cdot 69$ $97 \cdot 06$	146 124 134 130	148 125 136 131	130 108 123 121	174 168 213 169	198 194 234 182

Table XVI contrasts the mortality of male with that of female, and of legitimate with that of illegitimate, infants in 1933. The sex ratio of mortality, when compared with that of previous years (see Table XVI, Review for 1932), shows no unusual features. For the separate causes distinguished, other than whooping cough, male excess ranges from 18 per cent. for measles to 46 for diarrhœa, the congenital debility group and convulsions. The excess mortality of the illegitimate is, as usual, very much greater for syphilis than for any other cause distinguished in the table.

**Distribution throughout the country of Infant Mortality from various causes.**—Table XVII, which is derived from Table 15, furnishes an analysis by cause of the differences in total mortality under one year of age shown in Table VI.

#### Table XVII.—Comparison of Infant Mortality from the Principal Causes in Geographical Regions, 1933.

Measles (7). Whooping cough (9). Tubereulosis, all forms (23-32). Syphilis (34). Convulsions (86). Brouchitis and pneumonia (106-109). Diarhoe and enteritis (106-109). Diarhoe and enteritis (105-109). Diarhoe and enteritis (106-109). Diarhoe and enteritis Diarhoe	Other Causes.	All Causes.
---	---------------	-------------

Differences from Rates for England and Wales per 100,000 Live Births.

	-46 +12 -9 -7 -117 -414 -26 -69 -71 -379 -7 +2 -96 -1,227
Greater London	-44 +25 +3 -4 -135 -362 +188 -58 -89 -384 -13 -7 -71 -951
Remainder of South-	
East	-49  - 9  - 27  - 13  - 89  - 494  - 354  - 86  - 44  - 371  + 2  + 14  - 129  - 1.649
North	+31  - 8  + 8  + 7  + 65  + 405  + 184  + 35  + 60  + 259  + 16  - 2  + 158  + 1,218
	+35  - 27  + 18  + 27  + 184  + 271  + 457  - 4  + 111  + 366  + 2  - 16  + 145  + 1,569
, II	
	-17  - 29  - 2  + 8  + 23  + 332  + 54  + 54  - 29  + 216  -  +17  + 190  + 817
,, TTT	+65 +8 -2 +2 +29 +549 +151 +52 +83 +271 +25 -9 +193 +1,417
241.11 1	1 01 00 01 01 71 00 401 171 01 192 0 9 501 150
Midland	+10 - 37 - 4 + 7 - 23 + 88 - 15 + 32 - 17 + 196 + 1 - 3 - 29 + 206
TT	+10  - 37 - 4  + 7  - 23 + 38 - 13 + 32 - 17 + 130 + 1 - 3 - 23 + 200  +43  - 11  + 14  + 11  + 64  + 119  - 113  - 12  + 57  + 19  - 28  - 4  - 110  + 49
	+43 - 11 + 14 + 11 + 04 + 119 - 113 - 12 + 37 + 13 - 23 - 4 - 110 + 43
East	-44  - 27  -  -6  - 66  - 388  - 375  - 26  + 2  + 38  - 99  - 10  - 134  - 1,135
	-27  + 11  -  -11  - 56  - 497  - 421  - 12  - 33  - 261  + 19  + 10  - 142  - 1,420
Wales	
Wales I	+65 +83 -5 -3 +296 +434 -86 +181 +46 +385 +5 +3 +16 +1,420
" II	-2 +30 -2 -30 +271 -194 -36 -29 +3 +58 +77 +27 -22 -49

Rates per cent. of those for England and Wales.

South-East		271	107	89	831	37	66[	96	88	77	80	97	105	90	81
Greater London	1	30	114	104	90	28	70	131	90	71	80	94	84	93	85
Remainder of Se	outh-	F-30672	13.4 4 3		Are the	1932			CARD OF		3	19			
East		22	95	67	68	52	59	42	85	86	80	101	132	87	74
North		149	95	110	118	135	134	130	106	119	114	107	95	116	119
North I		156	84	122	168	198	123	175	99	136	120	101	64	115	125
" II		92	106	169	60	150	117	120	98	125	106	119	120	97	III
" III		73	83	98	120	112	128	109	109	91	112	100	139	120	113
" IV		203	105	98	105	116	146	125	109	127	114	111	80	120	122
Midland	1	133	84	102	123	104	108	92	103	103	107	96	93	94	102
Midland I		116	79	95	118	88	107	98	105	95	110	100	93	97	103
,, II		168	94	117	128	134	110	82	98	118	101	88	90	89	101
East		30	84	100	85	65	68	39	96	101	102	57	77	86	82
South-West		57	106	100	73	70	59	31	98	89	86	108	123	85	78
Wales	5	178	140	95	75	255	123	80	122	112	116	110	120	100	117
Wales I	£	203	148	94	93	258	136	86	131	115	121	102	107	102	122
II		97	117	98	25	245	84	62	95	101	103	134	161	98	99

The greatest departures from the average mortality of the whole country in Table 15 are furnished on the one side by North I, which shows excesses under every one of the causes distinguished, except whooping cough, suffocation and congenital debility, producing a net excess of 15.69 deaths per 1,000 live births over the average for England and Wales; and on the other by the South-East, excluding Greater London, with comparatively favourable experience under every head distinguished except suffocation and injury at birth, yielding a total rate 16.49 lower than the general average.

As usual, three causes contribute more than any other to these differences, the three being bronchitis and pneumonia, diarrhœa, and premature birth. The predominant influence of these causes in determining local variations of infant mortality has been evident in each of the last eleven years. Jointly they account in 1933 for 70 per cent. of the divergence above the mean in North I, and for 74 per cent. of the divergence below the mean in the South-East, excluding Greater London.

Mortality from *bronchitis and pneumonia* (considered jointly because of evidence of interchangeability between these forms of return) shows the usual large excess in the North of England, amounting to 46 per cent. in North IV, 28 in North III, 23 in North I and 17 in North II. In contrast with this the Eastern counties show a rate 32 per cent., and the South-West and South-East outside Greater London 41 per cent. below the mean. Urbanization also is associated with a higher rate for this as for most other forms of infant mortality. Thus in 1933 (Table 14) the county boroughs outside Greater London showed a rate 37 per cent. above, and rural districts 29 per cent. below, the mean mortality from this cause, the divergence increasing from 41 per cent. in the first month to 74 per cent. at 9–12 months of age. Greater London, however, showed a rate only 70 per cent. of that in England and Wales.

Mortality from *diarrhœa* usually increases from South to North. but this sequence is profoundly modified by the extent of urbanization. In London the 1933 rate was 10.70 per 1,000 live births. in the outer ring 8.01, the county boroughs 8.12, other urban districts 4.42, and rural districts 3.36. The connection between diarrhœa mortality of infants in the whole year and the mean air temperature of the September quarter is seen from Table XVIII. where the years are arranged, first for England and Wales and then for London, in ascending order of the mean temperature values. For England and Wales as a whole the relation between diarrhea rate and the summer temperature is shown by the fact that the average of the first 5 rates in the table is 6.06 and of the last 5 it is 8.15. For London it is more evident. Thus 1933 was one of 5 years in which the Greenwich mean temperature for the September quarter reached 63° F. or over, and these were also the only years in which the London diarrhœa death rate exceeded 9.8, whilst at the other end of the scale the 4 years with the coolest summer quarters were the only years giving rates below 9.

9 9 In 1933 North I had the highest rate and the South-West the lowest.

The third chief cause of local differences in infant mortality, *premature birth*, is more closely associated with geographical position than with urbanization, the range being from 121 per cent. of the

Table XVIII.—I	infant Mortalit	y from ]	Diarrhœa	and	Enteritis in
London and in	England and	Wales, an	nd Mean	Air '	Temperatures
	of the 3rd	Quarter,	1921-33.		

England and Wales.			nd Wales. London Administrative County.						
Year.	Mean Air Temp. of 3rd	Annual Diarrhœa rate.*	Year.		Temp. of uarter wich).		Diarrhœa te.*		
	quarter °F.	Tate.*		Actual.	Excess.†	Actual.	Excess.		
1922	56.0	5.57	1922	58.1	2.1	6.26	0.69		
1931	56.8	5.20	1931	59.2	2.4	8.94	3.74		
1924	58.0	6.32	1927	60.6	2.0	6.97	1.25		
1927	58.6	5.72	1924	60.8	2.8	7.89	1.57		
1925	58.6	7.47	1925	60.9	2.3	9.72	2.25		
1930	58.7	5.43	1930	61.8	3.1	9.07	3.64		
1928	58.7	6.21	1923	61.8	2.5	9.07	2.25		
1923	59.3	6.82	1928	62.2	3.5	9.52	3.31		
1932	59.8	5.91	1926	63.0	2.1	10.78	3.01		
1929	60.0	7.14	1932	63.1	3.3	11.78	5.87		
1926	60.9	7.77	1929	64.0	4.0	9.93	2:79		
1921	61.0	13.79	1921	64.2	3.2	18.63	4.84		
1933	62.0	6.13	1933	65.5	3.5	10.70	4.57		
	1 - Andrew Contractor				La				

\* Rate for the whole year, per 1,000 live births.

† i.e., excess over corresponding figure for England and Wales.

general average for Wales I, to 80 per cent. for Greater London and the remainder of the South-East. The low Greater London rate of 14.91 and the comparatively small difference between the rate of 21.23 for all county boroughs outside Greater London and 18.30for the rural districts (Table 14) suggest that urbanization has little influence on the rate.

Next to these three causes of infant mortality, come, for 1933, congenital malformations, congenital debility, injury at birth and convulsions (Table 12). Congenital malformation is steadily increasing in importance amongst the causes of infant deaths, its mortality having risen year by year from  $4 \cdot 16$  in 1923 to  $5 \cdot 89$  per 1,000 live births in 1933. This increase affects all sections of the population to much the same extent, but mortality in 1933 was highest in Wales I, and comparatively low in Greater London and the rest of the South-East.

Injury at birth has increased since 1918 without intermission except in 1922. Wales II shows the highest rate in 1933, and the East the lowest.

Congenital debility was, as usual, less frequently returned as a cause of death in Greater London than in any region, and the rate for the county boroughs was considerably less than that for the rural districts during the first four four weeks of life. Convulsions continued to decline as a registered cause of death, the 1933 rate being only 45 per cent. of that of 10 years earlier and 22 per cent. of that of 20 years earlier (Table XIV). The Greater London rate has fallen from  $\cdot98$  in 1931 to  $\cdot52$  in 1933, whereas in Wales the rate is  $4 \cdot 77$  and in North I  $3 \cdot 71$  per 1,000 live births, the rate decreasing as usual from North to South.

#### Mortality at Ages over One Year.

Table XIX states the crude and standardized death-rates at all ages for sexes and persons for the whole country, as well as the mortality per million living at different ages, for 1932 and 1933, and in order to provide means of comparison with experience of some twenty years back, for 1911–14.

Table XIX.—Morta	ality from	all	Causes	per Million	Population,
	1911–14,				

		Males.			Females.			Persons.		
	1911– 14.	1932.	1933.	1911– 14.	1932.	1933.	1911– 14.	1932.	1933.	
All Ages. Crude $\dots$ Standardized $\begin{cases} A \\ B \\ \dots \end{cases}$	14,890 14,841 15,911	12,745 10,896 11,824	12,948 10,920 11,874	13,065 12,260 13,713	11,396 8,730 10,033	11,711 8,809 10,162	13,948 13,475 14,779	12,043 9,738 10,887	12,304 9,794 10,976	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	40,588 3,304 1,972 2,942 3,721 4,912 8,033 14,808 29,767 62,844 135,490 271,337	$\begin{array}{c} 21,045\\2,201\\1,443\\2,535\\3,247\\3,336\\5,315\\10,831\\23,431\\57,949\\137,962\\289,190\end{array}$	19,876 2,268 1,481 2,552 3,285 3,507 5,714 11,676 23,733 56,715 139,423 286,550	$\begin{array}{r} 33,917\\ 3,255\\ 2,055\\ 2,683\\ 3,200\\ 4,057\\ 6,437\\ 11,363\\ 22,471\\ 150,722\\ 114,126\\ 237,360 \end{array}$	$\begin{array}{c} 16,825\\ 1,937\\ 1,325\\ 2,245\\ 2,821\\ 3,105\\ 4,336\\ 8,010\\ 17,021\\ 43,328\\ 111,818\\ 254,671 \end{array}$	$\begin{array}{c} 15,829\\ 2,120\\ 1,375\\ 2,270\\ 2,922\\ 3,208\\ 4,635\\ 8,332\\ 17,300\\ 44,009\\ 114,443\\ 259,386\end{array}$	$\begin{array}{r} 37,270\\ 3,279\\ 2,014\\ 2,811\\ 3,450\\ 4,464\\ 7,205\\ 13,018\\ 25,905\\ 56,124\\ 122,694\\ 249,201 \end{array}$	$\begin{array}{r} 18,961\\ 2,070\\ 1,385\\ 2,390\\ 3,030\\ 3,216\\ 4,785\\ 9,319\\ 20,045\\ 49,864\\ 122,188\\ 265,615 \end{array}$	17,879 2,194 1,428 2,411 3,100 3,353 5,130 9,879 20,327 49,698 124,354 268,062	

A. English Standard (Population of England and Wales, 1901). (See page 1.) B. International Standard.

The mortality of children under 5 and of males aged 65–75 and 85 and upwards was lower than in 1932, but at all other ages distinguished in Table XIX it was slightly higher. At every age-group under 75 for both males and females mortality was lower than in 1911–14.

The extent of the fall at the various ages can be better appreciated from Table XX, in which the mortality in 1932 and 1933 is expressed as a percentage of the rate in the period 1911–14.

At "all ages" for both sexes the decline in the crude death-rate amounts to 12 per cent. (14 per cent. in 1932), which on standardization according to the English standard is increased to 27 per cent. (28 per cent. in 1932). The fall is much greater at 0-5 than at any higher age, amounting in 1933 to about 51 per cent. for males and 53 for females.

na and Walls In Not set water an	Males.		Fema	ales.	Persons	
	1932.	1933.	1932.	1933.	1932.	1933.
$\begin{array}{c} \text{All Ages}-\\ \text{Crude} & \ddots & \ddots \\ \text{Standardized} \begin{cases} \text{A} \\ \text{B} \end{cases} \end{array}$	85·6 73·4 74·3	$87 \cdot 0$ 73 · 6 74 · 6	$87 \cdot 2 \\ 71 \cdot 2 \\ 73 \cdot 2$		86·3 72·3 73·7	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	52 67 73 86 87 68 68 66 73 79 92 102 107	49 69 75 87 88 71 71 71 79 80 90 103 106	50 60 64 84 88 77 67 70 76 85 98 107	47 65 67 85 91 79 72 73 77 87 100 109	51 63 69 85 88 72 66 72 77 89 100 107	48 67 71 86 90 75 71 76 78 89 101 108

Table XX.	-Mortality	at various	s ages from	all causes i	n 1932 and 1933
per	cent. of th	nat for the	same sex	and age in	n 1911–14.

After infancy the fall very rapidly decreases with advancing age up to early maturity, reaching a minimum of 12 per cent. for males and 9 per cent. for females at 20–25. The extent of fall then increases to 29 per cent. for males and 28 per cent. for females at 35–45. Thereafter the decrease recorded becomes progressively less for each sex and disappears after 75.

Mortality at 75–85 has fluctuated during the last 15 years without showing any progressive improvement. These fluctuations have been mainly governed by the occurrence of influenza epidemics, as may be seen from the fact that in the 6 years with an influenza crude death rate below  $\cdot 3$  per 1,000 (1920, 1921, 1923, 1926, 1928, 1930) male mortality at 75–85 from all causes never exceeded 133 and female mortality never exceeded 109 per 1,000, whereas in the remaining 9 years with influenza above this level, the male rate for all causes ranged from 137 to 154 and the female rate from 112 to 131. In seeking an explanation for the unfavourable rates of recent years, this factor is an important one.

Table XXI measures the effect of changes in the birth-rate upon the mortality rate at 0-5 years in 1911-14 and from 1917 onwards. It shows that in all these years the fall of the birthrate has caused some under-statement of mortality at 0–5 for each sex except during the three years 1920–22, when its temporary rise after the war reversed the process. The fall of 52 per cent. shown for this mortality in Table XX is seen to be slightly over-stated from this cause, being reduced to 49 per cent. when allowance is made for its influence.

The crude rate at these ages was the lowest ever recorded, and the standardized rate equalled the low record of 1930.

Table XXI.—	Comparison	of Crude	and Standardi	ized Death-Rat	tes per
			, 1911–14 and		1037

		Ma	les.	s. Females.		Persons.		
	Sector Se	Crude.	Stand- ardized.	Crude.	Stand- ardized.	Crude.	Stand- ardized.	
1911-14	0	40.6	40.8	33.9	34.2	37.3	37.5	
1917	8	31.8	34.3	26.3	28.4	$29 \cdot 1$	31.4	
1918		38.9	43.1	34.1	37.5	36.5	40.3	
1919	0	32.8	36.6	26.4	29.5	29.6	33.1	
1920	8	36.2	31.8	28.9	26.0	32.5	29.0	
1921		32.3	29.2	25.8	23.6	$29 \cdot 1$	26.4	
1922		30.2	28.5	24.5	23.1	27.4	25.8	
1923		24.3	25.0	19.6	20.1	22.0	22.5	
1924		25.1	27.3	20.2	21.8	22.6	24.6	
1925		25.3	$27 \cdot 1$	20.7	$22 \cdot 1$	23.0	24.6	
1926	11.103	23.3	$24 \cdot 9$	18.8	20.0	21.1	22.4	
1927	11104	23.7	25.2	18.9	20.0	21.3	22.6	
1928	7	21.9	23.3	17.4	18.5	19.7	20.9	
1929		26.3	27.7	21.6	22.7	24.0	25.2	
1930		20.5	21.4	16.0	16.7	18.3	19.1	
1931		$22 \cdot 4$	23.1	17.4	18.0	19.9	20.6	
1932	0.01	21.0	$22 \cdot 0$	16.8	17.6	19.0	19.8	
1933	PROV	19.9	21.2	15.8	16.9	17.9	19.1	

**Mortality at 1–5.**—Table XXII shows that mortality has fallen more rapidly for the years immediately following infancy than for the first year of life itself, so the features of the changes in progress at these ages also call for some consideration. Compared with 1911–14 the decline in 1933 has been least in the first year and greatest in the second, decreasing continuously from the second to the fifth year of life. The second year of life usually manifests the greatest degree of annual variation and would seem to be the age of greatest susceptibility to disurbing factors. That the death-rates of children aged 1–5 are more sensitive than those of infants or older children to environmental factors such as are indicated by urbanisation or density of persons per room was shown in the Review for 1932 (Table XXVIII). The distribution throughout the country of mortality at these ages is shown in Table XXIII, which may be compared with Table VI (Infant Mortality). The greatest excess over the general average recorded in the table at ages 1–2 is for North I, which

N CT'C	and Standardized Death-Rais		1933.	1933 per cent. of		
Year of Life.	1911–14.	1932.	1933.	1911–14.	1932.	
0-1	118.16	67 · 17	64.85	54.9	96.5	
1-2	34.06	$14 \cdot 18$	13.06	38.3	$92 \cdot 1$	
2–3	13.68	6.04	5.86	42.8	97.0	
3–4	8.32	$4 \cdot 16$	4.09	49.2	98.3	
4–5	6.14	3.32	3.36	54.7 .	101.2	
Crude	37.27	18.96	17.88	48.0	94.3	

19.81

6.94

6.92

50.8

42.0

42.3

19.05

6.56

6.58

96.2

94.5

 $95 \cdot 1$ 

0 - 5

1 - 5

Stand

Stand

Crude ..

37.52

15.62

15.54

Table XXII.—Mortality per 1,000 living (both sexes)	, in each of the first
Five Years of Life, 1911-14, 1932, and	1 1933.

shows a rate more than twice the corresponding rates for the Eastern region, the South-West and the South-East. Next in order comes North IV, followed by North II and Wales I, all with rates more than 30 per cent. in excess of the average. At 2–5 North IV shows the highest rate, followed by North I and Wales I. The South-East excluding Greater London has the lowest mortality of any region at both ages, the rates for the South-West being only slightly less favourable. The division of Wales into two regions indicates that Wales II, which is of course mainly rural, had, as in 1931 and 1932, a mortality for the second year of life much below the general average.

The occurrence of a large reduction of mortality at age 1-2 in good years has been pointed out in previous Reviews. It is to be expected that the most susceptible age would also exhibit the greatest range of regional variation. It has been shown that when the regional rates are expressed as percentages of the rate for England and Wales, their range tends to increase during the first two years of life. In 1933 the range was 59–141 at 6–9 months, and 57–142 at 9–12 months, increasing to 59–162 in the second year, and falling to 67–137 at ages 2–5 (Tables XI and XXIII).

The association with urbanization at these four age periods is reflected in the differences between the percentage rates for London and its outer ring, amounting to 40 at 6–9 months, 35 at 9–12 months, 29

34 at 1–2 years and 23 at 2–5, and by the corresponding differences between the county boroughs and rural districts, namely 57, 60, 65 and 47.

	Table	XXIII.—Di	stribution	of	Mortality	7 in	Early	Childhood.	1933.
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and der here t	Deaths j living (bo	per 1,000 th sexes).	Mortality per cent. of that in England and Wales.		
	1–2 years.	2–5 years.	1-2 years.	2-5 years	
England and Wales	13.06	4 · 44	100	100	
South-East	8.91	3.48	68	78	
Greater London	9.65	3.81	74	86	
Remainder of South- East.	7.76	2.98	59	67	
North	18.10	5.84	139	132	
North I	$21 \cdot 10$	5.90	162	133	
" II	17.12	5.24	131	118	
" III	$14 \cdot 40$	5.66	110	127	
" IV	19.11	6.07	146	137	
Midland	12.44	3.79	95	85	
Midland I	$12 \cdot 26$	3.83	94	86	
" II	12.79	3.72	98	84	
East	9.18	3.35	70	75	
South-West	8.47	3.06	65	69	
Wales	15.35	5.38	118	121	
Wales I	17.15	5.77	131	130	
" II	9.79	4.22	75	95	
County boroughs*	17.94	5.54	137	125	
Other urban districts*	12.36	4.30	95	.97	
Rural districts* Greater London—	9.41	3.45	72	78	
Administrative County	11.91	4.33	91	98	
Outer Ring	7.43	3.31	57	75	

\* Excluding Greater London.

Causes of Juvenile Mortality.—London mortality at 1–2 years was lower in 1933 than in any of the preceding 11 years, and at 2–5 it was lower than in any of those years except 1931. The London experience for each year from 1922–33, depicted in Table XXIV, indicates that measles, whooping cough and pneumonia have been chiefly responsible for the wide fluctuations in mortality during the second year of life, and when these causes together with influenza are omitted, the residual death-rates have followed a declining course with only slight fluctuations, the 1933 rate being slightly over half of that in 1922. The chief causes of death in England and Wales at ages 1–5 are set forth in Table XXV, which also provides comparison with 1932 and with 1911–14.

Table XXIV.—Mortality	from Various	Causes at 1	-2 and 2-5 years
of Age in London Admin	nistrative Coun	ty in each y	ear 1922 to 1933.

						1-2 years.				2-5 years.		
			ale	De	ath rate p		Death	Death rate from all causes.				
			Measles.	Whoop- ing cough.	In- fluenza.	Pneu- monia.	Other causes.	All causes.	rate per cent. of England and Wales.	Per 1,000 Living.	Per cent. of England and Wales.	
1922 1923 1924 1925 1926 1927 1928 1929 1930 1931 1933	··· ··· ··· ··· ···	··· ··· ··· ··· ··· ···	$\begin{array}{r} 8\cdot 08 \\ 1\cdot 87 \\ 6\cdot 93 \\ 1\cdot 87 \\ 5\cdot 55 \\ 1\cdot 04 \\ 8\cdot 33 \\ 1\cdot 44 \\ 7\cdot 55 \\ 0\cdot 76 \\ 6\cdot 38 \\ 0\cdot 68 \end{array}$	$5 \cdot 16 \\ 1 \cdot 47 \\ 2 \cdot 12 \\ 3 \cdot 42 \\ 0 \cdot 99 \\ 2 \cdot 38 \\ 2 \cdot 01 \\ 6 \cdot 19 \\ 0 \cdot 61 \\ 1 \cdot 59 \\ 1 \cdot 78 \\ 1 \cdot 89 $	$ \begin{vmatrix} 1 \cdot 25 \\ 0 \cdot 09 \\ 0 \cdot 50 \\ 0 \cdot 21 \\ 0 \cdot 09 \\ 0 \cdot 38 \\ 0 \cdot 25 \\ 1 \cdot 06 \\ 0 \cdot 05 \\ 0 \cdot 34 \\ 0 \cdot 15 \\ 0 \cdot 28 \end{vmatrix} $	$12 \cdot 81 \\ 4 \cdot 51 \\ 9 \cdot 05 \\ 5 \cdot 99 \\ 6 \cdot 15 \\ 6 \cdot 15 \\ 5 \cdot 64 \\ 9 \cdot 75 \\ 4 \cdot 35 \\ 5 \cdot 13 \\ 3 \cdot 87 \\ 4 \cdot 27 \\ \end{array}$	$\begin{array}{c} 9\cdot 47 \\ 7\cdot 31 \\ 6\cdot 64 \\ 6\cdot 21 \\ 6\cdot 33 \\ 5\cdot 95 \\ 6\cdot 32 \\ 6\cdot 19 \\ 5\cdot 97 \\ 5\cdot 97 \\ 5\cdot 96 \\ 5\cdot 98 \\ 4\cdot 78 \end{array}$	$\begin{array}{c} 36 \cdot 77 \\ 15 \cdot 25 \\ 25 \cdot 24 \\ 17 \cdot 70 \\ 19 \cdot 11 \\ 15 \cdot 90 \\ 22 \cdot 55 \\ 24 \cdot 63 \\ 18 \cdot 53 \\ 13 \cdot 28 \\ 18 \cdot 16 \\ 11 \cdot 91 \end{array}$	148 81 115 82 104 81 139 105 135 85 135 85 128 91	$12.03 \\ 5.26 \\ 6.84 \\ 5.30 \\ 5.19 \\ 4.81 \\ 5.71 \\ 5.68 \\ 4.70 \\ 4.15 \\ 5.62 \\ 4.33 \\ $	155 93 117 87 99 83 114 86 101 86 101 86 124 98	

Mortality from all causes combined at these ages was the lowest yet recorded, being only 42 per cent. of the rate in 1911–14 and 64 per cent. of that in 1921–25. The principal causes showing an increase over the preceding year were influenza, the pneumonias, scarlet fever, diarrhœa, diphtheria, laryngitis, and congenital malformations. On the other hand, measles, each form of tuberculosis, rickets, meningitis, convulsions, bronchitis, inflammation of the stomach, and burns and scalds all established new low records.

Table XXV.—Deaths from Various Causes per Million living at Ages 1–5 Years in 1911–14, 1932 and 1933. (Both Sexes.)

	De	ath-rate	e.	Cide .	Death-rate.			
Cause of Death.	1911– 14.	1932.	1933,	Cause of Death.	1911- 14.	1932.	1933.	
7. Measles	2,673 373 1,216 781 60 237 705 391 288 172 451 460	988 92 602 387 148 86 380 86 127 66 126 85	571 129 494 394 283 72 356 69 98 41 106 77	<ul> <li>105: 2. Laryngitis</li> <li>106. Bronchius</li> <li>107. Broncho-pneumonia</li> <li>108 &amp; 109. Pneumonia (Lobar and not otherwise defined).</li> <li>Other Respiratory Diseases</li> <li>118: 1. Inflammation of the Stomach.</li> <li>19 &amp; 120. Diarrheea and enteritis</li> <li>130. Acute nephritis</li> <li>137. Congenital malformations.</li> <li>181. Burns and scalds</li> <li>Other Violence</li> <li>Other Causes</li> </ul>	152 872 2,170 866 140 94 1,639 89 85 360 274 1,071	16 207 1,367 355 68 21 266 29 89 184 256 909	25 183 1,403 400 53 19 300 28 97 179 266 915	
				All Causes	15,619	6,939	6,558	

It was demonstrated in Table XXIV of the Review for 1931 that the quinquennial rates since 1876–80 at ages 0–5 have fallen continuously, both for tuberculosis of the nervous system and of the intestines and peritoneum. To maintain continuity with that table the rates per 1,000 at 0–5 years in 1933 were 0.36 for the nervous system, 0.08 for the intestines and peritoneum, 0.20 for other forms and 0.64 for all forms of tuberculosis. Expressing the tuberculosis rates at 1–5 years as percentages of those in 1911–14 and 1921–25, the extent of the fall in mortality from these causes for children of pre-school age can be seen from the following :—

over 70 Years of Age in 1911-20, 1931 30.	1933 per	cent. of
Tuberculosis of	1911–14.	1921–25.
Nervous system	50 18 30 34	74 36 50 58

The decline of other infective and respiratory diseases and of meningitis, convulsions and rickets since 1921 is revealed by the annual rates in Table XXVI.

#### Table XXVI.—Death rates from various causes per million living at ages 1–5 years in each year 1921–1933.

	Measles.	Scarlet Fever.	Whoop- ing Cough.	Diph- theria.	Bronchitis and pneu- monia.		Mening- itis.	Convul- sions.	Rickets
1921	 603	198	853	778	3,305	990	288	321	109
1922	 1,530	229	1,838	723	4,461	403	263	268	86
1923	 1,332	169	745	464	2,700	479	233	219	98
1924	 1,155	149	716	438	3,368	424	205	189	94
1925	 1,326	172	1,108	473	3,033	466	188	191	102
1926	 848	105	749	474	2,784	502	165	153	86
1927	 950	90	743	448	3,339	358	157	133	80
1928	 1,122	92	572	504	2,250	368	120	99	102
1929	 965	102	1,411	533	3,940	419	138	117	89
1930	 1,142	116	401	552	1.792	276	111	89	78
1931	 923	87	540	427	2,487	271	114	87	80
1932	 988	92	602	387	1,929	266	126	85	66
1933	 571	129	494	394	1,986	300	106	77	41

The most favourable years for measles were 1933 and 1921, and for whooping cough 1930 and 1933, the worst years for the latter being 1922, 1929 and 1925. Scarlet fever and diphtheria rates moved downwards together from 1922 to 1924, and from 1930 to 1931, and upwards in unison from 1924 to 1925, 1927 to 1930 and 1932 to 1933. Bronchitis and pneumonia mortality fell below 2 per 1,000 only in the years 1930, 1932, 1933, and below 3 per 1,000 also in 1928, 1931, 1923, 1926; the low rates of the last 3 years are the more remarkable in view of the high influenza prevalence, particu-

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larly in 1933, the other four years of low mortality being characterised by absence of influenza epidemics. Meningitis, other than cerebrospinal or tuberculous, is rapidly disappearing as a certified cause of death.

Mortality of the Aged.—The rapid increase in the relative magnitude of this section of the population continues to form an outstanding feature of our vital statistics. Persons over 70 years of age were 297 per 10,000 total population in 1911, 344 in 1921, and 426 in 1931, and were estimated as forming 443 per 10,000 in 1933.

## Table XXVII.—Mortality over 70 Years of Age in 1911–20, 1921–30, 1931, 1932, and 1933, from the chief Causes of Death.

				ch Cause Deaths.		Mo	ortality	per 1,00	00 Livin	.g.
	1911- 20.	1921- 30.	1931.	1932.	1933.	1911- 20.	1921- 30.	1931.	1932.	1933.
MR. Star			MALE	s.			•	( ALL	and a	
Influenza (11)	20	26	23	23	37	2.3	2.8	2.6	2.6	4.1
Cancer (45–53)	81 148	107 205	113 300	119 308	116 317	$9 \cdot 4 \\ 17 \cdot 1$	11·8 22·7	$12.6 \\ 33.3$	$     \begin{array}{r}       13 \cdot 2 \\       34 \cdot 0     \end{array} $	$     \begin{array}{r}       12 \cdot 8 \\       34 \cdot 9     \end{array}   $
Cerebral Hæmorrhage (82, 96, 97, 99 and 100)	163	195	171	170	166	18.8	21.6	19.0	18·8 7·0	18·3 7·0
Bronchitis (106)	137	110 35	78	63 31	63 31	$15.9 \\ 4.0$	$   \begin{array}{r}     12 \cdot 1 \\     3 \cdot 9   \end{array} $	8·7 3·6	3.4	3.4
Pneumonia (107–109) Chronic Nephritis (131 and 132)	29	29	33	35	32	3.3	3.2	3.7	3.9	3.5
Old Age (162) Other Causes	222 166	140 153	87 163	87 163	79 158	$25.7 \\ 19.0$	$   \begin{array}{r}     15 \cdot 5 \\     17 \cdot 2   \end{array} $	9·7 17·7	9.6 18.0	8·7 17·4
All Causes	1,000	1,000	1,000	1,000	1,000	115.5	110.8	111 · 1	110.5	110.1
Cancer (45–53)	87 153 157 149 32 21 248 129 1,000	105 223 181 117 34 23 165 121 1,000	315 164 87 33 28 109 126 1,000	322 170 69 33 29 111 127 1,000	329 159 70 32 27 100 124 1,000	$   \begin{array}{r}     15 \cdot 2 \\     15 \cdot 5 \\     14 \cdot 8 \\     3 \cdot 2 \\     2 \cdot 1 \\     24 \cdot 6 \\     12 \cdot 7 \\     99 \cdot 0   \end{array} $	$ \begin{array}{c} 21 \cdot 6 \\ 17 \cdot 6 \\ 11 \cdot 4 \\ 3 \cdot 3 \\ 2 \cdot 2 \\ 16 \cdot 0 \\ 11 \cdot 7 \\ 97 \cdot 0 \end{array} $	30·2 15·7 8·2 3·2 2·7 10·5 11·9 95·8	30·2 15·9 6·5 3·1 2·7 10·4 11·9 93·8	31.6 15.2 6.7 3.1 2.6 9.6 11.9 96.1
		1	1	<u> </u>	<u>]</u>		1	1	1	1
			PERSO	NS.					1	1
Influenza (11)	22	29	28	27	44	2.3	3.0	2.9	2.8	4.3
Cancer (45-53) Heart Diseases (90-95)	85 151	106 215	111 308	114 316	112 324	9·0 16·0	$   \begin{array}{c c}     10 \cdot 8 \\     22 \cdot 0   \end{array} $	$\begin{array}{c}11\cdot3\\31\cdot5\end{array}$	$\begin{array}{c c}11\cdot 4\\31\cdot 8\end{array}$	11·4 33·0
Disease of Blood Vessels, including Cerebral Hæmorrhage (82, 96,	a the set	1999	A set		Long Maria	1 Aller		a starter	1.2.3	1
97, 99 and 100)	159	187	167	170	162	16.9	19.2	17.1	17.1	16-3
Bronchitis (106)	144 33	114	82 33	67	67	$   \begin{array}{r}     15 \cdot 2 \\     3 \cdot 5   \end{array} $	3.5	3.4	3.2	3.9
Pneumonia (107–109) Chronic Nephritis (131 and 132)	24	26	30	32	29	2.6	2.6	3.1	3.2	3.0
	237	154	100	100	91	25.0	15.8	10.1	10.1	9.14.
Old Age (162)		105	141	143	139	15.3	14.0	14.3	14.4	14'
Other Causes	145	135	141	110		-		-	100.7	101.

The causes of death at ages over 70 are grouped, as in previous years, in Table XXVII. The year was noteworthy for its low mortality rates from bronchitis and pneumonia combined with a high mortality attributed to influenza at these ages. The cancer rate increased slightly for females, but not for males.

Centenarians.—Among the deaths registered during the year there were 110 of reputed centenarians, 19 of whom were males and 91 females. In the preceding three years the numbers were 61, 91, and 109 respectively. Particulars of the ages returned and of the regions concerned are given in Table XXVIII.

Table XXVIII.—Age at Death of Centenarians, 1933.

		Males.				Females										
	100 and over	100	101	102	103	104	100 and over	100	101	102	103	104	105	106	107	108
Greater London Remainder of South- East North Midlands East Wales England and Wales	4 3 5 2 2 3 	2 	$     \begin{array}{c}       1 \\       1 \\       2 \\       -1 \\       1 \\       - \\       6     \end{array} $	1 			17 26 9 12 10 10 7 91	10 12 4 6 5 4 3 44	5 6 3 1 2 3 1 2 3 1 21	2 22 1 2 9	1 2 2 1 2 1 9	3 		1	1 11111	

#### Mortality at Single Years of Age.

For 1933, as for previous years, the deaths of all males and of females according to marital condition, are given at each year of age in Table 19. The distinction of marital condition is not possible for males since this information is not afforded by the registers. In Table XXIX the deaths at each year of age for the 3 year period 1930–32, symmetrically disposed about the census, have been combined, and the mortality rates resulting from division of these numbers by 3 times the census populations at the corresponding ages are shown in Table XXX. Similar data for the periods 1910–12 and 1920–22 were presented in Tables XXXIII–IV of the Report for 1912 and Tables XXV–VI of the 1923 Review respectively.

As in 1910–12 and 1920–22, the deaths reveal irregularities at certain ages attributable to errors of statement of age, which are also noticeable in the census returns of the living, these errors being mainly of "round numbers" and of "even numbers." The piling up of deaths recorded at 38–40, and the excess at 32, 42, 50, 52, 54, 56, 58, 60, 65, 70, 72, and the deficiency at 55, compared with the numbers expected from a smooth progression, have all been noticed previously. Of these, the continued aversion to 55, with resulting transfer to 54, is the most remarkable feature, since it is not noticed at 45, 65 or 75, the preference for the "round number"

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5 being usually stronger than the tendency to state the nearest even number. The excess noticed previously at 38, 45 and 62, is now scarcely evident, but the preference for 69 and 70 over 71 is repeated for males.

Taple	AAIA	-Deatins at each year of age in the time years, 1900 of									
Age.	Males.	Females.	Age.	Males.	Females.	Age.	Males.	Females.			
 All		and Lake	<b>PION</b>	11 000	and and		C. Set (cat and	011 10			
Ages	729,442	701,744	33	2,982	3,173	67	16,153	13,931			
0	69.994	50,786	34	3,148	3,358	68	16,454	14,663			
1	14.012	12,024	35	3,394	3,332	69	16,787	14,941			
2	5,940	5,337	36	3,505	3,547	70	16,742	15,638			
3	4,015	3,623	37	3,501	3,492	71	16,001	15,274			
4	3,329	3,056	38	3,947	3,711	72	17,347	17,046			
5	3,263	2,781	39	3,998	3,903	73	16,924	17,093			
6	2,556	2,235	40	4,220	4,052	74	17,027	17,317			
7	2,130	1,815	41	4,281	3,782	75	16,055	17,489			
8	1,810	1,612	42	5,024	4,484	76	15,452	17,260			
9	1,773	1,570	43	4,993	4,361	77	14,363	15,999			
10	1,745	1,477	44	5,260	4,401	78	13,605	16,245			
11	1,537	1,382	45	5,998	4,787	79	12,705	15,554			
12	1,285	1,300	46	6,113	5,091	80	11,379	14,793			
13	1,222	1,287	47	6,463	5,510	81	9,944	13,451			
14	1,516	1,432	48	6,921	5,868	82	9,169	12,537			
15	1,908	1,809	49	7,663	6,327	83	7,765	11,556			
16	2,366	2,215	50	8,001	6,452	84	6,837	10,708			
17	2,733	2,488	51	7,859	6,482	85	5,812	9,435			
18	2,971	2,576	52	8,972	7,492	86	4,948	8,453			
19	3,084	2,820	53	9,146	7,541	87	3,918	6,880			
20	3,277	2,800	54	9,834	8,020	88	2,925	5,647			
21	3,396	2,943	55	9,808	7,792	89	2,310	4,533			
22	3,360	3,091	56	11,013	8,745	90	1,809	3,737			
23	3,442	3,082	57	11,188	8,941	91	1,332	2,775			
24	3,266	3,202	58	12,085	9,762	92	873	2,205			
25	3,200	3,115	59	12,545	9,853	93	667	1,587			
26	3,170	3,104	60	12,566	10,135	94	464	1,095			
27	3,239	3,210	61	12,324	10,051	95	317	822			
28	3,236	3,201	62	13,900	11,491	96	193	517			
29	3,281	3,255	63	14,420	12,092	97	122	379			
30	3,202	3,206	64	14,893	12,533	98	80	256			
31	3,149	3,157	65	15,992	13,535	99	55	167			
32	3,192	3,368	66	15,304	13,093	100	48	213			
			and a set of		AL LOSANS	and	and the second	Carlos Lister			
	a subscription	and an appropriate		and and the second	N MENTS	over.	NE Eme	1 1497 1200			
			a here and		1	a station of the					

Table XX	IX.—Deaths	s at each	1 year of	age in the	e three years,	1930-32.
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# Table XXX.—Annual death rates per 1,000 living at each year of age in the three years, 1930–32.

Age.	Males.	Females.	Age.	Males.	Females.	Age.	Males.	Females
A11	111 1.12 At 10	20/10-10-0	19910 n	Was or	T DEE B	t noves	age Dett	to crassi
Ages	12.7	11.2	33	3.8	3.4	67	46.4	33.8
0	76.5	57.0	34	4.0	3.5	68	50.0	37.0
1	15.6	13.6	35	4.4	3.6	69	56.7	41.6
2	6.6	6.1	36	4.5	3.8	70	60.5	44.0
3	4.5	4.1	37	4.7	3.9	71	66.6	49.6
4	3.6	3.4	38	5.0	4.0	72	77.7	57.6
5	3.4	3.0	39	5.3	4.4	73	83.3	63.1
6	2.6	2.4	40	5.4	4.4	74	91.6	68.5
7	2.1	1.9	41	6.0	4.7	75	98.0	76.9
8	1.8	1.6	42	6.6	5.1	76	109.2	85.9
9	1.6	1.5	43	6.8	5.1	77	121.8	92.6
10	1.5	1.3	44	7.4	5.3	78	132.0	106.5
11	1.3	1.2	45	8.3	5.7	79	147.3	116.6
12	1.6	1.6	46	8.6	6.2	80	148.9	119.7
13	1.5	1.6	47	9.4	6.9	81	174.6	143.5
14	1.6	1.6	48	9.6	7.0	82	188.3	151.9
15	2.0	1.9	49	10.7	7.8	83	204.8	169.3
16	2.2	2.1	50	10.9	7.7	84	221.1	183.2
17	2.6	2.4	51	12.1	9.0	85	238.3	200.1
18	2.9	2.4	52	13.5	9.8	86	252.3	216.1
19	3.0	2.7	53	14.1	10.3	87	278:5	231.1
20	3.2	2.7	54	15.1	10.9	88	286.9	249.3
21	3.3	2.7	55	15.6	11.2	89	308.1	270.3
22	3.3	2.8	56	17.8	13.0	90	314.9	290.6
23	3.4	2.8	57	19.3	14.2	91	387.4	308.5
24	3.2	3.0	58	20.5	15.0	92	368.4	347.0
25	3.2	2.9	59	23.1	16.7	93	431.7	360.4
26	3.2	2.9	60	23.6	16.8	94	422.6	369.4
27	3.3	3.1	61	26.7	19.8	95	442.1	403.5
28	3.3	3.1	62	29.6	21.9	96	491.1	426.6
29	3.5	3.3	63	32.3	23.5	97	391.0	435.6
30	3.3	3.1	64	35.0	25.7	98	533.3	422.4
31	3.5	3.2	65	40.0	28.4	99	$447 \cdot 2$	403.4
32	3.8	3.5	66	42.3	30.2	100	592.6	550.4
	E HI LAURDER	1993年-1893年	4401-0	15-3621373	A COLS OF	and	Stands on a	La manna
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The years of age after the second year at which the smallest and greatest numbers of deaths were registered and at which female deaths exceeded male deaths were as follows :

-di seri	Deaths Minimal.			Maximal. 2nd year)	Ages having a female excess.
aris to an	Males.	Females.	Males.	Females.	Ages having a remate excess.
1910–12 1920–22 1930–32	12 12 13	12 11 13	70 69 72	72 76 75	7, 8, 12–16, 70 and up. 5, 10, 12–15, 21, 23–33, 71 and up. 12, 13, 30–34, 36, 73 and up.

B 2

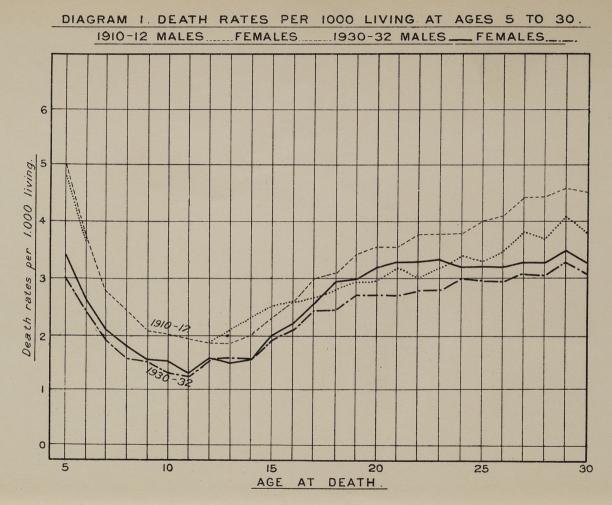
The excess of female over male deaths at 12–13, and at ages from 73 onwards, has been noticed at each period. The excess at 23–33 in 1920–22 was due to depletion of the young male population by the war and this also accounts for the female excess of deaths at 30–34 and 36 in 1930–32. The constancy of male deaths at successive years of age between 18 and 31 was commented upon in 1923, and it is now evident from 20 to 34 for males and also at 24 to 33 for females. It arises from a levelling out of the mortality risks between 20 and 30, combined with the effect of the falling birth-rate during the present century upon the population curve at these ages. Table XXX indicates that between 20 and 30 the male death-rate increased only from 3·2 to 3·3, and the female rate from 2·7 to 3·1, whereas in 1910–12 the increases were from 3·6 to 4·5 and 2·9 to 3·8 respectively. This is depicted also in Diagram 1.

The progression of death-rates of children at the school ages 5–15 is shown below, comparison being also made with the corresponding rates of 10 and 20 years ago.

Age		5	6	7	8	9	10	11	12	13	14	15
Rates per	$ \left( \begin{array}{c} \text{Boys} \\ 1910-12 \\ 1920-22 \\ 1930-32 \end{array} \right) $	50 43 34	37 34 26	28 27 21	24 23 18	21 20 16	20 18 15	19 18 (13)	18 17 (16)	18 18 15	20 19 16	23 22 20
10,000 · living	$ \begin{cases} \\ \hline \\ Girls & \begin{cases} 1910-12 \\ 1920-22 \\ 1930-32 \end{cases} \end{cases} $	49 44 30	37 31 24	28 26 19	24 21 16	21 19 15	20 19 13	19 17 (12)	18 18 (16)	21 20 16	23 21 16	25 24 19
Per cent 1910-12	to 1930–32 $\left\{ \begin{array}{c} \text{Boys} \\ \text{Girls} \end{array} \right\}$	32 39	30 35	25 32	25 33	24 29	25 35	32 (37)	11 (11)	17 24	20 30	13 24

The relative improvement since 1910–12 has been greater for girls than boys at each age except at 12. The irregularity of the 1930–32 rates and curves (Diagram 1) at ages 11–12 is due to the sudden changes in birth rate from 1916 to 1920 which make the rates based on 3 times the census population inaccurate at ages 11–14 in 1930–32. Using the more accurate sums of the estimated populations of the 3 years at ages 10, 11, 12, 13, 14, the resulting rates per 100,000 children living at these ages are 141, 139, 139, 151, 166, showing a smooth progression with minimum at 11–12, whereas by the method used the successive rates are 140, 129, 157, 158, 160.

At other ages the error involved in substituting 3 times the census population for the sum of the estimated populations of the years 1930-32 is of no consequence, the former method of estimating the total population at risk having in fact certain advantages at ages after childhood, since the 1930 population at individual ages was necessarily built up from the preceding census of 1921. The only ages at which the female rate equalled or exceeded the male



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rate were 12–14 (6–16 in 1910–12, and 5, 10, 12–15 in 1920–22) and 97, the latter being evidently a statistical accident owing to irregularities due to mis-statement of age by males at the census.

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## Mortality of Women according to Marital Condition.

Table XXXI gives the deaths in the triennium 1930–32 at each year of age from 15 onwards for single, married, and widowed or divorced women, and Table XXXII gives, for each year and quin-

Table XXXI.—Deaths of Single, Married and Widowed Females at each year of age from 15 upwards in the three years 1930–32.

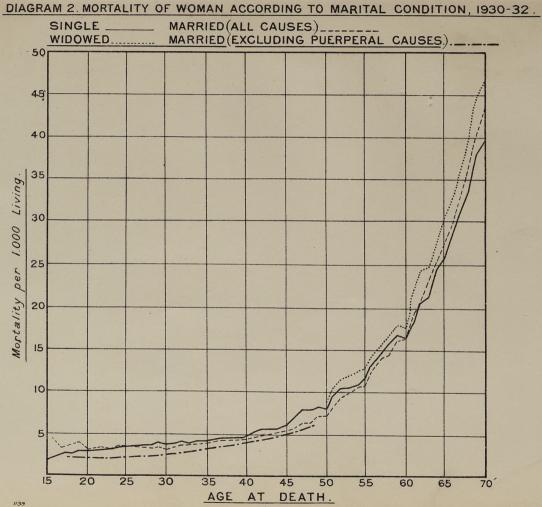
Age.	Single.	Married.	Widowed and Divorced	Age.	Single.	Married.	Widowed and Divorced.
$\begin{array}{c} {\rm Total  15} \\ {\rm years \ \&} \\ {\rm upwards \ 15} \\ {\rm 16} \\ {\rm 17} \\ {\rm 18} \\ {\rm 19} \\ {\rm 20} \\ {\rm 21} \\ {\rm 22} \\ {\rm 23} \\ {\rm 24} \\ {\rm 25} \\ {\rm 26} \\ {\rm 27} \\ {\rm 28} \\ {\rm 29} \\ {\rm 30} \\ {\rm 31} \\ {\rm 32} \\ {\rm 23} \\ {\rm 33} \\ {\rm 34} \\ {\rm 35} \\ {\rm 36} \\ {\rm 37} \\ {\rm 38} \\ {\rm 39} \\ {\rm 40} \\ {\rm 41} \\ {\rm 42} \\ {\rm 43} \\ {\rm 44} \\ {\rm 45} \\ {\rm 46} \\ {\rm 47} \\ {\rm 48} \\ {\rm 49} \\ {\rm 50} \\ {\rm 51} \\ {\rm 52} \\ {\rm 53} \\ {\rm 54} \\ {\rm 55} \\ {\rm 56} \end{array}$	$\begin{array}{c} 117,669\\ 1,809\\ 2,210\\ 2,465\\ 2,488\\ 2,583\\ 2,464\\ 2,386\\ 2,268\\ 2,021\\ 1,821\\ 1,589\\ 1,430\\ 1,345\\ 1,177\\ 1,121\\ 1,589\\ 1,430\\ 1,345\\ 1,177\\ 1,121\\ 990\\ 872\\ 895\\ 808\\ 806\\ 766\\ 771\\ 764\\ 804\\ 778\\ 849\\ 793\\ 924\\ 883\\ 843\\ 912\\ 996\\ 1,067\\ 1,104\\ 1,090\\ 1,124\\ 1,135\\ 1,263\\ 1,198\\ 1,268\\ 1,295\\ 1,407\\ \end{array}$	$\begin{array}{c} 240,726\\ & 5\\ & 23\\ & 88\\ & 237\\ & 335\\ & 555\\ & 819\\ & 1,053\\ & 1,366\\ & 1,504\\ & 1,656\\ & 1,835\\ & 1,985\\ & 2,100\\ & 2,152\\ & 2,215\\ & 2,390\\ & 2,277\\ & 2,448\\ & 2,440\\ & 2,622\\ & 2,559\\ & 2,756\\ & 2,891\\ & 2,952\\ & 2,735\\ & 3,201\\ & 3,130\\ & 3,135\\ & 3,360\\ & 3,534\\ & 3,849\\ & 4,034\\ & 4,375\\ & 4,445\\ & 4,418\\ & 5,075\\ & 5,118\\ & 5,367\\ & 5,038\\ & 5,680\\ \end{array}$	$\begin{array}{c} 251,632\\\\\\\\\\\\\\\\\\\\ -$	57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 and over	$\begin{array}{c} 1,407\\ 1,612\\ 1,544\\ 1,577\\ 1,497\\ 1,708\\ 1,731\\ 1,833\\ 1,945\\ 1,919\\ 2,032\\ 2,108\\ 2,198\\ 2,251\\ 2,275\\ 2,474\\ 2,397\\ 2,356\\ 2,521\\ 2,415\\ 2,178\\ 2,200\\ 2,141\\ 2,075\\ 1,875\\ 1,786\\ 1,605\\ 1,468\\ 1,383\\ 1,164\\ 957\\ 781\\ 651\\ 558\\ 414\\ 317\\ 235\\ 156\\ 122\\ 62\\ 61\\ 422\\ 21\\ 35\\ \end{array}$	$\begin{array}{c} 5,755\\ 6,027\\ 6,014\\ 5,922\\ 5,774\\ 6,354\\ 6,660\\ 6,581\\ 6,566\\ 6,102\\ 6,232\\ 6,238\\ 5,940\\ 5,889\\ 5,419\\ 5,532\\ 4,975\\ 4,744\\ 4,198\\ 3,828\\ 3,236\\ 2,933\\ 2,494\\ 2,163\\ 1,662\\ 1,465\\ 1,133\\ 884\\ 627\\ 527\\ 361\\ 266\\ 163\\ 122\\ 64\\ 49\\ 30\\ 15\\ 12\\ 7\\ 2\\ 2\\ 1\\ 1\\ 1\end{array}$	$\begin{array}{c} 1,779\\ 2,123\\ 2,295\\ 2,636\\ 2,780\\ 3,429\\ 3,701\\ 4,119\\ 5,024\\ 5,072\\ 5,667\\ 6,317\\ 6,803\\ 7,498\\ 7,580\\ 9,040\\ 9,721\\ 10,217\\ 10,770\\ 11,017\\ 10,585\\ 11,112\\ 10,919\\ 10,555\\ 9,914\\ 9,286\\ 8,818\\ 8,356\\ 7,425\\ 6,762\\ 5,562\\ 4,600\\ 3,719\\ 3,057\\ 2,297\\ 1,839\\ 1,322\\ 924\\ 688\\ 448\\ 316\\ 212\\ 145\\ 177\\ \end{array}$

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Age.	Single.	Married.	Widowed and Divorced.	Age.	Single.	Married.	Widowed and Divorced.
$\begin{array}{c} 15-20\\ 20-25\\ 25-30\\ 30-35\\ 35-40\\ 40-45\\ 45-50\\ 50-55\\ 55-60\\ 60-65\\ 65-70\\ 70-75\\ 75-80\\ 80-85\\ 85-90\\ 90-95\\ 95-100\\ 100 \ and\\ over.\\ 15\\ 16\\ 17\\ 18\\ 19\\ 20\\ 21\\ 22\\ 23\\ 24\\ 425\\ 26\\ 27\\ 28\\ 29\\ 30\\ 31\\ 32\\ 33\\ 34\\ 35\\ 36\\ 37\\ 38\\ 39\\ 40\\ 41\\ 42\\ 43\\ 44\\ 45\\ .\\ 46\\ 47\\ 48\\ \end{array}$	$\begin{array}{c} 2\cdot 3\\ 2\cdot 7\\ 3\cdot 2\\ 3\cdot 6\\ 4\cdot 1\\ 5\cdot 5\\ 7\cdot 5\\ 9\cdot 9\\ 14\cdot 3\\ 20\cdot 4\\ 31\cdot 0\\ 50\cdot 7\\ 86\cdot 6\\ 143\cdot 5\\ 225\cdot 2\\ 324\cdot 3\\ 369\cdot 3\\ 530\cdot 3\\ 1\cdot 9\\ 2\cdot 1\\ 2\cdot 4\\ 2\cdot 4\\ 2\cdot 6\\ 2\cdot 7\\ 2\cdot 8\\ 2\cdot 9\\ 2\cdot 9\\ 3\cdot 0\\ 3\cdot 3\\ 3\cdot 3\\ 3\cdot 6\\ 3\cdot 4\\ 3\cdot 5\\ 3\cdot 8\\ 3\cdot 7\\ 3\cdot 8\\ 3\cdot 8\\ 3\cdot 9\\ 4\cdot 2\\ 4\cdot 3\\ 4\cdot 5\\ 4\cdot 9\\ 5\cdot 3\\ 5\cdot 8\\ 5\cdot$	$\begin{array}{c} 3.8\\ 3.0\\ 3.0\\ 3.2\\ 3.9\\ 4.7\\ 6.4\\ 9.1\\ 13.4\\ 20.7\\ 32.5\\ 52.4\\ 84.2\\ 134.2\\ 134.2\\ 213.6\\ 173.9\\ 166.7\\ \hline \\ 4.4\\ 3.2\\ 3.4\\ 4.0\\ 2.9\\ 2.9\\ 3.0\\ 2.9\\ 3.0\\ 2.9\\ 3.0\\ 2.9\\ 3.0\\ 3.0\\ 3.1\\ 3.4\\ 3.5\\ 3.7\\ 3.8\\ 3.4\\ 3.5\\ 3.7\\ 3.8\\ 4.3\\ 4.5\\ 4.8\\ 4.9\\ 5.1\\ 5.5\\ 5.8\\ 6.6\\ 6.6\\ \hline \end{array}$	$\begin{array}{c} - \\ 4 \cdot 3 \\ 4 \cdot 1 \\ 4 \cdot 6 \\ 4 \cdot 7 \\ 5 \cdot 5 \\ 8 \cdot 0 \\ 11 \cdot 0 \\ 15 \cdot 3 \\ 23 \cdot 4 \\ 36 \cdot 5 \\ 59 \cdot 2 \\ 97 \cdot 7 \\ 151 \cdot 0 \\ 228 \cdot 2 \\ 324 \cdot 5 \\ 434 \cdot 1 \\ 561 \cdot 9 \\ - \\ - \\ - \\ 2 \cdot 6 \\ 3 \cdot 4 \\ 4 \cdot 2 \\ 5 \cdot 4 \\ 4 \cdot 5 \\ 4 \cdot 4 \\ 5 \cdot 6 \\ 3 \cdot 4 \\ 4 \cdot 6 \\ 3 \cdot 2 \\ 4 \cdot 7 \\ 4 \cdot 6 \\ 4 \cdot 7 \\ 5 \cdot 0 \\ 4 \cdot 9 \\ 3 \cdot 6 \\ 5 \cdot 2 \\ 4 \cdot 8 \\ 5 \cdot 1 \\ 5 \cdot 8 \\ 5 \cdot 3 \\ 6 \cdot 2 \\ 6 \cdot 9 \\ 7 \cdot 3 \\ 7 \cdot 5 \\ 8 \cdot 3 \\ \end{array}$	49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 and over	$\begin{array}{c} 8\cdot 3\\ 8\cdot 2\\ 9\cdot 8\\ 10\cdot 4\\ 10\cdot 4\\ 10\cdot 9\\ 11\cdot 7\\ 13\cdot 1\\ 14\cdot 4\\ 15\cdot 9\\ 16\cdot 7\\ 16\cdot 5\\ 18\cdot 8\\ 21\cdot 2\\ 21\cdot 9\\ 24\cdot 4\\ 25\cdot 7\\ 28\cdot 4\\ 31\cdot 1\\ 33\cdot 5\\ 38\cdot 4\\ 39\cdot 0\\ 47\cdot 1\\ 54\cdot 5\\ 57\cdot 0\\ 61\cdot 6\\ 72\cdot 1\\ 80\cdot 5\\ 86\cdot 4\\ 98\cdot 1\\ 108\cdot 8\\ 115\cdot 2\\ 137\cdot 9\\ 149\cdot 3\\ 166\cdot 3\\ 179\cdot 9\\ 206\cdot 4\\ 213\cdot 0\\ 230\cdot 5\\ 242\cdot 6\\ 273\cdot 3\\ 287\cdot 9\\ 315\cdot 8\\ 352\cdot 2\\ 382\cdot 1\\ 374\cdot 1\\ 380\cdot 1\\ 299\cdot 5\\ 462\cdot 1\\ 411\cdot 8\\ 291\cdot 7\\ 530\cdot 3\\ \end{array}$	$\begin{array}{c} 7.5\\ 7.4\\ 8.5\\ 9.4\\ 9.9\\ 10.6\\ 10.8\\ 12.6\\ 13.8\\ 14.3\\ 16.2\\ 16.4\\ 19.1\\ 21.0\\ 23.3\\ 25.1\\ 27.7\\ 29.3\\ 32.9\\ 35.9\\ 40.0\\ 43.3\\ 47.9\\ 54.8\\ 58.8\\ 65.8\\ 70.7\\ 79.4\\ 87.7\\ 97.8\\ 105.5\\ 115.1\\ 124.9\\ 148.2\\ 158.0\\ 165.7\\ 199.6\\ 175.4\\ 204.8\\ 211.4\\ 227.2\\ 187.1\\ 226.9\\ 277.8\\ 138.9\\ 307.7\\ 166.7\\ 95.2\\ 133.3\\ 47.6\\ 166.7\\ 95.2\\ 133.3\\ 47.6\\ 166.7\\ \end{array}$	$\begin{array}{c} 9.5\\ 8.8\\ 10.4\\ 11.4\\ 11.7\\ 12.3\\ 12.5\\ 14.1\\ 15.3\\ 16.3\\ 18.1\\ 18.0\\ 22.1\\ 24.3\\ 24.8\\ 27.4\\ 30.7\\ 32.1\\ 36.2\\ 39.6\\ 44.2\\ 46.3\\ 51.8\\ 60.5\\ 67.5\\ 71.8\\ 80.9\\ 89.7\\ 95.7\\ 111.0\\ 121.3\\ 121.6\\ 148.3\\ 153.0\\ 171.5\\ 185.7\\ 202.5\\ 218.1\\ 236.0\\ 253.7\\ 273.1\\ 294.3\\ 312.9\\ 351.1\\ 378.8\\ 410.3\\ 465.2\\ 440.7\\ 433.5\\ 451.7\\ 561.9\\ \end{array}$

Table XXXII.—Annual death-rates of Single, Married and Widowed Females per 1,000 living at quinquennial groups of ages and at each year of age from 15 upwards in the three years 1930–32.



quennium of age, the mortality rates obtained by dividing these deaths by 3 times the corresponding census populations. The rates at ages 15 to 70 are depicted in Diagram 2. Similar compilations for 1910–12 and 1920–22 are to be found in Tables XXXV–VI of the Report for 1912 and Tables XXVII–VIII of the Review for 1923. A comparison of mortality risks of the single and married with the corresponding risks 10 and 20 years ago is of special interest having regard to the great emphasis at present being placed upon the dangers of childbearing. Table XXXIII makes such a comparison at quinquennial ages from 15 to 85, and the last columns

Table XXXIII.—Mortality	per	10,000 liv	ving	of	single	and	married
women at quinquennial	age	s. 1910–12	2. 19	20-	-22. an	d 19	30-32

	1910–12.				1920–22			1930–32.			1930-32 per cent. of 1910-12.		
Age.	Single.	Married.	Diffce.	Single.	Married.	Diffce.	Single.	Married.	Diffice.	Single	Married.	Widowed or Divorced.	
15- 20- 25- 30- 35- 40- 45- 55- 60- 65- 70- 75- 80-85	26 29 33 43 53 69 96 127 173 257 369 584 919 1,419	62 39 39 46 59 72 92 124 179 254 372 591 906 1,347	+ 36 + 10 + 10 + 10 + 10 + 10 + 10 + 10 + 1	$\begin{array}{c} 26\\ 31\\ 35\\ 40\\ 0\\ 47\\ 61\\ 83\\ 114\\ 154\\ 219\\ 338\\ 532\\ 860\\ 1,364 \end{array}$	$\left[\begin{array}{c} 43\\ 47\\ 37\\ 38\\ 41\\ 49\\ 56\\ 72\\ 101\\ 144\\ 218\\ 341\\ 530\\ 847\\ 1,242\end{array}\right]$	$\begin{array}{r} + 17 \\ + 6 \\ + 3 \\ + 1 \\ + 2 \\ - 5 \\ - 11 \\ - 13 \\ - 10 \\ - 1 \\ + 3 \\ - 2 \\ - 13 \\ - 122 \end{array}$	$\begin{array}{r} 23\\ 27\\ 32\\ 36\\ 41\\ 55\\ 75\\ 99\\ 143\\ 204\\ 310\\ 507\\ 866\\ 1,435\\ \end{array}$	38 30 30 32 39 47 64 91 134 207 325 524 842 1,342	+ 15 + 32 + 4 + 28 + 11 + 33 + 11 + 15 + 15 + 15 + 15 + 15	88 93 97 84 77 80 78 78 78 83 79 84 83 79 84 87 94 101	61 77 70 665 65 70 73 75 81 87 89 93 100		

show the relative decline in mortality rates since 1910-12 for the single, married, and widowed or divorced.

At every age up to 60 the mortality of the married has fallen to a greater extent than that of the single, and at every age except 30–35 and 75–80 the mortality of the widowed has fallen more than that of the married. At ages 20–30 the mortality risk for married women has declined by 23 whereas for single women it has declined by only 3 to 7 per cent.; at ages 30–50 the risk for the married has fallen by 30 to 35 per cent., but for single women by only 16 to 23 per cent. This greater rate of improvement in vitality of the married than the single at ages up to 60 was progressive during the 20 years; in 1910–12 the married were at a disadvantage at every quinquennium of age up to 45, in 1920–22 at every quinquennium up to 40, but in 1930–32 the mortality risk had become greater for the single women at each age group from 25 to 60.

In Table XXXIV the 1930–32 rates for married and single women from puerperal causes, and other than puerperal causes, are compared at each quinquennium of age from 15 to 55 with the corresponding rates in the decennium 1911–20.

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## Table XXXIV.—Mortality, per million living, of single and married women from puerperal and other causes, by age, 1911–20 and 1930–32.

		1911–20.						1930–32.						
Age.		All ises.		peral ises,		other an peral.	Al			peral ises.	th	es other nan eperal.		
	S.	М.	S.	м.	S.	М.	S.	М.	s.	М,	S.	М.		
15- 20- 25- 30- 35- 40- 45- 50-55	3,179 3,662 4,337 5,100 5,993 7,529 10,203 13,715	5,720 4,422 4,662 4,886 5,774 6,743 8,763 11,904	$31 \\ 69 \\ 66 \\ 68 \\ 50 \\ 24 \\ 1 $	2,019 990 795 709 666 361 49 2	3,148 3,593 4,271 5,032 5,943 7,505 10,202 13,715	3,701 3,432 3,867 4,177 5,108 6,382 8,714 11,902	2,274 2,743 3,163 3,613 4,135 5,502 7,517 9,901	3,785 2,985 2,984 3,219 3,855 4,700 6,370 9,102	17 41 43 59 53 27 3 —	1,351 743 623 557 455 243 30	2,257 2,702 3,120 3,554 4,082 5,475 7,514 9,901	2,434 2,242 2,361 2,662 3,400 4,457 6,340 9,102		
15-55*	6,715	6,609	39	699	6,676	5,910	4,856	4,625	30	500	4,826	4,125		

 $\ensuremath{^{\ast}}$  Equivalent average death rates, that is, standardized rates based upon a population uniformly distributed according to age.

The legitimate birth rate per 1,000 married women aged 15–45 was 173 in 1911–20 and 122 in 1930–32, a fall of 29 per cent., and the birth rate amongst single women declined by a similar proportion. This accounts for the drop in the average puerperal mortality risk for married women at each age, and for single women at each age under 35, the relative change in the puerperal risk, expressed as a percentage of the 1911–20 rate at each age, being as follows :—

			15–	20-	25–	30-	35-	40-45
Single	•••		- 45	- 41	- 35	- 13	+ 6	+ 12
Married	•••	•••	- 33	-25	-22	-21	-32	- 33

After excluding the different risks due to childbearing, the mortality rates from non-puerperal causes amongst married women per cent. of those amongst single women of the same ages are as follows : - .

			'15–	20-	25–	30-	35–	40-	45-	50-55
1911-20	••		118	96	91	83	86	85	85	87
1930-32		••	108	83	76	75	83	81	84	92

At every quinquennium of age from 20 to 55 the married women have a lower non-puerperal mortality than single women, and this advantage has increased in recent years; in 1911–20 it was 4 per cent. of the single rate at 20–25, 9 per cent. at 25–30, and about 15 per cent. after, whilst in 1930–32 it amounted to about 25 per cent. at ages 25–35 and exceeded 15 per cent. at 20–25 and 35–50. This can be seen in Diagram 2. 41

The relative change in the non-puerperal risk, expressed as a percentage of the 1911-20 rate at each age was as follows :---

	15–	20-	25-	30-	35-	40-	45- 50-55
Single	-28	- 25	-27	- 29	- 31	- 27	-26 - 28
Married	-34	- 35	-39	- 36	- 33	- 30	- 27 - 24
Widowed				- 35	- 36	- 39	-32 - 31

The improvement has been greater for the married than for the single at each age up to 50, the contrast being especially great at 20-35.

The mortality rates of widowed or divorced women in 1930–32 from non-puerperal causes per cent. of the rates for single women of the same ages, were :—

	25-	30-	35-	40-	45-	50-	55-	60-65
1020 20	101	101		CONSTRUCTION OF		00	00	00-00
1930-32	121	124	111	99	106	111	108	115

This excess mortality amongst widows at all ages was commented upon in the Review for 1923; the contrast is much less than in 1910–12 at ages under 65, the fall in mortality having been greater amongst widows than either single or married (Table XXXIII). In order to show that when the risk of widowhood with its attendant higher mortality is taken into account, the apparent advantage of the mar.ied over the single condition still persists, the death rates of single women have been expressed below as percentages of the rates at the corresponding ages amongst the combined population of married and widowed, both from all causes and from nonpuerperal causes.

1911-20 :	15–	20-	25–	30-	35-	40-	45-	50-		60 & up.
All causes Non-puerperal 1930–32 :	55 84	82 103	91 108	103 118	102 114	109 114	112 112	109 109	106 106	94 94
All causes Non-puerperal	60 ,93	92 120	106 131	111 131	106 118	115 121	115 115	105 105	103 103	91 91

There is an excess mortality from all causes in the single over the married and widowed at ages 25–60, reaching 15 per cent. at 40–50, and when puerperal causes are excluded there is an excess at ages 20–60, exceeding 30 per cent. at 25–35.

The comparative risks of mortality to married and single may be usefully expressed by the use of a simple form of standardized rate or "equivalent average death-rate"\* The populations of single and married present such widely different distributions over the age-scale that, although the population of all women over 15 might be used as a standard, it is simpler and equally useful to postulate a standard population uniformly distributed over the scale of ages between defined limits. Standardized rates of mortality

\* G. W. Yule; Journal of Royal Statistical Society, 1934. xcvii, Pt. 1, 15.

between any two ages can then be found by simply calculating the arithmetic mean of the rates at individual years between these ages, or of the rates in quinquennial age groups. If we compare 100,000 married women with the same number of single women aged 15–55 and uniformly distributed over those ages, it follows from Table XXXIV that the numbers dying annually would have been,

672 single women (4 from puerperal, 668 from other causes).

- in 1911–20 661 married women (70 from puerperal, 591 from other causes).
  - (486 single women (3 from puerperal, 483 from other causes).
- in 1930–32 462 married women (50 from puerperal, 412 from other causes).

Stated in this way, the 100,000 married women would annually suffer in 1930–32 an excess of 47 deaths from puerperal causes (66 in 1911–20), but since 71 fewer would die of other causes (77 in 1911–20), they would enjoy a net advantage amounting to 24 survivors in the year (11 in 1911–20). The deaths saved by a fall in birth rate among married women (from 173 to 122 per 1,000 aged 15–45) totalled 20 of these 100,000 married women, since 70 died from puerperal causes in the first period and 50 in the second, so it may be presumed that even if their birth rate were to return to 173, the married would still enjoy a total survival advantage over the single.

It has been generally supposed that the greater vitality of the married than the single, as evidenced by their lower mortality from non-puerperal causes between ages 20 and 50, is due in large part to the operation of selective recruiting for wedlock. In the words of the Review for 1923 (p. 42) "Women suffering from mortal disease will frequently refrain from marriage, as from migration, and remain to swell the mortality of the ranks from which transfer for them is barred." This factor must be particularly important at the earlier ages when tuberculosis bars many from marriage, but any form of mortal illness which either stands in the way of marriage being contemplated, or prevents it after it has been arranged, virtually results in the transfer of a death from the married to the single group.

It is difficult to explain by selection of this kind, however, why in a period of rapidly falling incidence of most forms of mortal disease, the advantage as regards mortality from non-puerperal causes for the married over the single should have increased at ages 20-25 from 4 per cent. in 1911-20 to 17 per cent. in 1930-32, at ages 25-30 from 9 per cent. to 24 per cent., or at ages 30-35 from 17 to 25 per cent. There are, of course, a certain number of deaths associated with pregnancy or childbirth which are assigned to other causes and yet are contributed to by the puerperal condition, and 43

with a falling birth rate these too will have diminished to a greater extent for the married than the single. It is estimated, however, that if we make the extreme assumption of regarding every death associated with the puerperal state as due to maternal causes, the excess of the death rate unconnected with childbearing of the single over the married must then have increased from about 12 per cent. in 1911-20 to 31 in 1930-32 at ages 20-25, from 17 to 43 per cent. at 25-30, and from 26 to 41 per cent. at 30-35, so the explanation is not to be found here. There are as yet few signs to suggest that the development of the eugenic conscience has been operating upon selection for wedlock to such an increasing extent as to account for this, and it is difficult to escape the conclusion that in the present state of society the married condition per se for women is more favourable to vitality than the single condition at ages up to 60. Whether this is a matter of endocrine balance, psychology, economic and environmental differences, or all of these, cannot be decided, nor just what proportion of the handicap of the single women is due to these causes and what proportion to selection, but the plain fact that the risk of dying between ages 25 and 60 is smaller for the average married woman than the average single woman in the population, despite the risks attendant upon pregnancy and childbirth, is one which might usefully be stressed as a corrective to exaggerated fears of maternity.

#### CAUSES OF DEATH.

The causes of death of males and females at 18 groups of ages are stated in Table 21 for the whole country, and in Table 22 further detail of age is shown for all causes of significance at ages 0-5. In Table 23 deaths from each cause distinguished are tabulated by month of occurrence and by sex (but not by age). Table 23 differs, from all others in referring to date of occurrence and not of registration. Table 21 includes the full International List of causes of death, as revised in 1929. The information as set out in this table is also available for London, and for the county borough, urban district and rural district aggregates of England and Wales. Certain of the numbered items in it are subdivided, and where this occurs the letters (a), (b), &c., indicate subdivisions in international use, and numbers (1), (2), &c., subdivisions made without international agreement. All other abstracts of the causes of death are arranged in the form of the short list of causes adopted by the Registrar-General in consultation with the Ministry of Health for use during 1931-40. The relation of this list to the detailed International List, as revised by the International Commission in 1929, is shown at the head of Table 24.

The contents of every heading in both the short and the detailed list now in use are defined in the Registrar-General's "Manual of the International List of Causes of Death " (1929 Revision),\* which should be consulted in all cases where it is desired to ascertain the precise significance of any heading in the lists.

Where two or more causes of death are jointly stated, the classification of the death to one or other of the causes in the International List is carried out in conformity with rules of selection, whose general principles are laid down in the Manual. Thus, with certain exceptions, deaths from violence associated with disease are classed to the appropriate violent cause, and deaths from an infectious disease associated with a local disorder such as a cardiac or renal lesion are classed to the infectious disease. Deaths are therefore not always classed to the immediate cause, but in some instances to a more remote one leading up to it. These rules for selection have not been seriously modified since 1901, so that continuity in the resulting tabulation has been maintained. Sufficient understanding and experience of the new form of certificate, introduced in 1927, has first to be gained before replacing the code of selective rules by the expressed opinion of the certifier. However desirable it may seem to make the change at once for certain combinations of causes, the importance of safeguarding the continuity of the statistics of causes of death must outweigh such considerations until the quality of certification is such as to justify reliance upon the order of statement for all combinations of causes. Special secondary tabulations according to the associated cause are made for deaths connected with anæsthetics, alcoholism and childbearing.

In Table 24 deaths are shown for the several geographical regions of the country, for urban and rural portions of administrative counties, and for county and metropolitan boroughs, arranged by sex, age, and the short list of causes as set out at the head of the Table. The same information, though not by age, is also available for each individual administrative area.

In addition to the above tables, which relate exclusively to the year 1933, Table 6 contains a statement of the number of deaths registered in each year 1923–33 from each cause distinguished in Table 21 so far as available, with distinction of sex but not of age; while Table 7 states the corresponding crude death-rates per million living for persons, males and females, so far as these can be regarded as of any significance, no rates being shown for causes which give a rate of less than five per million population. But the crude rates in Table 7 are liable to be misleading as indices of the progress of mortality even where their numerical basis is adequate. Owing to the rapid ageing of the population at the present time as a result of simultaneous fall in birth and death-rates the rates shown in Table 7 for causes mainly affecting old people tend automatically to increase, and thus to overstate mortality from such causes as cancer, cerebral hæmorrhage and heart disease. As this overstatement had become

\* Copies may be obtained from H.M. Stationery Office. Price 3s. net.

seriously misleading in many cases, Table 8 was inserted to correct it by showing the course of mortality from each cause dealt with when allowance is made for such population changes by standardization (see page 1). Owing to the clerical labour involved in the preparation of these rates the list of causes in Table 8 is much shorter than that in Table 7, and rates are shown only for males and females separately. Standardized rates for both sexes jointly are given for a few causes in Table 9. Tables Nos. 11 and 12 state the mortality during the eleven years 1923–33 of infants under one year of age from the causes of chief importance at that age, but without distinction of sex.

1, 2. **Typhoid and Paratyphoid Fevers.**—The number of deaths classified to this heading during 1933 was 222. Of these, 39 were ascribed to paratyphoid infection, the same number as in 1932, forming 18 per cent. of the total compared with 19 per cent. in the preceding period of 5 years.

The standardized rates corresponding to these deaths, 5 per million persons living (Table 9), 6 for males and 4 for females (Table 8), are the lowest recorded.

Table 9 shows that this rate is quite trifling compared with those of earlier years, the rate for 1871–75, for instance, having been 371 per million, or over 70 times that for 1933.

The distribution of this mortality throughout the country is outlined in Table XXXV.

The highest mortality rate in 1933 for any region is that for Midland II. North II follows next, and Wales and London's outer ring show the lowest rates. Excess of mortality in the small towns had been the general rule during the preceding twenty years, but in 1933 the rural districts outside Greater London had a rate of 8 per million, the small towns 6, and county boroughs 4.

Prevalence (Table 26) in England was 4 per 100,000 living, the lowest rate recorded, but in the Administrative Counties of Wales the rate of 3 per 100,000 was slightly above the lowest rate of 1932. The fatality rate (Table XXXVI) was above the rates of the 3 preceding years. The distribution throughout the various regions in 1933 is also shown in Table XXXV.

Prevalence was highest in North I and Midland II and lowest in Wales I. Fatality was highest in Midland II. The proportion of paratyphoid to total notifications ranged from  $19 \cdot 0$  in Wales to  $27 \cdot 0$  in the Midlands,  $28 \cdot 6$  in the South West,  $32 \cdot 3$  in the East,  $39 \cdot 6$  in the South East and  $47 \cdot 0$  per cent. in the North.

The highest mortality rate recorded in Table 10 is, for counties of over 100,000 population, 103 per million in Northants and 35 in Yorks, East Riding. The county boroughs with highest rates are Northampton (83), Barrow-in-Furness (46), Eastbourne (35), Barnsley and St. Helens (28). Table XXXV.-Typhoid and Paratyphoid Fevers; Mortality, Prevalence and Fatality at all ages. Measles and Whooping Cough; Mortality at ages under five years, and Proportion of Deaths occurring in the First One or Two Years of Life, 1933.

	Ty Paraty	vphoid au yphoid F	nd `evers.	Mea	sles.		oping ugh.
	Deaths per million living.	Cases† per million living.	Deaths per 1,000 cases noti- fied.	Deaths per 100,000 living at 0-5.	Deaths at 0-2 per cent. of those at all ages.	Deaths per 100,000 living at 0-5.	Deaths at 0-1 per cent. of those at all ages.
England and Wales	6	44	126	58	59	74	44
South-East Greater London	444	46 46	85 85	19 19	47 52	78 88	45 42
Remainder of South-East       of         North          North I          , II          , III          , III          , III          , III          , Midland I          , II          , Wales          Wales I	4 6 9 5 6 9 5 17 6 5 2 1	45 43 89 43 28 35 44 32 69 53 42 25 17	86 141 90 2000 173 158 199 145 247 113 128 63 63	$ \begin{array}{c} 18\\92\\106\\39\\45\\126\\65\\65\\24\\28\\104\\121\end{array} $	40 61 57 62 55 64 62 59 70 43 51 57 59	62 78 59 74 78 88 58 55 63 69 66 91 102 61	$51 \\ 41 \\ 49 \\ 47 \\ 36 \\ 40 \\ 47 \\ 47 \\ 47 \\ 48 \\ 40 \\ 55 \\ 50 \\ 48 \\ 63 \\ 63 \\ 63 \\ 63 \\ 63 \\ 63 \\ 61 \\ 61$
" II	3	45	65	51	63	- 79	41
County boroughs* Other urban dis- tricts* Rural districts*	4 6 8	43 61	146 128	51 19	56 39	64 68	49 48
Greater London :	6 2	43 50	137 39	31 7	54 43	111 66	42 42

\* Excluding Greater London.

† Including cases in Port Sanitary Districts.

6. Small-pox.—The deaths allocated to this cause numbered 2, a smaller number than in any of the preceding fourteen years. The mortality record for this disease is contained in Table 9, which shows that the standardized rate for 1933 was less than 0.5 per million, indicated by 0 in the table, as in sixteen other years since the 1901-05 epidemic. In the remaining eleven of these years the rate has been one per million.

Of the 2 deaths classed to small-pox, one was a male child of 2 years with acute miliary tuberculosis and smallpox, the other a male aged 52 years.

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The type of disease prevalent in 1933, though not specified in the records, is indicated by the low fatality rate of 3.2 per 1,000 notified cases (Table XXXVI). Since 1923, when it suddenly fell from 27.7 to 2.8 per 1,000 cases, the rate has shown but slight fluctuations—between 4.3 in 1928 and 1.5 in 1932.

The notified cases numbered 631, compared with 2039 in 1932 and 5,664 in 1931, and of these 604 occurred in Greater London, 9 in the remainder of the South East, and 9 in Lancashire.

7. Measles.—The deaths registered from this cause numbered 1,937 corresponding to a mortality of 48 per million population. But allowance for decreased proportion of children in the present population increases the rate on standardization from 53 to 76

### Table XXXVI.—Fatality of certain Infectious Diseases (Deaths per 1,000 Notified Cases), 1911-33.\*

Year.	1. Enteric (typhoid and para- typhoid) fever.	6. Small-pox.	8. Scarlet fever.	10. Diphtheria.	15. Erysipelas.	16. Poliomyelitis (including polioencepha- litis).	17. Encephalitis lethargica.	18. Cerebro- spinal fever (meningo- coccal meningitis).
1911 1912 1913 1914 1915	174 191 182 194 199	$78 \cdot 0 73 \cdot 2 87 \cdot 0 61 \cdot 5 141 \cdot 3$	$     \begin{array}{r}       18 \cdot 1 \\       18 \cdot 6 \\       16 \cdot 1 \\       17 \cdot 2 \\       18 \cdot 6     \end{array} $	103 96 88 99 107	39 39 35 42 46	? 283 348 331		? ? 1,089 1,257 630
1916 1917 1918 1919 1920	174 205 201 147 171	$ \begin{array}{c} 113 \cdot 2 \\ 333 \cdot 3 \\ 30 \cdot 8 \\ 77 \cdot 6 \\ 114 \cdot 1 \end{array} $	$   \begin{array}{r}     17 \cdot 8 \\     15 \cdot 3 \\     20 \cdot 5 \\     14 \cdot 7 \\     12 \cdot 0   \end{array} $	101 100 106 90 81	39 43 47 42 52	270 469 1,004 297 404	? ? 533 539	656 663 673 727 911
1921	158	$     \begin{array}{r}       15 \cdot 9 \\       27 \cdot 7 \\       2 \cdot 8 \\       3 \cdot 5 \\       1 \cdot 7     \end{array} $	9.5	72	55	314	493	1,007
1922	191		12.7	78	53	352	742	1,047
1923	140		11.6	68	50	185	517	934
1924	120		10.5	60	52	183	279	746
1925	139		10.8	58	57	370	520	876
1926	133	$     \begin{array}{r}       1 \cdot 8 \\       3 \cdot 2 \\       4 \cdot 3 \\       3 \cdot 6 \\       2 \cdot 4     \end{array} $	8·3	59	55	181	583	926
1927	103		6·8	52	56	203	713	911
1928	124		5·7	52	55	306	819	1,061
1929	133		6·0	55	58	263	999	882
1930	106		6·7	47	56	212	1,241	938
1931	110	$1.6 \\ 1.5 \\ 3.2$	6.6	53	66	247	1,471	650
1932	101		6.2	54	68	237	1,463	568
1933	126		5.6	56	66	253	1,887	556

\* The rates in this table are given with reserve, being in some respects unsatisfactory. For the years 1911-13 cases of disease among non-civilians have been excluded from the notification returns, but it has not been possible to distinguish their deaths; for the years 1920-1925 inclusive both cases and deaths relate to civilians only; for all other years the figures relate to the total population. The numbers relating to small-pox in some years are too small to yield significant rates, but their basis of fact can be ascertained from Tables 6 and 28, and the rates quoted serve to bring out the extremely mild type of disease prevalent in 1921-33. The rates for poliomyelitis include polioencephalitis, which was not distinguished in the notification returns until 1919. The extraordinary rise in 1918 is partly ascribable to certification of a number of deaths from the then " new disease," encephalitis lethargica, as polioencephalitis, but mainly to a reduction in notifications unaccompanied by significant change in the number of deaths (see Report for 1918). The rates from this disease will be found to differ from some of those published in the Annual Reports of the Chief Medical Officer of the Ministry of Health, partly because polioencephalitis is included throughout and partly because special inquiries made by the Ministry in certain years have led to revision of the returns for those years, which is not embodied in Table XXXVI. The cases there referred to are similar for each year dealt with, being in all cases derived from the published notification returns. The latter source of discrepancy applies also to cerebro-spinal fever, and in this case there is a possibility that some cases of posterior basal meningitis may not have been notified as cerebro-spinal fever though all such deaths are included in the table.

for males and from 44 to 71 for females, each of these rates being the lowest ever recorded. The death-rate for children under 15 years of age, 201 per million, is seen from Table 9 to be also a low record.

The distribution throughout the country of mortality from measles is stated in Table XXXV in the form of death-rates per 100,000 living at ages 0–5. Deaths at these ages in 1933 formed 88 per cent. of the total, and statement in this form prevents the comparison being prejudiced by varying proportions of children in the populations compared. Measles was not epidemic in London and produced the lowest death rate yet recorded in that County. The regions showing the highest rate were North IV and Wales I.

The Table also demonstrates to what an extent measles mortality is enhanced by urban conditions, the county borough rate of 112 being almost 6 times that in the rural districts, a similar gradation with urbanisation having been evident in each of the 23 years for which the facts are available. The proportion of deaths which occurred at ages under 2 years also increased from 39 per cent. in the rural districts to 63 per cent. in the county boroughs, and was higher in the North, Midlands, Wales I and Greater London than in the less urbanised areas.

The relations of measles and whooping cough mortality at ages under 5 to latitude and to overcrowding were referred to in the Review for 1932 (Table XXVII and Diagram 2).

Table 10 shows that, of administrative counties with over 100,000 population, Glamorgan returned the highest death rate, 112 per million or more than twice the rate for England and Wales, Denbigh 109, Caernarvon 84, and Stafford 81, coming next. The highest county borough rates were—Liverpool 351, South Shields 307 and Birkenhead 293.

8. Scarlet Fever.—Deaths registered from this cause numbered 729, smaller numbers having been recorded in each year 1926 to 1929 and in 1931 and 1932. The rate at ages under 15, 63 per million living, was also greater than in those six years and 1917.

The progress of the decline from the maximum decennial rate of 1861-70 (Table 9) may be traced in the following statement of proportionate figures for subsequent periods, taking the rate of 2,617 in that decade as 1,000—1871-80, 729; 1881-90, 345; 1891-1900, 168; 1901-10, 119; 1911-20, 54; 1921-30, 28; 1931, 17; 1932, 18; 1933, 24. Thus the mortality of 1933 was less than one fortieth of that experienced 60 years earlier. The records of individual years since 1881 indicate that, ignoring increases which were not maintained over at least two years, the downward trend has been interrupted by short periods of rising rates which have failed to compensate for the preceding fall. Such periods were 1888-90, 1891-93, 1898-1902, 1911-14, 1917-20, and 1928-30, and it is noteworthy that several of these were coincident with similar periods of increase in the diphtheria death rate (1891–93, 1912–14, 1917–20, 1928–30). Prevalence increased by 51 per cent. in 1933 compared with the preceding year, whereas mortality increased by only 37 per cent.

Table XXXVI shows that the fatality ratio of deaths to notified cases was  $5 \cdot 6$  in 1933 compared with a mean rate of  $6 \cdot 2$  per 1,000 cases notified in the preceding five years. This rate is less than one-third of that at the commencement of the record in 1911, when the notifications were first tabulated, scarlet fever and small-pox showing much the greatest declines of fatality in the Table.

The distribution of the disease according to urbanisation and geographical location is given in Table XXXVII. Increased prevalence compared with 1932 is recorded in every region, the percentage increase in the notification rate ranging from 11 in the

#### Table XXXVII.—Scarlet Fever and Diphtheria, 1933 : Mortality at Ages under 15 Years, Prevalence and Fatality at All Ages.

	a ganeri Inites	Scarlet	Fever.		. D	iphtheria	
ang of the control way readibut at the 42 per cent to reach destinate these distinate	Deaths per million living at 0-15.	Cases per 100,000 living at all ages.	Deaths per 1,000 cases noti- fied.	Deaths at 0-5 per 100 at all ages.	Deaths per million living at 0-15.	Cases per 100,000 living at all ages.	Deaths per 1,000 cases noti- fied.
England and Wales	、63	321†	5.6	44	261	118†	56
South-East	62	358	4.7	38	253	125	47
Greater London Remainder of South-	67	441	4.1	40	330	166	45
East	53	230	6.6	34	134	61	54
North	90	384	6.6	51	352	140	64
North I	186	581	10.3	56	128	72	53
,, II	33	270	3.4	33	427	165	70
" III	76	385	5.4	44	447	163	67
" IV	68	335	5.6	52	380	147	64
Midland	35	213	5.4	43	124	73	47
Midland I	43	234	5.7	44	125	77	47
,, II	21	173	4.6	37	120	66	49
East	20	186	3.5	42	165	69	65
South-West	34	166	5.2	22	181	73	59
Wales	66	313	6.5	38	332	154	62
Wales I	72	381	6.0	40	334	155	62
" II	49	126	10.3	33	324	153	59
County boroughs*	72	340	6.1	50	338	148	58
Other urban districts*	69	298	6.5	41	200	84	62
Rural districts* Greater London :	38	193	6.2	42	156	64	67
Admin. County	75	512	3.8	42	. 386	225	37
Outer Ring	58	366	4.5	37	275	105	63

\* Excluding Greater London.

† Including Port Sanitary Districts.

South West to 91 in North I. In London there was a 57 per cent. increase in prevalence with a 9 per cent. fall in mortality. The death rate fell also in North II, Midland II, East and Wales I, but increased in the other regions.

The notification rate was greatest in North I, followed by Greater London, and lowest in Wales II, and showed the usual increase with urbanisation from 193 in the rural districts to 512 in London Administrative County. The fatality ratios were lowest in North II, East, and Greater London and highest in Wales II and North I. Outside London it was unaffected by urbanisation.

Children under 5 provided  $44 \cdot 2$  per cent. of the deaths, compared with 45.7 in 1932 and 43.0 in 1931. The proportions in the six quinquennia from 1901–05, to 1926–30 were 60.6, 58.4, 54.0, 48.4,  $48 \cdot 6$  and  $42 \cdot 4$ , this fall being partly due to alteration in the ratio of younger to older children in the population resulting from the declining birth rate. The rate of fall in mortality risk has been greater, however, for younger than for older children, the 1931-33 mortality rates at ages 0-5, 5-10, 10-15 and 15-20 being 1.9, 2.4, 3.6 and 5.9 per cent. respectively of the corresponding rates in 1861-70. The death-rates per million living at these four ages, tabulated below, show that this differential rate of decline in mortality risk was in progress from the beginning of the century up to 1926-30, the rate at 5-10 years being 68 per cent. of that at 0-5 years in the latter period, compared with 42 to 47 per cent. in the decades from 1861 to 1900. In 1931-33 this ratio has fallen again to 58 per cent., a slight increase in the mean death-rate having occurred at 0-5 years, and a decrease at 5-10 years.

		Death rates per million.				Per cent. of rate at 0–5 years.			
		0-	5	10-	15-20.	0-	5-	10-	15-20.
$1861-70 \\1871-80 \\1881-90 \\1891-1900 \\1901-10 \\1911-20 \\1921-25 \\1926-30$	··· ··· ··· ··· ···	4,644 3,504 1,667 844 570 244 154 87	$2,193 \\ 1,522 \\ 763 \\ 353 \\ 274 \\ 140 \\ 93 \\ 59$	504 326 154 81 65 38 30 19	153 104 42 33 29 18 15 8	$     \begin{array}{r}       100\\       100\\       100\\       100\\       100\\       100\\       100\\       100\\       100     \end{array} $	47 43 46 42 48 57 60 68	11 9 9 10 11 16 20 22	3 3 3 4 5 7 10 9
			CONTRACTOR AND NO.	The second second		State of the second			

Table 10 shows that, amongst counties with over 100,000 population, mortality was highest in Durham (62 deaths per million) and Northumberland (46).

The highest rates amongst the county boroughs (average 20) are those of Sunderland (139) and Wakefield (133).

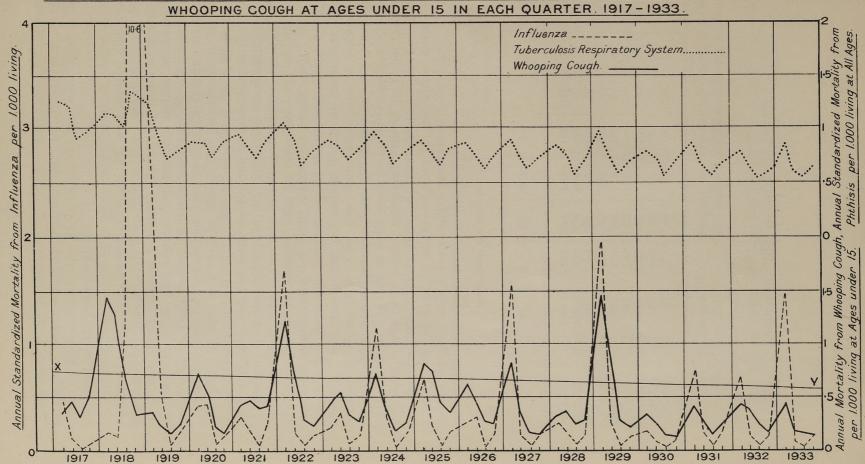


DIAGRAM 3. STANDARDIZED MORTALITY FROM INFLUENZA AND PHTHISIS, AND MORTALITY RATE FROM

9. Whooping Cough.—The deaths allocated to this heading numbered 2,270 (991 males and 1,279 females). The excess for females is shown by Table 6 to be a constant feature of this disease, and tends to increase with age. The percentage ratios of the numbers of female deaths to male deaths in 1933 are 114 at 0-3 months, 106 at 3-6 months, 113 at 6-12 months, and 122, 178 and 162 in the second, third and fourth years of life respectively, the ratios between the death rates being slightly higher owing to the excess of males at risk at these ages. An increasing female excess after 3-6 months, at which age the excess is scarcely appreciable when averaged over a period of years, has been a constant feature of the records of the last four decades.

The standardized death-rates, 76 for males and 100 for females (Table 8), are the lowest recorded except in 1930.

The death-rate per million living at ages under 15 reached a maximum of 1,511 for the five years 1866–70, after which, with a single exception, the quinquennial rates progressively declined to 387 in 1926–30. In 1933 the rate was 237 (Table 9.).

The annual rate of mortality from whooping cough per 1,000 living under 15 estimated for each quarter in the years 1917 to 1933 is represented in Diagram 3, where the standardized death-rate from influenza is also graphically shown for the same quarters. In every year except 1917, 1921, 1923 and 1928 whooping cough mortality was maximal in the first quarter, and the mean secular trend of the March quarter rates is indicated by the straight line XY drawn through ordinates equal to the mean rate for the first 7 years (709) at 1920 and for the last 7 years (597) at 1930.

The March quarters when influenza was strongly epidemic, with a standardized death-rate exceeding 1 per 1,000 living, were those of 1919, 1922, 1924, 1927, 1929, 1933, and in 4 of these quarters whooping cough mortality surpassed the level of expectation XY. A study of the two graphs leaves little doubt that, apart from the similarities arising from the seasonal periodicity common to most infectious diseases, there is a relationship between the amounts of registered mortality from the two diseases occurring in the same quarters, and this is demonstrated more conclusively in the section on Winter Mortality in relation to Mean Air Temperature and Influenza Rate (see Diagram 7). The coincidence in the years of high mortality may be due to the presence of some factor affecting both influenza and whooping cough, but it seems more probable that the rise in whooping cough deaths, particularly noticeable in the March quarters of 1922 and 1929, was due to the epidemic transmission of respiratory infections secondary to influenza proving especially fatal to children already suffering from whooping cough.

The latter hypothesis receives support from the fact that the 1933 influenza epidemic, which was remarkable for the absence of any appreciable contemporaneous increase in mortality from bronchitis and pneumonia not attributed to influenza, was also not accompanied by increased whooping cough mortality. There is no reason to suppose that whooping cough prevalence is affected by an influenza wave, and if only its fatality is affected little impression would be made upon the number of whooping cough deaths unless prevalence of both diseases happened to be high at the same time.

When whooping cough and influenza are mentioned jointly on a death certificate, precedence is usually given for purposes of statistical classification to the former, and the Table below shows the numbers of deaths assigned to whooping cough in each quarter during 1929 to 1933 with mention of influenza as an associated or secondary cause, and the proportions of these per 1,000 total deaths so assigned.

			Nı	umbers	of deat	hs.	P	Per 1,000 whoop cough deaths.						
Quart	er		1st	2nd	3rd	4th	1st	2nd	3rd	4th				
1929			66	3		1	19	2		2				
1930				1				2						
1931			7	1			7	2						
1932			7	1		1	7	1		2				
1933		•••	24	1	1		22	2	3	-				

The increase in whooping cough deaths due to a recognised double infection amounted to only 1.9 per cent. in the March quarter of 1929, which is scarcely appreciable compared with the total increase indicated in Diagram 3.

The distribution of mortality at ages under 5 and the proportion of deaths under 1 year of age are given in Table XXXV. The county borough rate of 79 was the lowest ever recorded and the increase of mortality with urbanisation was less evident than usual, although mortality in London was much higher than in the Outer Ring. The average rates of the 5 years 1926–30 and the annual rates since 1931 at ages under 5 are :—

		London.	County boroughs.	Urban districts.	Rural
1926-30	••	130	133	106	90
1931		99	105	71	52
1932		116	121	88	72
1933	••	111	79	64	68

Wales I and North IV registered the highest mortality and Midland I and North I the lowest.

Wales II showed the highest proportion of deaths at ages under 1 year as in 1932.

10. **Diphtheria.**—The 2,646 deaths in 1933 include 1,291 males and 1,355 females. A female excess is shown also by the standardized death-rates (Table 8), as in each year since 1919 except 1922 and 1931, though the crude death-rate (Table 7) is generally higher for males. For 1933 the crude rates were 67 per million for males and 65 for females, and the standardized rates 88 for males and 92 for females.

The history of diphtheria mortality is best expressed by the death-rate from diphtheria and croup at ages under 15 in Table 9, for during last century much diphtheria was evidently returned as croup, and the larger proportional child population in itself tended to produce a higher crude death-rate at all ages. In 1861–65 this rate was 1,422 per million, but fell to 891 in the next quinquennium, and the 5-yearly rates then showed only slight fluctuations until the end of the century. The downward trend of annual rates since 1900 has been interrupted by short periods of increase. These occurred in 1912–14, 1917–20, 1924–26 and 1927–30, a contingent rise in scarlet-fever mortality occurring in three of these periods. The rate in 1933, 261 per million living under 15, is above that of the two preceding years. (Table 9.)

Table XXXVII shows that diphtheria mortality was highest in North III, followed by North II, and lowest in the Midlands and North I. For the country as a whole, outside London, the rate increased regularly with urbanization, and the London rate was also in excess of that for London's Outer Ring. It seems probable that diphtheria is still much more freely returned in some sections of the population than in others. Thus the frequency of its notification has been greater in London than in any of the regions or density aggregates separated in this table or its predecessors in each of the years 1916–33, with the exception of 1931 when the London rate was exceeded in Wales II.

The contrast between North I and the other Northern regions has been evident in each of the years 1931 to 1934 as shown below, and it is seen from these figures and from Table XXXVIII that

	Notif		s per 10 ng.	0,000		ns per n at ages	Deaths per 1,000 notified.				
	1931.	1932.	1933.	1934.	1931.	1932.	1933.	1931.	1932.	1933	
North I	64	51	72	160	136	67	128	62	41	53	
North II	142	163	165	196	409	488	427	77	79	70	
North III	119	131	163	276	371	330	447	79	64	67	
North IV	141	147	147	196	372	379	380	66	64	64	

North I has also been characterised in recent years by a low diphtheria fatality in comparison with the rest of the north of England.

Recent bacteriological research suggests that under present conditions the fatality rate of an outbreak of diphtheria is largely dependent upon the proportion of cases infected by particular strains of C. diphtheriæ which may have a localised distribution. Table XXXVIII has therefore been introduced to show the trend, over a series of years, of prevalence and fatality indices in London, each county borough having a population exceeding 150,000 in 1931, and in the residue of each region surrounding these towns. Although local differences in the standard of notification of diphtheria may affect comparison of local rates in a given year, this factor is not likely to affect comparisons of the trend of prevalence or fatality in one town with the corresponding trend during the same period in another town. The rates for 1934 which have become available at the time of going to press have been included in the Table. There are wide differences, both as regards prevalence and fatality, between towns of similar size and situation, such as Manchester and Liverpool, or Leeds and Sheffield.

Fatality ratios exceeding 100 deaths per 1,000 notified cases were registered in 5 of the county boroughs distinguished in Table XXXVIII in 1926, these being Croydon, Bolton, Leicester, Nottingham and Plymouth; in 1927 this level was only reached in 3 (Sunderland, Bradford, Coventry), in 1928 in 2 (Bolton, Coventry), and in 1929 in 2 (Bolton, Bradford). In 1930 and 1931 Birkenhead and in 1933 West Ham alone gave ratios in excess of 100, and in 1934 Bolton and the region of North II excluding Kingston-upon-Hull. The distributions given below of the fatality ratios for the 36 areas distinguished in the table fail to show evidence of a bimodal character since 1930, although in 1926-29 the occurrence in some of the towns of outbreaks with fatality above the usual range seems to be indicated, the distributions in 1927 and 1928 being particularly abnormal.

	nula Nula	Fatality ratio.													
	0-	20-	. 40-	60-	80-	100-	120-	140-	160-	A11.					
1926            1927            1928            1929            1930            1931            1932            1933            1934	$ \begin{array}{c c} 1 \\ -2 \\ -1 \\ 2 \\ 3 \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ -$	2 7 9 5 11 8 9 11 8	$     \begin{array}{r}       12 \\       10 \\       11 \\       14 \\       18 \\       14 \\       11 \\$	8 16 12 13 4 6 10 9 13		$ \begin{array}{c c} 4 \\ 2 \\ -1 \\ 1 \\ 1 \\ -1 \\ 2 \\ \end{array} $		1	1	36 36 36 36 36 36 36 36 36					

In Table XXXIX all the county boroughs have been grouped according to their geographical situation by latitude and the per-

		N.W.	NUL STREET	Notifie	ed Cases	per 100	),000 liv	ving.					Deatl	ns per 1	,000 No	tified C	ases.		
		1926.	1927.	1928.	1929.	1930.	1931.	1932.	1933.	1934.	1926.	1927.	1928.	1929.	1930.	1931.	1932.	1933.	1934.
- Cro Por Sou	ndon Admin. County oydon C.B rtsmouth C.B uthampton C.B est Ham C.B	407	133 271 122 310 150 302	155 275 223 360 194 342	159 268 194 317 214 265	184 303 169 255 232 282	126 195 90 151 122 120	108 188 48 97 119 105	118 225 91 77 161 182	170 281 181 136 419 291	59 40 103 70 58 19	52 32 39 65 39 42	52 33 66 61 58 32	55 30 53 33 68 48	47 34 39 27 69 40	53 31 (24) 35 60 31	54 38 96 (8) (9) 40	56 37 78 (46) (31) 105	59 40 57 86 28 61
Rer North I :— Nev Sur Rer	est Ham C.B	113 73 49 61	124 78 72 84 253	161 96 104 132 225	156 95 79 121 279	168 78 144 119 280	102 42 90 65 361	65 55 61 49 534	74 33 39 81 473	124 137 82 172 333	53 82 (88) 87 24	52 67 128 79 43	57 (30) (11) 62 31	59 48 (62) 63 44	47 (18) 49 56 54	50 (51) 65 63 82	51 (32) (44) 42 78	56 (96) (41) 51 60	59 61 78 69 60
North III :— Ren Bra Lee She	emainder of North II adford C.B eds C.B effield C.B mainder of North III	72 114 79 201	74 116 91 164 74	82 97 133 159 98	64 139 110 146 99	80 117 207 134 116	69 82 203 80 115	42 106 183 79 136	63 129 216 189 150	151 288 455 272 234	88 58 69 52 84	58 103 64 38 73	42 68 33 40 65	75 122 47 45 68	62 55 54 29 71	69 (36) 88 (14) 90	83 45 54 (15) 75	96 39 83 20 78	109 52 70 30 79
North IV :— Bir Bol Liv Ma Sal	rkenhead C.B.             olton C.B.             verpool C.B.             anchester C.B.             lford C.B.	87 66 175 153 215	105 79 191 175 204 97	90 61 218 158 173 99	67 40 267 120 288 113	167 45 462 137 317 124	152 25 375 95 257 98	$     172 \\     24 \\     384 \\     140 \\     329 \\     91   $	$241 \\ 60 \\ 340 \\ 134 \\ 350 \\ 96$	472 54 338 169 414 155	(51) 121 72 88 38 75	$ \begin{array}{c c} (48) \\ 71 \\ 52 \\ 69 \\ 46 \\ 63 \\ \end{array} $	$(42) \\ 153 \\ 52 \\ 79 \\ 24 \\ 68$	$(29) \\ (110) \\ 58 \\ 63 \\ 56 \\ 67$	$ \begin{array}{c} 103 \\ (37) \\ 59 \\ 55 \\ 41 \\ 63 \end{array} $	102 (45) 59 82 53 68	39 (71) 56 76 30 77	41 (56) 60 85 30 69	38 116 61 65 30 74
Midland I :— Bir Bri Cov Sto Rei	emainder of North IVrmingham C.B.istol C.B.ventry C.B.oke-on-Trent C.B.emainder of Midland I	247 186 74 93 100	211 169 144 83 95	218 153 162 111 112	238 289 265 97 126	235 369 293 91 148	178 207 114 75 101	$     \begin{array}{r}       117 \\       134 \\       64 \\       59 \\       64     \end{array} $	83 157 81 85 61	156 182 108 104 116	50 62 (53) 90 80	31 49 113 48 78	33 28 168 (19) 71	36 57 88 40 61	37 27 85 39 49	35 37 57 81 57	30 41 (27) (31) 62	38 34 74 (30) 55 38	53 23 65 (21) 63 43
East	emainder of Midland II	238 95 53	127 355 94 61	188 346 115 133	104 259 116 126	83 255 155 107	47 99 80 86	32 51 59 78	140 56 58 69	192 76 72 66	106 108 67 52	35 66 70 65	41 47 65 51	51 83 74 64	(30) 50 50 59 27	(53) (15) 58 67	(92) (66) 65 64	(38) 54 65 53	(28) 56 72 45
Wales I : Car Swi	mainder of South West rdiff C.B vansea C.B	47 108 151	197 46 179 122	217 81 248 239	264 113 328 266	318 159 321 290	191 82 264 289 163	212 66 221 190 136	165 63 215 172 144	186 70 235 200 215	116 49 66 57 66	62 63 37 70 64	76 59 28 41 70	48 69 41 39 71	37 56 40 23 52	46 51 41 23 57	45 52 20 (29) 62	53 61 40 (32) 72	$ \begin{array}{c} 45 \\ 55 \\ 40 \\ (24) \\ 82 \end{array} $
Wales II	emainder of Wales I	00	123 115	163 93	179 107	238 234	229	136	144	165	57	48	70	70	54	51	56	59	57

# Table XXXVIII.—Diphtheria prevalence and fatality rates in Certain Large Towns and Regions, 1926 to 1934.

Note.—In London, notifications are transferred to the area of residence, but this is not the case in other towns. Note.—Rates in parentheses are founded upon less than 10 deaths.

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centage of their populations living at densities exceeding 2 per room in 1931, and the diphtheria mortality at ages under 15 during 1929–33 has been calculated for each group. Mortality bears no

Table XXXIX.—Mortality from Diphtheria under 15 years of age, 1929-33, in the County Boroughs distributed according to Latitude and Rate of Overcrowding, per cent. of that in all County Boroughs.

Per cent. at density	Degrees of North Latitude.										
exceeding 2 per room.	50°-	51°-	52°-	53°	54°						
0- 3-	76	47	75	95							
3-	77	86	102	82							
6-		161	66	124	30						
9-	121	103	29	143	67						
18 and up				and the second second	39						
All densities	86	101	77	124	46						

consistent relation to the latitude in which the town is situated, the most remarkable feature being the low mortality in the group of 10 most northerly towns, despite their unfavourable rates of overcrowding. The Lancashire and Yorkshire towns, which comprise most of the group in latitude zone  $53-54^{\circ}$ , exhibit a rise of mortality with increasing overcrowding index, and this is also evident for the Southern towns, but not for the Midland zone ( $52-53^{\circ}$ ).

Table 10 shows that the counties, with over 100,000 population, with highest mortality in 1933 were Denbighshire (134 per million), also highest in 1930, 1931 and 1932, Flintshire (132) and Mon-

Table XL.—Influenza	Mortality per	million P	opulation	during	the
first 3 and 1	ast 9 months	of each Yea	ar, 1921–33		

			January–March.	April-December.
1921	 ·	 	356	198
1922	 	 	1,854	133
1923	 	 	240	214
1924	 	 	1,322	213
1925	 	 	783	175
1926	 	 1	298	206
1927	 	 	1,827	147
1928		 20.00	332	152
1929	 	 	2,450	173
1930	 	 	225	94
1931	 	 	958	165
1932	 	 	926	131
1933			1,995	100

mouthshire (117). The highest rates among county boroughs (average 88) were those for Huddersfield (430), Dewsbury (336) and Wakefield (316).

11. Influenza.—The deaths assigned to this cause numbered 22,890, 10,926 of males and 11,964 of females. The resultant crude mortality rate of 567 per million is reduced on standardization, by allowance for the increased age of the population, to 432 (Table 9), 463 for males and 401 for females (Table 8). Since the pandemic of 1918–19 this standardized rate has been exceeded in 3 out of the 13 years.

Mortality in the March quarter of 1933 was exceptionally high, the crude rate, as shown in Table XL, having been exceeded since 1919 only in 1929, and the standardized rate (Diagram 3) only in 1922, 1927 and 1929. As Table XL indicates, mortality in the latter nine months of the year has been subject to much slighter annual fluctuation than that in the first quarter.

The distribution of influenza mortality throughout the country is indicated in Table XLI.

Table XLI.—Influenza	; Mortality.	. Encephalitis	Lethargica an	d
Cerebro-spinal Fever ;	Mortality, 1	Prevalence and	Fatality, 1933.	

engelikke generen en 26 juni 17 de se	In- fluenza.		ncephalit ethargic:		Cer	ebro-spin Fever.	nal
	Deaths per Million Living.	Deaths per Million Living.	Cases per Million Living.	Deaths per 100 Cases Notified	Deaths per Million Living.	Cases per Million Living.	Deaths per 100 Cases Notified
England and Wales	567	20	11†	189	23	42†	56
South-East Greater London Remainder of South-	491 465	14 12	8 7	177 182	17 20	31 36	55 55
East North	533 610	$16 \cdot 27$	9 12	172 227	13 36	23 68	54 53
North I ,, II	477 626	27 · 21	9 17	305 123	58 25	99 46	59 54
,, III ,, IV Midland	608 657 569	19 32 20	5 16 10	388 206 195	$\begin{array}{c c} 48\\24\\22\end{array}$	$     \begin{array}{ }       107 \\       40 \\       37     \end{array} $	45 59 59
Midland I	582 544	21 19	13 5	160 354	19 28	26 57	71 49
East	665 592	33 16	19 15	171 110	11 10	17 16	66 61
Wales Wales I ,, II	661 662 657	16 15 16	$\begin{array}{c c} 12\\11\\16\end{array}$	129 145 100	15 14 17	18 20 10	87 71 171
County boroughs*	585	23 22	13	178	31 21	56	55 55
Other urban districts* Rural districts* Greater ∫ Admin. Co.	595 607 520	$\begin{array}{c c} 22\\ 22\\ 12 \end{array}$	$  11 \\ 11 \\ 5 $	203 196 230	18 27	38	58 51
London ( Outer Ring	406	12	8	148	13	19	67

\* Excluding Greater London.

† Including Port Sanitary Districts.

The highest regional rate is that for the East, followed by Wales and North IV, while the lowest rates are those recorded for Greater London and North I. Mortality generally was highest in the rural districts, decreasing slightly with urbanisation though the rate in London Administrative County was higher than in the Outer Ring.

In these respects the mortality from influenza contrasts with the incidence of the infantile epidemic diseases which follow an almost constant rule of increase with urbanisation. In 17 of the 23 years, 1911-33, for which comparison is possible, the highest mortality from influenza has been recorded in the rural districts.

The relation between influenza mortality of adults in mid-life and average density of persons per room in different classes of area is analysed in Table XLII, where the rates at ages 25-45 and 45-65 during the quinquennium 1929-33 have been calculated for aggregates of areas grouped according to these factors. London mortality attributed to influenza tends to be no greater in the Metropolitan Boroughs with high densities per room than in those with more satisfactory housing indices, but the county boroughs manifest a very definite increase in death-rate with increasing average density per room. It must be remembered that, as pointed out in the Reviews for 1931 and 1932, this grouping of the county boroughs

Table XLII.—Mortality from Influenza 1929-33 at ages 25-45 and 45-65 of Males and Females in different Classes of Area, when County Aggregates, County Boroughs and Metropolitan Boroughs are grouped according to the Mean Density of Persons per room in 1931.

				Mea	n pers	ons pe	r room	• ***				Mea	n pers	ons pe	r room		
Sex and Age.	Area.	· 55-	- 70-	· 85–	1.00-	1 · 15-	1.30-	1 · 45–	All den- sities	· 55–	·70-	·85-	1.00-	1 · 15–	1.30-	1 · 45-	All den- sities
		Rates per 100,000 living. Mortality per cent. of that in England and Wales.															
Males	London County Boroughs Other Urban Dis-	$\left  \frac{1}{20} \right $	14 22	18 26	19 31	19 35	18	21	17 25	87	61 96	78 113	83 135	83 152	78	91	74 109
25-45	tricts          Rural Districts          All Areas	21 15 18	22 22 22	27 22 25	$\frac{22}{25}$	$\frac{1}{28}$		$\frac{-}{21}$	23 21 23	91 65 78	96 96 96	117 96 109	96 109	122 117		<u>-</u> 91	100 91 100
Females	London County Boroughs Other Urban Dis-	13	14 17	13 18	14 22	12 27	<u>12</u>	<u>10</u>	13 18	76	82 100	76 106	82 129	71 159	71	59	76 106
25-45	tricts          Rural Districts          All Areas	14 17 15	17 18 17	22 20 18	$\frac{17}{18}$	$\overline{\frac{20}{20}}$	$\frac{-}{12}$	$\frac{-}{10}$	17 18 17	82 100 88	100 106 100	129 118 106	100 106	118 118	$\frac{-}{71}$		100 106 100
Males	London County Boroughs Other Urban Dis-	61	61 72	60 74	73 87	66 74	<u>69</u> —	48	64 74	91	91 107	90 110	109 130	99 110	103	72	96 110
45-65	tricts Rural Districts All Areas	54 57 57	65 59 65	78 61 73	57 75	- <del>53</del> 64		<u></u> 48	66 58 67	<b>8</b> 1 85 85	97 88 97	116 91 109	$\frac{85}{112}$	79 96	 103		99 87 100
Females	London County Boroughs Other Urban Dis-	41	49 50	46 57	42 62	47 53	48 —	<u>65</u>	47 54	84	100 102	94 116	86 127	96 108	<u>98</u>	133	96 110
45-65	Rural Districts All Areas	43 45 43	45 46 47	60 43 55	$\frac{47}{52}$	$\frac{1}{50}$	$\frac{-}{48}$		47 46 49	88 92 88	92 94 96	122 88 112	96 106	102 102		133	96 94 100

according to density is closely correlated with northerliness of situation. The group with densities .85-.99 persons per room consists in the main of the Lancashire and Yorkshire industrial towns, and the most densely housed group consists entirely of Tyneside towns. The factors unfavourable to respiratory diseases which accompany industrialisation, such as smoke, fog and reduced effective solar radiation, are therefore involved, as well as the greater crowding and lower average winter temperature. The combined effect of these on influenza mortality is evidently greater at ages 25-45 than at 45-65.

In the small towns, apart from the higher rates in the  $\cdot 85 - \cdot 99$ per room zone, there is little evidence of association with housing density, whilst in the rural districts there is an increase in mortality with density at ages 25-45 for each sex, but little or no evidence of this at 45-65.

The proportion of deaths from influenza with stated respiratory complications (mostly pneumonia) was higher in 1933 than in any vear since 1918-19 with the exception of 1929, in spite of the fact that the standardized mortalities assigned to bronchitis and pneumonia (without mention of influenza) were exceptionally low in 1933. The "sympathetic" increase during influenza epidemics of mortality attributed to respiratory and cardiac disease and other causes, without mention of influenza, is dealt with in a special section of this Review. (See pp. 94, 139, 140 and Diagrams 3 and 7). Table XLIII affords the means of comparing the varying proportions of deaths with respiratory complications in the several classes of area. It will be seen that the proportion is lowest in the rural areas and increases with urbanisation to a maximum in London.

and the			England and Wales.	London.	County Boroughs.	Other Urban Districts.	Rural Districts
Oct. 191	8-Mar.	1919	80	85	81	79	78
1926	· · · ·		61	70	67	58	55
1927			69	79	73	69	64
1928	42.		64	71	68	62	58
1929			75	84	78	73	68
1930	1,01,0	0000	63	73	67	60	57
1931	9.008	UB. C	69	76	74	67	64
1932	1		68	77	70	67	63
1933	1. 1.1.1		74	81	78	72	68

#### Table XLIII.-Deaths from Influenza with stated Respiratory Complications (11a) per cent. of all Deaths from Influenza (11).

When influenza is jointly stated as a cause of death with certain other epidemic diseases, cancer, puerperal sepsis, acute abdominal crises, violent causes, and in most circumstances with tuberculosis,

venereal and post-venereal diseases, rheumatic fever and a few other causes, the death is classified as a rule to the cause other than influenza. That is to say influenza when associated with any of these causes is regarded for statistical purposes as having merely hastened or contributed to the fatal termination. Table XLIV gives the numbers of deaths assigned to the principal causes thus taking precedence over influenza in classification which were certified during 1929–33 with statement of influenza as an associated cause, and the per mille ratios of these numbers to all deaths classed to the causes in question. In 1933 there were 637 such deaths additional to the 12,890 deaths classed to influenza itself, that is, an addition of about 5 per cent., the corresponding additions in 1929 being 3 per cent. and in 1930–32 2 per cent.

#### Table XLIV.—Number and proportion of Deaths from certain causes with mention of Influenza as Associated Cause. 1929-33.

.ist. No.				aths with ciated influ	Per 1,000 deaths classed to the cause in question.				
	a human transmis	1929.	1930.	1931.	1932.	1933.	1929.	1930-32.	1933.
7	Measles	15	ha - n	7	2	3	4	1 1	2
8	Scarlet fever	5		2	2	9	7	22	12
9	Whooping cough	70	1	8	3	26	11	2	11
10	Diphtheria	8	the second	6	2	6	2	1	2
16	Acute poliomyelitis and		C.C.C.C.C.C.C.C.	Contraction of the second				1200 Carl	
17	polioencephalitis	3	-	2	1	1	21	7	5
34	Encephalitis lethargica	19 7	6	18	24	24	18	18	29
80	Syphilis (acquired)	12	2	65	-7	3	5	2	2
	General paralysis of in-	12	- Marine I	5	1	6	14	6	8
	sane	10	1	5	8	9	8		
23	Tuberculosis of Respira-	10	1	0	•	9	0	4	9
	tory System	372	53	192	117	365	12	4	13
-32	Other forms of tubercu-	012	00	152	117	303	14	4	15
10.00	losis	- 27	7	19	9	12	4	2	2
-53	Cancer	151	17	83	64	121	3	Ĩ	2
	Premature birth	12	4	9	9	11	1	i	1
40	Puerperal or post abor-	1. S. S. S. S.	(10) 9, 15 (m)	A REF 1	NOISE 71	Mar Co. L	LA BOARD	A STATE AND A STATE OF	1 Carlo Para
145	tive sepsis	5			5	8	4	2	8
	Suicide	12	3	5	4	5	2	1	1
71		Contraction of the		ALCONT ON T				Self-series and	
76-	Accidental causes	6	3	6	4	4	0	0	0
94	The product of the pr			a tisk he h		Ballet and			
	classed to causes other	and the second second	No. No.	Service Carlos		A ALEENSA		Contraction of the	
than	influenza	770	105	391	277	637		Mains 1	
ale	assed to influenza	20.094	5.010	14 400	10.150	10.000			Carlo and a
J. CI2	assed to influenza	29,084	5,019	14,409	13,156	12,890	The second second	and the second second	

The causes showing the greatest tendency to have influenza mentioned as an associated cause (the frequency of such mention exceeding 1 per cent.) were in 1929 acute poliomyelitis, encephalitis lethargica, tabes dorsalis, phthisis and whooping cough, in 1930–32 encephalitis lethargica, and in 1933 encephalitis lethargica, phthisis, scarlet fever, and whooping cough. Since the great bulk of the influenza prevalence in epidemic years is concentrated in the 3 months of the epidemic, the ratios *during the epidemic* would be several times the rates given in the table; thus in March quarters of 1929 and 1933 when influenza was epidemic, 5 and 7 per cent. respectively of the deaths certified as due solely or partially to 61

encephalitis lethargica had mention of influenza as an associated cause. On the other hand less than 1 per cent. of cancer deaths occurring during the epidemics of 1929 and 1933 had mention of influenza as associated cause, and in the statistics of the complete years the transfer of all such deaths from the cancer to the influenza heading would only reduce the cancer rate by about 1 in 500.

Tuberculosis deaths during 1929 and 1933 included 10 and 11 per 1,000 respectively with mention of associated influenza, but if the inquiry is confined to the March quarters, which were the epidemic periods of those years, the proportions were 24 and 31 per 1,000 respectively. In the 1918–19 pandemic the proportion during the December quarter of 1918 was 126 per 1,000. The effect of influenza in hastening death of persons suffering from phthisis is reflected during epidemics not only in these deaths with joint statement of cause but also in an increase above expectation of phthisis deaths without mention of influenza (see p. 140).

15. Erysipelas.—Deaths attributed to erysipelas numbered 1,191, 624 of males and 567 of females, corresponding to standardized death-rates of 30 for males and 25 per million for females. These rates attained their lowest level in 1923, 15 and 14 respectively, but in recent years mortality has increased (Table 8). It may be noted that a similar course has been followed by the standardized rates for carbuncle and boil (No. 151), which were higher in 1933 than in any of the preceding 15 years, having increased since 1924. The rates for diseases of the ear and mastoid, fatal cases of which are almost entirely infective, have also risen from 35 for males and 26 for females in 1924 to 50 and 38 respectively in 1933.

At ages under 5 the erysipelas death-rate per 100,000 living was 9 in 1896–1900, 8 in 1901–5, 6 in 1906–10, 4 in 1915–20, and 3 in 1923, but has risen again to 10 in 1933. In infants under 1 year the rate per 100,000 births fell from 33 in 1896–1900 to 11 in 1923, and has risen to 26 in 1932 and 40 in 1933. At ages 5–25 there has been no increase since 1923, the rates being only 4 per million, whilst at ages over 25 standardized mortality has increased from 22 to 34 per million for males and from 18 to 25 for females.

The notification rate, which rose from 32 per 100,000 in 1923 to 45 in 1929 and 1930 and then declined, again reached 45 in 1933 (Table 26). In London this rate reached 65, the highest since 1919.

16. Acute Poliomyelitis.—The increase in mortality and prevalence of this disease noticed in 1932 continued in 1933. Deaths, including those from acute polioencephalitis, numbered 202, compared with 178 in the preceding year. The standardized death-rate of 8 for males equalled the peak level reached in 1926, but for females the rate remained at 5 per million. The cases notified, numbering 714 of poliomyelitis and 83 of polioencephalitis,

were in excess of those in the five preceding years (Table 28). The seasonal distribution of these cases conformed to the usual type, prevalence being highest from August to October (Table 27).

17. Encephalitis Lethargica.—Deaths attributed to this disease numbered 815, 428 of males and 387 of females, yielding standardized death-rates of 19 per million for males and 16 for females. These are the lowest rates since 1923 (Table 8). The 432 notifications (Table 28) show a decline for the ninth year in succession, and are considerably less than deaths, yielding a fatality ratio of 1,887 deaths per 1,000 notifications, compared with 1463 in 1932. This ratio was 279 in 1924, and then rose in each successive year to 1,471 in 1931.

Table XLI shows that mortality was highest in the East and North IV, whereas in London mortality and more especially prevalence were, as usual, below the general average.

18. Cerebro-spinal Fever (Meningococcal Meningitis).—Deaths from this cause numbered 942. Of these 530 were of males and 412 of females, corresponding to standardized rates of  $35 \cdot 2$  and  $27 \cdot 3$  per million. These rates show a further decline from the high rates reached in 1931, the fall continuing at each age distinguished in Table XLV. At ages under 5 the rates were still in excess of those attained in the 1915–17 epidemic by 17 per cent. for males and 41 per cent. for females.

Table XLV.—Cerebro-spinal Fever, 1911–33: Mortality at Various Ages per Million Living and per cent. of that in 1915–17.

			THE W	a dial	Males.		10a (375	13 65	F	emales.		A 02
Y	ear.		All Ages.•	0-5	5-15	15-25	25 and up*	All Ages*	0–5	5–15	15-25	25 and up
reason to	a series	da e	India	ez).	REP.	N	Iortality	rate per	million.	Part	igel -	1.9(23)
1915–17† 1931 1932 1933			$ \begin{array}{c c} 69 \cdot 8 \\ 54 \cdot 7 \\ 46 \cdot 4 \\ 35 \cdot 2 \end{array} $	148·2 218·7 209·6 172·9	45·3 51·2 36·0 26·7	135·3 54·1 42·6 28·5	35·2 17·5 13·6 8·8	$31 \cdot 6$ $37 \cdot 2$ $31 \cdot 8$ $27 \cdot 3$	$\begin{array}{c c} 122 \cdot 7 \\ 172 \cdot 6 \\ 153 \cdot 0 \\ 139 \cdot 5 \end{array}$	$   \begin{array}{r}     36 \cdot 5 \\     45 \cdot 8 \\     31 \cdot 5 \\     27 \cdot 6   \end{array} $	$\begin{array}{c c} 24 \cdot 8 \\ 17 \cdot 4 \\ 16 \cdot 3 \\ 12 \cdot 9 \end{array}$	10.5 9.3 9.4 6.4
					М	ortality	rate per o	cent. of t	hat in 19	15 · 17.†		
1911-14† 1915-17† 1918 1920 1921 1922 1923 1924 1925 1926 1927 1928 1929 1929 1930 1931 1932	······································		$\left \begin{array}{c} 17\\ 100\\ 55\\ 39\\ 27\\ 21\\ 18\\ 13\\ 15\\ 18\\ 24\\ 23\\ 33\\ 34\\ 78\\ 66\\ 66\\ 50\\ \end{array}\right $	43 100 57 64 60 52 44 31 34 450 63 60 83 76 148 141 117	26 100 54 49 47 28 25 19 21 29 27 30 28 38 52 113 79 59	$\left \begin{array}{c} 4\\ 100\\ 59\\ 28\\ 10\\ 5\\ 7\\ 3\\ 6\\ 6\\ 6\\ 6\\ 6\\ 14\\ 13\\ 40\\ 31\\ 21\\ \end{array}\right $	$\begin{bmatrix} 5\\100\\48\\24\\9\\11\\5\\6\\6\\4\\5\\8\\10\\0\\11\\15\\50\\39\\25\\\end{bmatrix}$	$\begin{array}{c} 31 \\ 100 \\ 55 \\ 51 \\ 46 \\ 32 \\ 27 \\ 24 \\ 29 \\ 30 \\ 34 \\ 39 \\ 50 \\ 58 \\ 118 \\ 101 \\ 86 \end{array}$	$\left \begin{array}{c} 45\\ 100\\ 56\\ 56\\ 56\\ 50\\ 49\\ 32\\ 31\\ 39\\ 45\\ 44\\ 54\\ 45\\ 44\\ 54\\ 125\\ 114\\ 125\\ 114\\ \end{array}\right.$	$\begin{array}{c c} 24 \\ 100 \\ 63 \\ 52 \\ 39 \\ 28 \\ 23 \\ 27 \\ 21 \\ 26 \\ 14 \\ 30 \\ 45 \\ 46 \\ 125 \\ 86 \\ 76 \end{array}$	$\left \begin{array}{c} 16\\ 100\\ 49\\ 46\\ 51\\ 28\\ 20\\ 29\\ 19\\ 24\\ 19\\ 27\\ 27\\ 27\\ 25\\ 70\\ 6\\ 52\\ \end{array}\right $	$\left \begin{array}{c} 14\\ 100\\ 46\\ 39\\ 225\\ 21\\ 9\\ 11\\ 15\\ 14\\ 19\\ 18\\ 222\\ 18\\ 27\\ 89\\ 90\\ 61\\ \end{array}\right $

\* Standardized. † The rates used for 1911-14 and 1915-17 are mean annual rates for those years.

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Notifications in 1933 numbered 1,695 (Table 28), this having been exceeded only in 1915, 1917, 1931 and 1932. The numbers in the preceding 5 years were 413, 667, 674, 2,216, 2136. The fatality ratio, 56 per 100 cases, is similar to that in 1932 (57) but is below that in recent years, the ratios in the 5 years preceding 1932 being 91, 106, 88, 94 and 65. In times of high prevalence, when attention is directed to the disease, notification statistics probably furnish a more complete record of the total number of persons attacked than at other times.

Prevalence was greatest from mid-January to the middle of March (Table 27), mortality being highest in February (Table 23).

The mortality distribution manifested, as in 1932, a higher rate in the towns than the rural districts, and in London than in the Outer Ring. TableXLI also shows that, as in the two preceding years, both mortality and prevalence increased in general from South to North, mortality being highest in North I, followed by North III and Midland II as in 1932, and lowest in the South-West and East. The fatality ratio of deaths to notified cases was in general lowest in the regions with greatest prevalence, and highest where the disease was least prevalent, which again suggests that notification is more complete during local epidemics.

Table XLVI indicates that during the quinquennium 1929–33 cerebro-spinal fever mortality amongst children under 15 years of age was greatest in the large towns north of latitude  $53^{\circ}$ , which corresponds roughly with the North region. When the towns of the northern zones are grouped according to their average density of persons per room, mortality increases with density of housing, and a similar association is evident for the southern towns, but not in the midland zone.

Table XLVI.—Mortality from Cerebro-spinal Fever under 15 years of age, 1929-33, in the County Boroughs distributed according to Latitude and Rate of Overcrowding, per cent. of that in all County Boroughs.

Per cent. at density	Degrees of North Latitude.								
exceeding 2 per room.	50°–	51°	52°-	53°–	54°-				
0- 3-	17	46	67	39					
3–	86	68	73	64					
6–	x	64	66	119	57				
9-	80	131	12	122	72				
18 and up		1		1	237				
All densities	77	76	65	109	181				

23–32. **Tuberculosis.**—The deaths assigned to tuberculous affections in the aggregate numbered 33,259—18,734 of males and 14,525 of females—399 less than those so classified in the previous year.

The standardized death-rate resulting from these figures, 799 per million persons (males 901, females 707), is the lowest yet recorded (Table 9), being 16 per million below the previous lowest rate in 1932, the male rate being 12 per million lower and the female rate 20 per million lower than in that year.

The improvement on the preceding year was limited, as Table XLVII shows, to ages under 25 and over 65 for males, and under 10,

Table XLVII.—Mortality from Tuberculosis (All Forms) per Million Population, 1912–14, 1931, 1932 and 1933.

		Ma	les.			Females.				Persons.			
	1912-14	1931	1932	1933	1912-14	1931	1932	1933	1912-14	1931	1932	1933	
All Ages { Crude Stand- ardized	1,571 1,542	1,041 976	972 913	968 901	1,169 1,174	762 772	713 727	692 707	1,364 1,349	896 869	837 815	824 799	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 2,081\\ 572\\ 447\\ 939\\ 1,501\\ 1,816\\ 2,189\\ 2,384\\ 2,213\\ 1,378\\ 586\end{array}$	824 276 216 790 1,230 1,206 1,439 1,636 1,367 857 360	833 239 216 727 1,203 1,116 1,273 1,496 1,310 825 354	701 236 188 675 1,189 1,150 1,308 1,529 1,320 794 331	$\begin{array}{c} 1,717\\ 580\\ 687\\ 1,226\\ 1,381\\ 1,403\\ 1,374\\ 1,185\\ 967\\ 752\\ 440\\ \end{array}$	$\begin{array}{r} 678\\ 250\\ 327\\ 1,145\\ 1,353\\ 1,129\\ 824\\ 620\\ 527\\ 440\\ 288\end{array}$	666 247 278 1,075 1,343 1,034 752 574 503 402 281	$\begin{array}{r} 584\\ 211\\ 288\\ 1,020\\ 1,313\\ 1,065\\ 764\\ 539\\ 457\\ 397\\ 221\\ \end{array}$	1,900 576 568 1,084 1,439 1,599 1,767 1,762 1,553 1,031 498	752 263 271 968 1,293 1,166 1,106 1,093 924 626 316	750 243 247 901 1,275 1,074 991 1,002 884 591 309	643 224 237 847 1,252 1,107 1,014 997 863 575 263	

Table XLVIII.—Mortality from Tuberculosis in 1933, per cent. of that in 1912–14 and 1922–24.

Ma	The Real Constraints					
	les. Females	. Persons.	Males.	Females.	Persons.	
	52 59	60	79	73	76	
Ages Stand- ardized.	60	59	76	74	75	
	34 34	34	59	60	60	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	1 36	39	63	54	59	
10 4	2 42	42	56	54	55	
15 7	2 83	78	79	80	79	
	9 95	87	76	86	81	
	3 76	69	75	83	79	
	50 56	57	75	74	75	
	64 45	57	88	67	80	
	50 47	56	88	67	80	
	58 53	56	77	68	73	
75 and up 5	6 50	53	82	63	71	

15-25 and over 45 for females; it was most pronounced at ages under 5, at which ages the fall in mortality had been arrested since 1930.

Comparison with the latter year, a very favourable one when influenza was not epidemic, reveals a decline at every sex and age group except amongst males aged 20–25.

In Table XLVIII the mortality of the year under review is compared at each age with the rates of 20 years earlier, in 1912–14, and of 10 years earlier, in 1922–24. The rates of fall in mortality, expressed in each instance as percentages of the rate at the beginning of the period, (a) from 1912–14 to 1922–24 and (b) from 1922–24 to 1933, are compared below.

Ages.	Ma	les.	Fem	ales.
	(a) .	(b)	(a)	(b)
0	-43	-41	-43	-40
5	-35	-37	-32	-46
10	-25	-44	-23	-46
15—	- 9	-21	+ 5	-20
20	+ 4	-24	+10	-14
25—	-15	-25	- 9	-17
35—	-21	-25	-25	-26
45—	-27	-12	-32	-33
55—	-32	-12	-29	-33
65—	-25	-23	-22	-32
75 and up	-31	-18	-20	-37

For children under 10 the relative fall was about the same in each decade, whilst at 10–35 the relative decline has been much greater during the last decade than in the preceding one. Males aged 20–25 and females aged 15–25 registered an increase in the first period followed by a greater fall since 1922–24, and at 25–35 for both sexes and at advanced ages for females the rate of decline as thus measured has been enhanced in the second decade. For males at ages over 45, however, the rate of improvement registered in the first decade has not been maintained.

It was pointed out in the Review for 1932 that the tuberculosis death rate of young adult females had not declined since 1914 to any satisfactory extent, the rate at ages 20–25 for 1930–32 being about 2 per cent. below the level of 1912–14. The 1933 rate shows a slight fall to 5 per cent. below that level or 14 per cent. below the 1922–4 level.

Mortality from respiratory tuberculosis of females aged 25–35 was found (Table XLII of 1932 Review) to have declined since 1911 in the large towns and administrative counties having low densities of population measured by the average number of persons per room in 1931, but not in those having densities exceeding .85 persons per room. Males aged 15–25 also registered an increase in mortality in the group of districts with highest rates of crowding.

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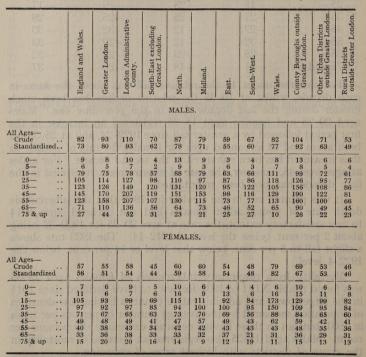
C

Grouping together areas with over 1 per room average density, phthisis mortality of females aged 15–25 increased from 1911 to 1930–32 by 25 per cent. in the county boroughs and 21 per cent. in the counties, whilst in London with a mean density about 1 per room it increased by 16 per cent. At densities of  $\cdot$ 85–1 per room the towns showed no change and the counties an increase of 15 per cent. but at densities below  $\cdot$ 85 per room both showed improvement of the order of 20 per cent. On the other hand, at ages 25–45 the fall in mortality was not confined to the better housed areas, but occurred almost irrespective of density.

The 27,854 deaths from respiratory tubercle form 84 per cent. of the total allocated to tuberculosis, and  $5\cdot 6$  per cent. of those from all causes.

The distribution of this mortality by regions and by class of area as well as by sex and age is shown in Table XLIX.

# Table XLIX.—Tuberculosis of Respiratory System : Mortality per 100,000 Living at different Ages in different Areas, 1933.



The relation of phthisis mortality to urbanisation is manifested by the decline of the standardized rate for males from 92 per 100,000 in the county boroughs outside Greater London and 93 in London itself, to 49 in the rural districts. For females the effect of urbanisation is not so great, the rates being 67 in the county boroughs, 54 in London, and 46 in the rural districts.

The regional distribution indicates that for males the standardized rate is highest in Greater London, the North and Wales, whilst for females it is much higher in Wales than elsewhere, and below the general average in Greater London. For males this rate is lowest in the East and South West and for females in the South East outside Greater London. The Welsh rates are below the general average for children under 5, and for males over 35 and females over 65, but show a large excess at ages 15–25, amounting to 41 per cent. for males and 65 per cent. for females. The favourable position of the South East excluding Greater London is also most manifest at ages 15–25, the male rate being 28 per cent. and the female rate 34 per cent. below the general average. The ratios of male to female mortality at ages over 25 present considerable contrasts in the various regions, as shown below.

#### Male mortality per cent. of female.

Greater London South East (ex- cluding Greater London)	15– 81 83	25– 124 115	35– 188 190	45– 354 290	55– 416 315	65–75 306 170
North	77	117	179	321	310	194
	71	97	158	268	274	228
Midland East	68	87	138	200	170	124
South West	79	91	218	270	179	248
Wales	64	79	119	208	263	210

In each of the years 1931, 1932 and 1933, Greater London has given the highest ratio at 25–35 and 55–65, followed by the North or South East, whilst at 15–25 and 35–45 either Greater London or the South East have been highest, and at 45–55 and 65–75 either Greater London or the North. The lowest ratio has been evident in the East and Wales at 25–35 and 45–55, in Wales at 35–45 and in the East at 55–65.

Amongst counties of over 100,000 population the lowest rates were those of Derbyshire, 415, Wiltshire, 422, Buckinghamshire, 436; Norfolk, 438; Cheshire, 439 and Dorset, 442.

The highest county borough rates were those for South Shields, 1,376, Bootle, 1,308; Middlesbrough, 1,276; and Liverpool, 1,182. The Dewsbury rate, 466, was lowest.

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The standardized death rate from tuberculosis of the intestines and peritoneum declined further (Table 8) for males to a new low record of 27 per million, whilst for females the rate of 28 was slightly higher than the lowest rate of 1932 (27). The standardized rates for tuberculosis of the nervous system, which had shown no tendency to decline from 1928 to 1931, declined to low records of 75 for males and 71 for females.

The rapidity with which non-respiratory tuberculosis mortality in general continues to fall may be gathered from the fact that during the eleven years covered by Table 8 the standardized rate for each sex has fallen without interruption, from 264 to 172 for males, or by 35 per cent., and from 235 to 148 for females, or by 37 per cent., the percentage decline for the respiratory form of the disease in the same period being 19 for males and 21 for females. The proportion of nonrespiratory to total (standardized) mortality was 24 per cent. in 1923 and 20 in 1933.

When the county boroughs are grouped according to their latitude and the percentage of their populations living at densities exceeding 2 per room (Table L), the mortality rates from non-respiratory tuberculosis during 1929–33 at ages under 5, and at the school ages 5–15, are seen to be higher in the Northern zones than elsewhere, but to present no consistent correlation with the overcrowding index.

44 (1 and 2). Vaccinia and deaths following Vaccination.— Three deaths have been assigned to the heading of vaccinia in 1933, consisting of two male infants aged 3 and 4 months with vaccinia and a female aged 17 years with post-vaccinal encephalitis.

Table L.—Mortality from Tuberculosis, other than respiratory, under 15 years of age, 1929-33, in the County Boroughs distributed according to Latitude and Rate of Overcrowding, per cent. of that in all County Boroughs.

OIL HE	Per cent. at density	Degrees of North Latitude.							
Age.	exceeding 2 per room.	50°-	51°-		54°-				
1110 ET-182	0-	64	86	103	107	102_01			
toold're a	3-	99				199 mar			
Under 5 years	6-	70-71		85	103	79			
	9-	82	98	72	107	148			
	18 and up			1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-		149			
	All densities	91	80	84	105	145			
TESTER ST	0-	65	59	117	57	1000 - 50 B			
	0-3-	91	85	81	91	AN ANT A			
	6-	The state of the	100	64	99	156			
5-15	9-	80	72	52	105	149			
	18 and up	1100		and and a second second		204			
	All densities	86	84	76	99	186			

Two deaths have been classed to the group "other sequelæ of vaccination" (44:2), a male aged 4 months with broncho-pneumonia\* and a female aged 6 months with septicæmia, both following vaccination. The death of a male infant aged 2 months from meningitis occurring 3 weeks after vaccination had been performed but without evidence of causal association, was assigned to meningitis as cause. In each of the above deaths vaccination was mentioned on the certificate. The death, stated to be due to pulmonary œdema and acute encephalitis, of a female aged 54 who was found on inquiry to have also suffered from a post-vaccinal encephalitis many years before, was classed to No. 78(b).

45-53. **Cancer.**—The deaths ascribed to cancer during 1933 numbered 61,572—28,837 of males and 32,735 of females. For both sexes these numbers are the highest yet recorded.

Of these deaths 53,458 were referred to carcinoma, 2,741 to sarcoma, and 5,373 to "cancer" not otherwise defined. These are the largest numbers yet recorded for total cancer and for carcinoma, but not for sarcoma, which of late years has accounted for a somewhat smaller proportion, now 45 per 1,000, of the total cancer deaths than heretofore.

The standardized death-rate for males in 1933 amounts to 1,035 per million, and that for females to 973. In 1928 the increase in female mortality was arrested and the rate decreased each year to 966 in 1932, but again shows a slight rise in 1933. Table XLI, $\dagger$  in the 1927 volume, shows that the standardized rate for males first exceeded that for females in 1924, and since that date the excess has been maintained, increasing to 86 per million in 1932. In 1933 the male rate was below the high record of the preceding year, the rate for each sex being almost identical with that of 1931. The crude death-rate is seen from Table 7 to be still in excess for females to the extent of 69 per million living in 1933, compared with 123 ten years earlier, this being due to the greater age of the female population.

For sarcoma the crude rate is 68 per million as against 71, 71, 68, 66 and 69 in the five previous years. When standardized there is a considerable male excess, the rate being 63.0 for males and 45.2 for females in 1933.

The mortality from cancer as a whole is compared by sex and age in Table LI for England and Wales, with record of the degree of difference in sex mortality at the various ages.

At ages from 15 years up to 55 the female exceeds the male rate but from 55 years to the end of life the male rates are in excess, the maximum divergence occurring at 65–75 years. This female excess in middle age, greatest at 35–45, is associated with, and largely explained by, the special frequency at this age of cancer

 \* In Tables 6, 21, 22, 23 of Part I this death (occurring in March) was included with the vaccinia deaths (44:1) but should be transferred to No. 44:2.
 † This table gives standardized death-rates from Cancer by Sex for each year 1851–1927.

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of the uterus and of the female breast, which together account for a larger proportion of the total deaths of women from cancer at each age between 25 and 65 than at all ages jointly (see "Text" Volume of the Review for 1929, page 57).

Table LI.-Mortality from Cancer (All Sites), 1933.

ent no bonoties	Morta	ality per M	lillion.		Sex Ratio	noso, m
tionand en inquiry	Males.	Females.	Persons.	Males.	Females.	Persons.
$\begin{array}{c} \text{All } \left\{ \begin{array}{c} \text{Crude} & \dots \\ \text{Ages} \left\{ \begin{array}{c} \text{Standardized} \end{array} \right. \end{array} \right. \end{array}$	1,490 1,035	1,559 973	1,526 997	976 1,038	1,022 976	1,000 1,000
0—	36 23	33 19	35 21	1,029 1,095	943 905	1,000 1,000
$15- \cdots 25- \cdots$	41 115	44 151	43 134	953 858	1,023 1,127	1,000 1,000
$35 - \dots + 145 - \dots + 155$	452 1,646	731 2,063	603 1,870 4,359	$750 \\ 880 \\ 1.056$	1,212 1,103 950	1,000 1,000 1.000
$55 - \dots $ $65 - \dots $ $75 - \dots $	4,604 9,863 14,427	4,141 7,623 11,668	4,359 8,626 12,738	1,143 1,133	884 916	1,000 1,000 1,000

The percentage share of the breast and uterus in the total cancer mortality of females, in 1933, was :---

All ages	0-	25-	35-	45-	55-	65-	75-	85-	
33.2	4.7	$34 \cdot 4$	50.1	$48 \cdot 1$	36.5	$24 \cdot 6$	$23 \cdot 3$	$24 \cdot 3$	

The mortality attributed to sarcoma, carcinoma and cancer undefined is distinguished in Table LII, other details of the deaths being shown in Tables LIV and LV. The rates for cancer undefined are lower than the average of the five preceding years at every age over 25 except for males aged 35–45, indicating increased precision in the statement of the type of cancer. Sarcoma rates are lower than in 1928–32 at ages 15–75 for males, and at 45 and over for females. Carcinoma rates show an increase at all ages over 25 for males, but for females there is a decline at 25–45.

Table LII also shows the trend of cancer mortality by sex and age since 1901-10.

The crude death-rate at all ages for males in 1933 is 93 per cent. and the female rate 52 per cent. higher than the respective rates in 1901–10, but if standardized rates are compared these excesses are reduced to 32 and 3 per cent. respectively. These great differences in the rate of increase as shown by comparing crude and standardized rates emphasise the desirability of restricting comparison to the latter. The standardized figures take into account the rapidly increasing proportion of elderly persons in the population and attempt to correct, though imperfectly owing to the wide divergence of the age constitution of the present population from that of the 1901 standard, the exaggerated impression conveyed when crude rates are compared.

#### Table LII.—Cancer Mortality in 1911–20, 1921–30, 1932 and 1933 per cent. of that in 1901–10. Sarcoma, Carcinoma and Undefined; rates per million in 1928–32 and 1933.

	Mo	rtality per	r cent. o	f the	bri T	M	ortality pe	er million	living.	
am in the		rate in 1	901-10.4	ears,	Sarc	oma.	Carc	inoma.	Cancer u	ndefined
	1911-20	1921-30	1932	1933	1928-32	1933	1928-32	1933	1928-32	1933
	.8881	,26.37	1. 109	M	ALES.	8. 28	in A In	ieto Bil		
All ages— Crude Standardized	128 114	167 128	193 134	193 132	81 66	78 63	1,189	1,279 880	154 111	133 92
0- · · · · · · · · · · · · · · · · · · ·	96 107 101 102 108 114 120 124	100 112 106 101 105 121 143 162	121 120 106 102 101 123 155 179	113 100 106 109 106 118 148 183	22 33 37 69 129 215 295 314	25 27 35 63 124 201 271 319	$\begin{array}{r} 2\\ 12\\ 71\\ 324\\ 1,324\\ 3,961\\ 8,668\\ 11,950\\ \end{array}$	$\begin{array}{r}1\\12\\75\\350\\1,374\\4,015\\8,698\\12,661\end{array}$	1 2 9 36 156 497 1,166 1,652	1 3 5 40 148 387 893 1,447
te quos ju	1 196		1	FEN	IALES.	<u>** **</u>	1 11			alana) d
All ages— Crude Standardized	114 102	135 105	148 103	152 103	58 45	58 45	1,280 836	1,368 845	159 103	133 82
0 5 5 5 5 5 5 and up	100 103 92 93 98 99 107 116	111 106 94 90 92 96 116 143	121 112 94 86 90 93 112 148	121 133 89 86 89 94 114 148	19 20 25 42 88 144 189 236	20 25 26 45 84 140 177 176	2 14 121 639 1,812 3,529 6,683 10,405	2 17 115 629 1,812 3,674 6,731 10,434	1 2 12 68 203 439 876 1,394	1 2 11 57 167 327 715 1,057

\* The rates per 100,000 at 1901-10, 1911-20, 1921-30 and 1931 were given in Table XLII of the Review for 1931. The percentage ratios in this table are based upon rates per million, that is to say, upon an additional significant figure, and therefore differ slightly from those given in previous years.

The recent trend of the sex death-rates at the several age-groups over 25 is indicated below, the rates per million being expressed as percentages of the 1901–10 rate in each instance.

	1	926	1927	1928	1929	1930	1931	1932	1933
Males 25	]	108	108	113	111	102	107	106	106
35		96	102	103	104	107	102	102	109
45	11-10-2 (A)	106	104	105	102	106	106	101	106
55		22	120	121	119	116	119	123	118
65		45	149	149	149	152	153	155	148
75 and u		64	167	172	181	178	173	179	183
Females 25		96	95	98	93	90	89	94	89
35		88	90	93	87	88	87	86	86
45		91	90	93	89	88	92	90	89
55		97	94	94	93	94	93	93	94
65		20	116	118	122	117	114	112	114
75 and up	) 1	42	148	152	156	157	149	148	148

Comparison of the last 3 years with the preceding years indicates a declining tendency in the rates for males aged 25–35 and females aged 25–45 and 65–75. Apart from annual fluctuations the rates

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for males aged 35-65 and females aged 45-65, have remained almost stationary, whilst for males aged 65-75 the upward trend was interrupted in 1933 by a fall.

Cancer mortality is analysed according to sex, age, region and class of area in Table LIII. The standardized rate for each sex declines, as noticed in previous years, from a maximum in the county boroughs to a minimum in the rural districts, the range

Table LIII.—Cancer	(All Sites) :	Mortality per 100,000	Living in
		t different Ages, 1933.	A. F. P. Barris

	ume	Lette	<b>m</b> ca	5 am	1 au	ume	CALU	118009	100			
	England and Wales.	Greater London.	London Admin. County.	South East, exclu- ding Greater London.	North.	Midland.	East.	South-West.	Wales.	County Boroughs outside Greater London.	Other Urban Dis- tricts outside Greater London.	Rural Districts outside Greater London.
	E BAR		28. 14		MALE	es.		10.20			1.44	100 - 100 100 - 100
All Ages— Crude Standardized	149 104	153 113	172 122	161 98	145 107	142 102	158 91	155 88	137 98	153 112	147 100	143 87
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	4 2 4 11 45 165 460 986 1,443	3 2 5 13 48 176 510 1,051 1,622	4 2 6 15 44 205 573 1,121 1,646	4 2 5 12 42 155 410 952 1,410	3 2 4 12 49 176 490 1,025 1,364	4 3 4 11 48 155 459 961 1,411	6 1 2 9 30 130 364 909 1,583	3 1 4 9 29 127 376 868 1,389	7 3 8 42 168 413 961 1,333	4 3 4 12 55 183 517 1,076 1,355	4 2 4 11 40 158 432 972 1,482	3 2 3 10 35 132 366 844 1,363
The state	1			COP /	FEMAI	.ES.					1 2	
All Ages— Crude Standardized	156 97	150 95	159 99	176 94	151 101	145 94	187 103	180 90	146 101	153 100	159 98	164 94
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	3 2 4 15 73 206 414 762 1,167	4 2 4 17 73 207 394 728 1,175	5 2 6 16 81 219 414 756 1,128	5 1 6 13 69 207 392 717 1,189	5 1 4 14 75 209 436 836 1,173	$ \begin{array}{r}1\\3\\4\\17\\70\\193\\414\\734\\1,131\end{array}$	6 3 4 14 73 235 409 793 1,292	$ \begin{array}{r} \\ 1 \\ 5 \\ 13 \\ 66 \\ 186 \\ 414 \\ 665 \\ 1,129 \\ \end{array} $		3 2 5 15 73 216 433 793 1,147	3 2 4 15 78 202 411 772 1,180	3 2 5 14 66 195 410 738 1,166

according to urbanisation, as thus measured, being greater for males, 112 to 87, than for females, 100 to 94. The London rate for males (122) is in excess of that for the county boroughs, but for females it is slightly lower.

These relations suggest that cancer may be more often certified in the towns because hospital and other facilities for its recognition are there greatest, but successful treatment, particularly of cancer of the breast and uterus, in so far as it reduces mortality, tends to affect the rates in the opposite sense.

Apart from Greater London, the North gives the highest standardized mortality for males and the East for females, whilst the South-West shows the lowest rate for each sex. The regional dispersion thus indicated is greater for males, 88-107, than for females, 90-103.

Cancer by Site.-The parts of the body affected by fatal cancer in 1933 are shown in Tables LIV and LV in greater detail than that provided by the international classification, six out of its nine headings (Nos. 45-53) being sub-divided. Fuller details with regard to cancer of the uterus and of the skin than those shown in

Table. LIV.—Sites	s and Forms o	of Fatal Cancer	by Sez	x and Age, 198	33.
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		All Ages.	0-	5-	15–	25-	35-	40-	45-	50-	55-	60-	65-	70-	75-	80-	85-
		10 10 10 10						DEAT	HS C	OF MA	ALES.		-			interio fraction deg	
All Sites Carcinoma Sarcoma Cancer N.S.		28,837 24,749 1,514 2,574	54 1 50 3	78 4 71 3	135 38 87 10	372 244 112 16	420 315 66 39	734 577 94 63	1,404 1,171 123 110	2,384 1,992 162 230	3,666 3,167 190 309	4,781 4,201 178 402	5,359 4,705 159 495	4,565 4,047 114 404	3,150 2,758 73 319	1,315 1,150 26 139	420 379 9 32
45 {Lip Tongue Mouth Tonsil Jaw Pharynx Others (1)		241 1,031 291 283 420 365 181				2 2 3 6 5	-4 1 1 8 4 -	2 6 2 4 12 5	8 27 3 7 13 11 6	12 73 20 17 38 29 15	$     \begin{array}{r}       14 \\       150 \\       43 \\       42 \\       59 \\       58 \\       26 \\     \end{array} $	27 205 63 56 52 78 39	44 228 71 51 89 78 30	50 179 37 51 65 54 24	45 112 27 28 44 25 29	26 34 16 15 18 13 11	5
Total	••	2,812	2	6	3	18	18	31	75	204	392	520	591	460	310	133	49
(Esophagus         Stomach         Small intestine         Cæcum         Hepatic flexure         Splenic flexure         46         Sigmoid flexure         Large intestine (color         Rectum (excluding ar         Liver         Gall bladder         Pancreas         Others (2)		1,6676,43910324644797032,3173,1031,278269907549			$ \begin{array}{c} 1 \\ 4 \\ -1 \\ -1 \\ 2 \\ 8 \\ 2 \\ -3 \\ 3 \\ 3 \end{array} $	30 12 - 7	7 91 3 2  1 11 26 33 18 3 5 8	$     \begin{array}{r}       13 \\       188 \\       4 \\       7 \\       1 \\       2 \\       10 \\       49 \\       68 \\       29 \\       3 \\       31 \\       10 \\       \end{array} $	44 383 7 12 2 25 81 104 44 14 56 18	164 210 78 17 105	$\begin{array}{c} 259\\ 874\\ 20\\ 32\\ 9\\ 4\\ 85\\ 251\\ 346\\ 137\\ 31\\ 130\\ 46 \end{array}$	362 1,094 13 44 6 14 116 335 545 214 37 149 77	13 55 11 22 146 470 597 238 53	$ \begin{array}{r} 10\\32\\7\\16\\128\\447\\569\\249\\48\end{array} $	171 636 9 25 4 6 87 296 402 163 38 88 88 88	7 11 2 41 130 153 75 15 41	61 1 4 2 4 2 4 2 4 2 1 1 1 1 1 1 1 1 1 1
Total	•••	17,704	6	10	25	171	208	415	792	1,444	2,224	3,006	3,431	2,933	2,013	799	22
47 {Larynx Lung Others (3)		889 1,820 262	1	 1 1	15 2	2 49 10	6 79 11	17 112 22	37 254 23	85 290 34	138 334 41	195 282 35	193		63 59 15	18	
Total		2,971	I	2	17	61	96	151	314	409	513	512	425	265	137	56	I
50 Breast	075	55	× <u>10</u>				I	2	I	8	7	8	11	7	6	3	
51 Kidney, suprarenal Bladder, urethra, ure Prostate Testis Penis Scrotum	eter 	357 922 1,629 149 156 64	25 	11 	1 		11 7 3 19 3 2	23 17 3 17 5 2	$31 \\ 44 \\ 13 \\ 10 \\ 6 \\ 4$	37 14 12	58 122 98 8 13 6	121 230 11 19	168 372 8 26	184 386 8 25	130 305 6	51 143 2 17	13
Total	11.	3,277	25	14	14	38	45	67	108	166	305	455	619	639	492	225	6
52 Skin	1.25	618	1-1-		5	5	6	6	19	19	46	76	94	116	98	71	5
53 Brain, Meninges Thyroid Bones (jaw excepted) Others (4) and unspec	 ) cified	155 46 400 799	-7	17 	2 37	3 24	12	15 2 14 31	4 29	2 39	9 51	7 57	49	6 33	2 26	5 7	
Total	it.	1,400	20	46	71	79	46	62	95	134	179	204	188	145	94	28	9

Includes Palate, Cheek (internal surface), Salivary Glands, Gums. ,, Intestine undefined, Peritoneum, Omentum, Mesentery, Anus. (1)(2)(3)(4)

Mediastinum

Lymphatic Glands, Abdomen, Eye, Muscle, etc.

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Table LIV.—cont.

	All Ages.	0-	5-	15-	25-	35-	40-	45-	50-	55-	60-	65-	70-	75-	80-	85-
11-11 / Public						D	EATH	S OF	FEM	ALES	1			televen beven	Parties -	<u> </u>
All Sites Carcinoma Sarcoma Cancer, N.S.	28,709	48 5 39 4	61 4 55 2	147 57 82 8	517 392 88 37	794 688 50 56	1,408 1205 86 117	2,340 2,034 102 204	3,176 2,810 123 243	3,959 3,487 145 327	4,590 4,098 143 349	4,796 4,233 117 446	4,665 4,121 103 441	3,479 3,113 54 312	1,869 1,666 23 180	886 796 17 73
	$ \begin{array}{c}     125 \\     44 \\     37 \\     155 \\     110 \\     40 \\   \end{array} $				1 5 1 8				10 4 3 19 18 6 60	6 13 10 2 21 12 12 1 12 5	3 17 6 5 18 18 18 5 72	4 21 3 3 22 21 7 81	1 22 7 4 23 10 5 72	4 10 5 5 16 5 7 52	6 16 3 4 7 1 2 39	2 2 2 2 4 3 1 16
GEsophagus          Stomach          Small intestine          Cæcum          Hepatic flexure          Splenic flexure          Sigmoid flexure          Large intestine (colon)       Rectum (excluding anus         Liver          Gall bladder          Others (2)	5,490 89 356 52 105 719 3,029 1,930 1,301 586			-5 -1 -5 -3 7 7 -2 4	$ \begin{array}{r}     4 \\     51 \\     -4 \\     -4 \\     8 \\     32 \\     34 \\     4 \\     3 \\     10 \\     14 \\ \end{array} $	8 71 2 7 2 	23 148 3 6 1 1 1 3 66 56 30 7 25 40	37 247 8 100 2 3 388 118 97 51 19 37 33	70 385 11 26 4 6 52 188 130 65 45 71 47	104 600 12 366 2 7 7 76 243 222 130 69 105 66	93 782 11 47 9 9 20 127 390 285 177 75 138 97	98 1,002 11 58 6 14 14 117 490 323 236 106 136 134	85 999 14 70 12 22 22 125 571 333 249 116 143 132	55 716 11 52 8 17 78 495 247 203 70 107 128	35 356 328 5 9 40 260 108 87 48 48 68	17 128 3 11 1 2 23 133 49 45 21 23 35
Total 47{Larynx Lung		7	4	34 — 5	168 3 17	228 5 18	419 14 29	25 58	30 62	1,672 38 87	33 102	31 97	2,871 29 53	2,187 16 31	1,095 11 17	491 4 2
L Others (3) Total	132 	1	2 5	2	3  	3  	7 	90	11 	18  	21 156	24 	14 	12 	6 	1
48 Uterus	4,313		I	7	99	190	309	513	629	637	609	520	407	244	118	30
49 { Ovary Vulva Others	1,399 468 1	_1	_4	20 1 	57 1 —	55 - 8 	110 11 —	172 23 1	199 34 —	221 40 —	193 61 —	168 73	105 81 —	59 65 —	23 49	12 21 —
Total	1,868	I	4	21	58	63	121	196	233	261	254	241	186	124	72	33
50 Breast	6,551			4	79	213	391	676	837	941	937	716	688	546	338	185
52 Skin	500	I	I	2	6	8	5	17	26	28	46	52	75	83	75	75
53 Brain, meninges Thyroid	196 301 435 354	2 -21 -3 11	5 	10 2 37 16	12 7 9 3 23 22	9 3 7 1 17 16	12 7 23 7 15 27	12 10 18 21 27 30	21 27 29 26 38 47	16 25 32 33 33 73	10 23 56 49 35 92	3 38 39 84 44 95	2 26 28 86 28 100	3 18 20 63 19 61		4 2 21 8 14
Total	2,055	37	44	67	76	53	91	118	188	212	265	303	270	184	98	49

Includes Palate, Cheek (internal surface), Salivary Glands, Gums.
 ,, Intestine undefined, Peritoneum, Omentum, Mesentery, Anus.
 ,, Mediastinum.
 ,, Lymphatic Glands, Abdomen, Eye, Muscle, etc.

the Table are also available. The cancer mortality distribution is shown by sex, age and site as well as by the nature of the growth to which the deaths were attributed, under the headings carcinoma, sarcoma and "cancer" not otherwise defined. Continuing the

			III.S.Y.	Ŋ	ALES.			7		F	EMALES	•	10 - 131 2012 -	and and a
			Numbe	er of De	aths.		entag Cance		Numbe	r of De	aths.		entag Cance	
	are been are been methods, to carbfy	irean. Mions irean irean irean irean	Carcinoma.	Sarcoma.	" Cancer." Not otherwise defined.	Carcinoma.	Sarcoma.	" Cancer." Not otherwise defined.	Carcinoma.	Sarcoma.	" Cancer." Not otherwise defined.	Carcinoma.	Sarcoma.	" Cancer." Not
be	All Sites	(in ten	24,749	1,514	2,574	86	5	9	28,709	1,227	2,799	87	4	8
45	Mouth Tonsil Jaw		225 951 271 232 291 323 165	$ \begin{array}{c} 1 \\ \\ 25 \\ 96 \\ 11 \\ 4 \end{array} $	15 80 20 26 33 31 12	94 92 93 82 69 89 91	0 	6 8 7 9 8 8 7	26 116 43 23 103 96 37		9 1 3 8 8 1	100 93 98 62 67 88 92		
	Total .	· tot	2,458	137	217	87	5	8	444	63	30	82	12	
46	CEsophagus Stomach Small intestine Cæcum Hepatic flexure Splenic flexure. Sigmoid flexure. Large intestine ( Rectum (excludi Liver Gall bladder Pancreas	  	$\begin{array}{c} 1,500\\ 5,948\\ 74\\ 224\\ 43\\ 74\\ 666\\ 2,161\\ 2,883\\ 1,061\\ 239\\ 830\\ 402 \end{array}$	$ \begin{array}{c} 3 \\ 5 \\ 13 \\ 3 \\ - \\ 1 \\ 3 \\ 1 \\ 14 \\ - \\ 2 \\ 63 \end{array} $	164 486 16 19 1 5 36 153 219 203 30 75 84	90 92 71 91 98 94 95 93 93 83 89 92 74	$ \begin{array}{c} 0 \\ 0 \\ 13 \\ 1 \\ - \\ 0 \\ 0 \\ 0 \\ 1 \\ - \\ 0 \\ 11 \end{array} $	10 8 16 8 2 6 5 7 7 16 11 8 15	557 5,089 83 329 51 92 665 2,852 1,804 1,093 524 780 615	$ \begin{array}{c} -1\\ 2\\ 1\\ -\\ 2\\ 1\\ 4\\ 14\\ 14\\ 65\\ \end{array} $	72 400 4 26 1 13 52 176 122 194 61 72 136	94 84 90 92	0 2 0 0 0 0 0 0 1 0 0 8	1
	Total .	. gaill	16,105	108	1,491	91	I	8	14,534	95	1,329	91	I	
47	Others		805 1,526 144	1 117 56	83 177 62	91 84 55	0 6- 21	9 10 24	217 439 67	3 64 37	19 79 28	91 75 51	1 11 28	12
	Total .		2,475	174	322	83	6	II	723	104	126	76	II	1
48.	Uterus	in market	10 <u>10</u>	0.00	1000	-	_	110	3,867	71	375	89	2	
49	Ovary Vulva Others					H	HH	HI F	1,184 441 1	39 5 —	176 22 —	84 94 100	3 1 	1
	Total .	·				100 <u>-1</u> 100 <u>-1</u>	1.00	aT	1,626	44	198	87	2	I
50.	Breast		49	4	2	89	7	4	6,008	43	500	91	I	
51	Testis Penis	nal , ureter   	152 827 1,394 82 142 61	173 3 9 52 1 —	32 92 226 15 13 3	43 90 85 55 91 95	48 0 1 35 1 -	9 10 14 10 8 5		IIIII	TITI	11111		1 1 1 1 1
	Total .	·beat	2,658	238	381	81	7	12	TIC		Th	-	-	-
52.	Skin	ni ili	548	51	19	89	8	3	429	54	17	86	II	
53		nal , ureter pted)	16 40   60 340	124 5 — 320 353	15 1 	10 87 	80 11 	$ \begin{array}{c c} 10 \\ 2 \\ - \\ - \\ 5 \\ 13 \end{array} $	9 187 127 389 54 312	90 3 146 4 279 231	18 6 28 42 21 109	8 95 42 89 15 48	77 2 49 1 79 35	
	Total .	20110	456	802	142	33	57	10	1,078	753	224	52	37	

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## Table LV.—Forms of Fatal Cancer of each Site, 1933.

practice of many years past, every practicable effort is made, with the co-operation of certifying practitioners, to assign the deaths to the organs primarily affected, in order to obtain as true indications as possible of the incidence of the disease. It is well recognized, however, that for certain organs, especially the liver and lung, commonly affected secondarily to such a degree that the symptoms dominate any that may arise from the primarily affected organ, ascertainment of the latter may prove impracticable. Such exceptions are becoming more rare, due no doubt to improvement in diagnostic methods, an encouraging sign justifying the inclusion, in the notes to certifying medical practitioners which accompanies the book of death certificates, of the request that "the seat of primary occurrence should be returned in all cases where known.'

The distribution of cancers of each individual site, according to the nature of the growth is given in Table LV. The percentage of cancers with nature undefined is, amongst the organs distinguished, highest for the liver, prostate, ovary and brain. The percentage of all cancers defined as sarcoma ranges from 79 for the bones and brain, 48 for kidney or suprarenal and 35 for the testis to 1 per cent. for the digestive tract and female breast.

The facts as to cancer mortality distribution by sex, age and site contained in Table LIV are summarized for each site in Table LVI, which compares total mortality in 1933 with the rates for other recent periods for the same sex and site. In this table the tendency to increase of mortality merely in consequence of increase in the proportion of persons at risk falling within those ages at which cancer chiefly occurs, as well as the tendency to female excess for the same reason, has been allowed for by standardization. so that all the rates quoted may be compared with one another.

The chief increases in 1933, over the previous year are, for males-lung 9.8 per million, intestine 2.6, bladder 0.5, pancreas, kidney and suprarenal 0.4, and for females—intestine 6.6, stomach 2.9, pancreas and ovary 1.6, breast 1.3, bladder 0.8, lung 0.4.

The sites showing at least 25 per cent. increase in mortality from 1911-20 to 1933 are, for males, the lung (426 per cent.), prostate (117), pancreas (94), gall bladder (60), kidney and suprarenals (55), intestine (44), testis (35), larynx (29), and breast (25), and for females the lung (151), pancreas (89), ovary and Fallopian tube (85), kidney and suprarenals (43), gall bladder (42), and intestine (29). Those showing a decline are the tongue, mouth, jaw, liver, mesentery and skin in both sexes, uterus, rectum, mediastinum and rodent ulcer in females and lip, œsophagus, penis and scrotum in males.

The rate for cancer of the lung in males was more than six times as great in 1933 as in 1901-10, and in females more than twice as great. Whilst the magnitude of the increase in both sexes suggests that improved means of diagnosis is partly responsible, the much greater increase for males than females requires some other explanation.

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#### Table LVI.-Cancer Mortality : Rates per Million Population (Standardized) for the more important Sites for each Sex 1901-10, 1911-20, 1921-30, 1929, 1930, 1931, 1932 and 1933.

				Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Female
Endler, W.	NO. CON	here its	dit i	All	Sites.	I	.ip.	To	ngue.		th and	I	aw.
1901-10				784	942	12.8	0.0	1.0.1		To	nsil.		
1911 - 20	::		•••	897	942 959	12.8	0.8	43.1	4.4	?	3	22.6	6.9
1921-30		and the second		1.004			0.7	50.8	4.3	23.5	3.0	25.1	7.2
1921-30		••			986	11.5	0.7	46.1	3.8	28.3	3.6	20.8	6.4
1929	12 th	a titu		1,031	999	10.4	0.6	41.8	4.1	27.6	3.5	19.2	6.5
	••	••		1,031	987	11.3	0.7	40.6	3.5	29.3	3.8	16.7	5.3
1931	••	••		1,034	974	10.7	0.5	38.1	3.6	29.4	3.5	16.5	5.1
1932 .				1,052	966	10.3	0.6	37.6	. 3.4	21.2	2.4	16.6	5.2
1933	••			1,035	973	8.7	0.7	35.7	3.6	20.1	2.4	15.2	4.8
				Ph	arynx.	Œso	phagus.		mach.	Liv		Gall	bladder
1901-10				2	?	51.2	14.6	167.2	133.0	2	?	?	?
1911 - 20			TRAC	10.8	3.0	60.6	16.5	186.4	139.0	87.1	98.0	6.0	11.6
1921-30				12.6	3.0	64.2	18.1	221.1	155.5	61.0	60.9	8.8	16.6
1929		ALL .	(POLOG	13.8	2.8	62.3	18.3	237.2	164.6	52.3	50.6	9.4	
1930			2	11.8	3.2	61.8	18.6	233.7					17.6
1931	80.60		100	13.0	3.1	62.8			162.8	47.7	45.4	9.5	17.1
1932				14.7	3.4		18.7	231.3	155.5	47.0	42.7	9.2	16.9
933	1.		1.00			62.5	19.5	233.3	153.8	45.7	38.9	10.8	16.9
	••			12.8	3.4	57.8	18.3	229.2	156.7	45.5	36.8	9.6	16.5
	23537			Mesen	tery and	Inte	stine.		im and		y and	Uter	us.
901-10					oneum.				nus.	Fallopia	an Tube.	The second second	
		01.00		8.2	15.8	63.5	72.3	79.8	55.9	and the	19.2	2 - 29	?
1911-20				6.0	12.0	96.8	109.2	93.6	59.3		24.3	100 100 100 100 100 100 100 100 100 100	174.4
1921-30		10.400	LO TA	5.4	8.1	125.4	129.9	105.5	59.8	Carrier Carrier	36.0	110000	157.9
1929			8	4.4	7.2	134.3	138.6	108.0	58.3	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	40.8	1	150.3
1930	1	80.0	STATIST.	4.9	6.6	136.9	138.4	110.6	59.9	Distance.	42.3	112 119	143.9
931				5.3	6.6	136.1	136.3	109.1	59.5	Contra College	42.7	Sector Sector	139.9
1932	PEOPLE.	1000		4.6	6.3	136.8	133.9	113.5	59.8	L D BUD DE	43.3	Constant of the	
933		2.		3.9	6.0	139.4	140.5	1111.1	56.5	_		CONTROL OF	137.8
	- Alato	1 Alacha	3.5.00		east.		t Ulcer.				44.9	1	134.5
901-10				1.5	158.4			Pe	enis.	Scro	tum.		r Skin.
911-20	10111	144 144	11.	1.6	170.8	3	?		A COLOR	r	ET EL T	3	?
921-30						6.7	4.3	6.6		2.4		17.6	10.9
929	11.11	1000		1.8	189.1	8.4	4.9	6.4	11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	2.7		17.6	10.2
	••			1.8	195.7	9.5	5.0	5.7	and the second	2.7		18.2	10.7
930	1.			2.3	194.5	9.1	4.6	6.3	17 ( <u>18</u> )	2.3	1	16.1	9.0
931				2.3	200.2	9.0	4.7	6.5	7	2.6		17.5	9.2
932			14.0	1.8	196.6	8.0	4.2	6.0	A REAL PROPERTY	2.8	31321-64	16.1	11.0
933				2.0	197.9	7.2	3.9	5.7		2.3		15.6	9.9
				Lar	ynx.	Tr	ing.		creas.		ev and		dder.
					A ROOM				cicus.		renals.	Dia	uuer.
901-10			19	?	?	10.2	7.0	14.5	11.8	Supra 8.4		2	
911-20	BOE	11. 14	0.000	23.9	6.0	12.7	7.0	14.5	13.1		7.6		
921-30	1000	ALC: N		31.3	7.1	25.2	9.6			9.1	7.2	28.2	9.7
929	and the	ten pur		31.4	7.6			26.3	19.5	11.7	8.9	30.5	11.4
930		THE PARTY	12.00	31.4		33.4	11.9	30.3	20.0	13.2	9.6	32.3	12.3
931	miles.	the contraction	6		8.5	40.2	13.9	29.4	23.8	13.0	8.7	31.8	11.5
932				31.7	7.9	$51 \cdot 2$	16.3	28.8	21.6	13.9	9.5	34.2	11.0
932	••			30.7	7.2	57.0	17.2	32.0	$23 \cdot 1$	13.7	10.1	32.0	11.2
933	••		11	30.8	7.1	66.8	17.6	32.4	24.7	14.1	10.3	32.5	12.0
			C. C. L. C. C.	Pros	state.	Te	stis.	Bo	nes.	Medias	stinum.	Not the Real of	No. of Concession, Name
901-10			9.00	11.8		,?	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	?	?	8.1	4.5		
911-20			1	26.5		4.9	and the second	15.7	12.0	9.2	4.6		
921-30		No. The	12 1.0.00	47.7	train -	5.8		17.6	13.5	12.6	5.8		
929			12	56.4	and the same of	5.2		17.6	14.6	12.0	5.6		
930	944 P.16	incer.	1.12.13	54.9	To Des	6.7	ME I	17.0	14.6	$12 \cdot 1$ $13 \cdot 1$			
931				56.4		5.9	100				5.3		
932	M.S.	C.C.	nt:	58.5	1932		X19 0	16.5	11.7	11.4	4.6		
933			•••		All Carlos N. C. C. C.	6.8	1200-	16.8	13.3	9.8	4.0		
				57.4		6.6	Contraction of the second	16.4	13.0	9.8	4.1	and the second	ALL ROTATION IS NOT

The continued increase in mortality from cancer of the prostate has been accompanied by an increasing mortality assigned to nonmalignant prostatic diseases which has risen by 51 per cent. since 1923 (Table 8). The rate of increase in the standardized mortality from cancer of this organ since 1911-20 is 63 per cent. at ages under 65, 120 at 65-75 and 168 at 75 and upwards.

Excepting the testis, breast and larynx for males all the sites mentioned above as showing high rates of increase are included in the group of inaccessible sites in the Review for 1926 (p. 66). It is therefore probable that these increases are, in some

measure, due to improvement in diagnosis, and in the case of cancer of the intestines, pancreas and gall bladder, to the continual transfer of certification from secondary cancer of the liver and mesentery and peritoneum to the primary site which has been in progress since 1901–10.

The increase in the mortality from cancer of the *larynx* and of the *rectum* for males may, in view of their greater accessibility, be more real than that from the other sites. The rate of increase for rectal cancer from 1911–20 to 1933, has been 19 per cent. for males but the rate has slightly fallen for females.

Mortality from cancer of the breast-the most frequent site in females and accounting for about one-fifth of their total cancer mortality-increased in 1911-20 by 8 per cent. over the previous decennium and in the next decennium the rate of increase was 11 per cent., whilst mortality in 1933 is 5 per cent. in excess of that during 1921-30. There has not, however, been any consistent change since 1928. Many cases of breast cancer followed after removal by secondary cancer of the liver were formerly certified under the latter description and the transfer of such deaths with improved certification doubtless accounts for the greater decline in the liver rate for females than for males and for part of the rise in the breast rate. The increase in standardized mortality from breast cancer since 1901-10 has been 25 per cent. at ages under 65, 18 at 65–75, and 35 at 75 and upwards. In so far as treatment only delays the fatal issue in many cases it must tend to increase the rates at later ages at the expense of those at earlier ages. It was shown in the Review for 1932 (Table LII and p. 72) that whilst mortality at ages 35-55 had increased from 1911-20 to 1930-32 by about 10 per cent. in married and single alike, at ages over 55 the increase had been much greater amongst the married than the single.

The fall between 1911–20 and 1933 of 23 per cent. in the mortality from *uterine* cancer—now the fourth site in order of frequency—is of great significance. No other site of similar importance shows such a decline for either sex. The extent of the fall increases from 25 per cent. at ages under 45 to 26 per cent. at 45–65, and then diminishes again. Analysis of 1930–32 mortality by marital condition (Review for 1932, p. 72) showed that whilst at ages under 45 mortality had declined from 1911–20 to 1930–32 to a greater degree amongst the married than the single, between 45 and 75 the relative improvement was almost the same in each group of women (about 25 per cent. fall at ages 45–65 and 13 per cent. at 65–75).

Mortality rates from cancer of the *lip*, tongue and jaw have declined almost continuously since 1911–20 for both sexes. The female mortality from lingual cancer is extremely low compared with the mortality among males The male rate fell in 1933 for the sixth year in succession, the rate of 35.7 per million being only 70 per cent. of the mean rate in 1911–20.

The standardized mortality from syphilitic diseases (syphilis, tabes, general paralysis and aneurysm) in males also declined for the fifth year in succession, the rates per million in each year from 1927 being 161, 161, 153, 145, 143, 133, 126.

Cancer of the *ethmoid* has recently received attention owing to a suspected occupational factor in its causation. The precise point of origin of cancerous growths of the nose is not always ascertainable and an analysis has therefore been made of all deaths attributed to nasal cancer in males during 1933 (included in Nos. 45 and 53).

	All ages	0-	45-	55-	65–	75 and up
Ethmoid sinus or cells	 13	2	2	5	2	2
Nasal bones or septum	 5	1	2	2	REALENSE	100 -
Sphenoidal sinus or sphenoid	 5	2	1		2	tenet
Nasal fossæ, nares, nostril	 11			4	5	2
"Nose" (chiefly epithelioma)	 17		1	3	6	7

The occupations were as follows, in order of increasing age at death within each group. First group: child, 2 nickel workers (42, 46), farmer, bedstead worker, excise official, army officer, tailors' cutter, shoe finisher, green-grocer, general labourer, awl blade maker, fire brigade officer. Second group : general labourer, gas-producer in nickel works, tram conductor, nickel worker, lithographic printer. Third group : general labourer, unoccupied, bus conductor, butcher, cabinet maker. Fourth group : corporation labourer, leather dresser, coal merchant, carpenter, farm horseman, lace draughtsman, railway engine driver, engineer's labourer, agricultural labourer, butcher, naval pensioner. Fifth group: shoe finisher, medical practitioner, general labourer, clerk, textile engineer, farm labourer, banker, commercial traveller, bobbin (lace) worker, carpenter-joiner, farm bailiff, transport worker, shoe finisher, unoccupied, architect, seaman, agricultural worker. The 4 deaths of men employed in nickel works were registered in Glamorganshire; the remainder were scattered throughout the country.

54. Tumours not returned as malignant.—As in other recent years all deaths from tumours not definitely stated to be malignant have been assembled in Table LVII. These numbered 3,086, the tumour being returned as benign in 1,803 instances, and its nature in the remaining 1,283 being unstated. The classification differs from that in use prior to 1931, as explained in the Review for 1931.

"Adenoma" of the prostate is classed to diseases of the prostate, No. 137, rather than to these headings because this condition seems to be scarcely distinguishable from that described as prostatic hypertrophy. Benign tumours other than adenoma or the varieties of it shown in Table LVII are classed to No. 54 (3 only in 1933) and tumours of unstated nature to No. 55. Mortality attributed to prostatic diseases is seen from Table 8 to have increased rapidly in the last decade, the standardized rate being 114 per million in 1923

# Table LVII.—Deaths attributed to Tumours not returned as Malignant.—1933.

All Ages 0-15-35-45-55-65-75-Part affected. F. M. F. M. F. M. F. M. F. M. F. M. М. F. M. F. Tumours classed with other disease of organ affected. In 137. Prostate .. 272 9 6 ··· ··· 120 5 4 103 44 5 ... .. | | | Adenoma ... Fibroadenoma ... ••• ··· ·· ·· \_\_\_\_ \_ Myoadenoma .. Tumours not classed with other disease of organ affected. 54a and 55a. Female genital organs. emaie genital organs. ...Cyst..... Cystadenoma Fibroid ... Papilloma ... Other benign Nature unstated 1 1 1 2 Ovary .. 1 1 1 1 4.9 1 .. 4 2 3 15 .. ••• 2 9.4 Uterus .. .. Adenomyoma 12 -Endometrioma 22 107 • Fibroid ... .. Myoma .. Polypus .. Other benign 17 4 1 de la .. \_ . Nature unstated Pelvis .. .. Non-malignant Nature unstated .. Vagina .. .. Non-malignant .. Broad ligament.. Cyst.. .. Other benign .. .. ..... 54b and 55b. Other sites. .. Angioma ... Astrocytoma 2 4  $\frac{2}{10}$ Brain .. 7 18 .. 3 1 \_\_\_\_ \_ 7 3 •• Cyst.. .. .. Endothelioma, non-malignant Glioma 142 149 36 38 33 .. Meningioma, non-malignant 14 441 3 54 3 77 5 94 Other benign ... Nature unstated ... 409 79 33 69 106 88 37  $\frac{1}{38}$ Pituitary gland. Adenoma ... 2 17 5 20 2 Other benign 4 1 4 Nature unstated \_\_\_\_ Pineal body .. Non-malignant . . Thyroid .. .. Cyst.. .. 3 7 1 Spinal cord .. Glioma Glioma ... Other benign 2 3 1/2 \_\_\_\_ Nature unstated Glioma .. Other benign 1 2 Eye . . .. \_ Nature unstated Cholesteatoma Other benign 1 Ear .. . . 2.3 ----Polypus ... Other benign 1 Nose ... .. .. Papilloma ... Other benign Larynx .. .. .. Nature unstated Mediastinum .. Non-malignant Nature unstated 34 54 22 17 9 

Pa	urt affected.	A11	Ages.	(	)	1	5-	3	5-	4	5-	5	5-	6	5–	7	75-
apple	s, chieffy irypern	M.	F.	М.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Tumours not	classed with other disease		A A	(11)	line.	1209		1	jub.		10517	0	pd		1 Marca	Check	
of organ	affected—continued.		1		a sur a				a shika a	- Ale			a the			al denny i	Territo
Lung	Non-malignant Nature unstated	1 56	1 16	-	-	1 1		4	2	18	15	19	<u>-</u> 6	$\left\  \frac{1}{10} \right\ $		$\left\  -\frac{1}{4} \right\ $	=
Parotid	Mixed tumour Other benign Nature unstated	$\frac{6}{3}$	3 1 1					1					1	$\begin{vmatrix} 3\\ -1 \end{vmatrix}$	1	$\left  \begin{array}{c} 2\\ -1 \end{array} \right $	1
Esophagus	Nature unstated	1	5		1.	1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	-	1.	-							1
Stomach	Non-malignant Nature unstated	2 12	$\left  \frac{1}{10} \right $		-	1						1 3			_		4
Intestine	··· Cyst ··· ·· Polypus ··· ·· Other benign ··· Nature unstated ···	3 1 1 16	1 5 6 19	1	2		$-\frac{1}{2}$					$\begin{array}{c c} 3 \\ 1 \\ - \\ 1 \\ 2 \end{array}$	$  - 1 \\   - 1 \\   1 \\   4 \\   4$	5	2	3	6 — — 8
Rectum	··· Papilloma Other benign Nature unstated	5 1 4	2 3 —	1	- H	1				$\left  \frac{1}{1} \right $	4 B	$\frac{1}{-1}$		2 1 1			
Liver	·· Non-malignant Nature unstated	2 2	3 7	1	-	-	1	1	-		-	-	1 2	$\left\  -\frac{1}{1} \right\ $	12		
Pancreas	., Cyst Other benign Nature unstated	5 1 1	7 1 -			111					4	4	1	$\frac{1}{1}$			
Kidney	·· Non-malignant ·· Nature unstated ··	3 7	3 16	1 1	$\left  \frac{1}{1} \right $	-			$\left  \frac{1}{1} \right $			<u>-</u>	15	1	1 2	1	15
Bladder	··· Papilloma ··· ·· Polypus ··· ·· Nature unstated ···	110 2 8	47 2 1		111	1		2	2	19	2	$\frac{26}{1}$	6 2	$\left  \frac{34}{4} \right $	$\frac{18}{1}$	28 2 3	19
Prostate	Non-malignant Nature unstated	3 4										2		1 3	-	_	_
Breast	··· Adenoma, Cyst- adenoma Cyst Other benign Nature unstated		6 3 4 2		I HIE		1111 1 2	I BI B	1 1 2 			HHL -	1	3			$\frac{2}{1}$
Jaw	Non-malignant	1	1	1997 1997 - 1997 1997 - 1997		1-	-	51	-	-		1		A CARDON	1		
Spine	Non-malignant Nature unstated	9	4 10						2 2		1115		15	$\left  -\frac{1}{2} \right $	$\left  \frac{-}{2} \right $		
Sacrum	Non-malignant Nature unstated	1	3	_1	E	112		· 		1			1		1	-	-
Neck	Non-malignant Nature unstated	2	1	1	1		1) 1)		-1855 	1		N N	STE Tot		_	_	_
Thorax	Nature unstated	7	1	0)	50	1	mi	1	igs	1	tim	Di	0 5	10		-	1
Abdomen	··· Cyst ··· ·· Other benign ··· Nature unstated ···	$-\frac{1}{6}$	7 2 19		1	I É L	1		1		2 1 3		129 14-14-14-14-14-14-14-14-14-14-14-14-14-1	$\begin{vmatrix} 3 \\ - \\ - \\ 2 \end{vmatrix}$	2	0	1
Other sites	Non-malignant Nature unstated	31 7	21 11	7	2	3	3	4	5	62	32	7	2	2	2	2 2	8 4
Site not stated	I Non-malignant	3	5	-		1.24	1		1		2	3	1	1	2	-	4
Total (54	and 55)	1088	1711	92	82	122	215	149	300	222	419	256	295	169	223	78	177
Total "	, all tumours benign tumours nature unstated	1375 707 668	1711 1096 615	92 35 57	82 42 40		215 127 88	149 51 98	300 214 86		419 301 118	301 137 164	295 161 134	THE	223 134 89	186 150 36	177 117 60

## Table LVII.—continued.

DIAGRAM 4 DIABETES MORTALITY IN ENGLAND AND WALES

and 162 in 1933. In 1933 a total of 6,134 deaths was assigned to No. 137, diseases of the prostate, No. 51, cancer of the prostate, and Nos. 54, 55, other or ill defined tumours, and of these deaths  $26 \cdot 6$  per cent. were attributed to cancer,  $4 \cdot 8$  per cent. to benign tumours and  $68 \cdot 6$  per cent. to other conditions, chiefly hypertrophy.

The corresponding figures relating to 1922-24 and 1930-32 were incorrectly stated in the Review for 1932, but the conclusion drawn, that deaths attributed to non-malignant conditions have increased in recent years rather more rapidly than those attributed to cancer, was correct. The proportions calculated on the above basis for 1922-24 are  $29\cdot1$ ,  $4\cdot4$  and  $66\cdot5$  per cent. respectively.

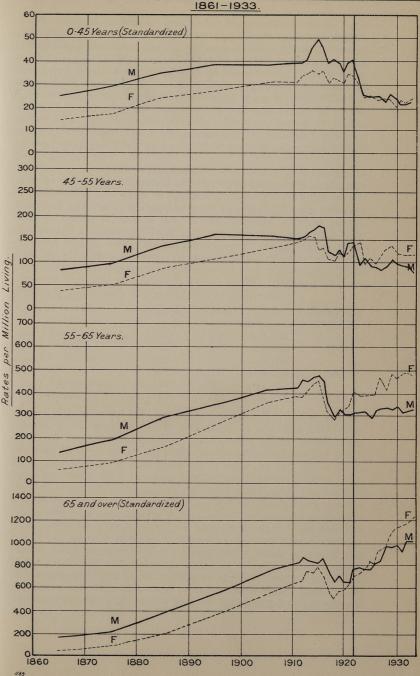
Deaths assigned to associated causes with "adenoma" of the prostate as a contributory condition, numbered 25, compared with 24 in 1931 and 29 in 1932, and of these 78 deaths 21 were classed to heart diseases, 13 to diabetes, 8 to arterio-sclerosis and 6 to kidney diseases.

Adenoma of the thyroid is not included in this table, but is classed to No. 66(a), Simple goitre.

Deaths ascribed to pituitary tumour have increased from 7 in 1913 to 57 in 1933. Deaths from tumour of the lung increased from numbers ranging between 11 and 21 during 1912–19 to 83 in 1932 and 74 in 1933. Like lung cancer, which has also increased rapidly (Table LVI), they affect males much more than females. The ratios of malignant to benign tumours of the mediastinum, lung, and abdominal organs suggest that large proportions of those returned as of unknown nature were probably malignant.

59. **Diabetes.**—The deaths allocated to this disease numbered 6,278, 2,460 of males and 3,818 of females, corresponding to standardized death-rates of 92 for males and 114 for females. This rate has been in excess for females in each year from 1923 onwards, whereas before that date excess for males was an invariable rule, though its amount had long been decreasing.

The trend of diabetes mortality since 1861–70 is represented in Diagram 4 for each sex. At ages under 45 male standardized mortality increased until 1891–1900, remained stationary until 1912, and then rapidly increased to 1915. The rates of the next 5 years, which relate to civilians only, were greatly influenced by selection, but from 1920 to 1922 the rate was again rising. The introduction of insulin in 1923 was accompanied by a drop from 41 per million in 1922 to 26 in 1924 and a further gradual fall to the present level of 23 (22 in 1931–32). At ages 45–55 male mortality behaved similarly; it remained stationary, about 160 per million, from 1891–1900 to 1913, fluctuated during 1914–20 and had not quite regained its former level by 1922. The following years witnessed a drop from 143 to a mean level of 88 in 1926–28 and 90 in 1931–33.



Mortality of females at ages under 45, steadily increased until 1901–10, when the standardized rate was 32 per million, and fluctuated about that level during the next decade. With the use of insulin the rate fell from 34 in 1922 to 25 in 1924 and has remained about that level since. At ages 45–55 the rate was steadily rising up to 1913, then rapidly declined during 1915–18 but increased again almost as quickly in the succeeding years to 1923. The fall which then occurred has not been so well maintained as at the earlier ages; the curve indicates that the introduction of insulin interrupted for several years the upward trend of registered mortality at this age period, just as food restriction and other factors had done in 1915–18.

There is no reason to suppose from the behaviour of the deathrates in the pre-insulin period or from other evidence that the rate of incidence of new cases of diabetes at ages under 55 has undergone any diminution during the past 10 years. On the contrary there is reason to believe that it has increased to some extent. Assuming a constant incidence rate, the deaths which would have occurred at ages under 55, had no change in therapy taken place, may be calculated by applying the 1920–22 death-rates to the population at the corresponding ages in the year in question. These expected deaths of both sexes in the years 1931, 1932 and 1933 are compared below with the actual deaths registered.

	Under 45	45-55	Under 55	Deficiency under 55
$1931 \begin{cases} Expected \\ Actual \end{cases}$	1,112	630	1,742	under 55
Actual.		540	1,242	500
1932 Expected Actual.	1,116	634	1,750	
Actual.	691	527	1,218	532
1933 { Expected Actual	1,117	637	1,754	
(Actual	723	501	1,224	530

In each year there has been a deficiency of about 500 deaths from the calculated number, and it is reasonable to conclude that these represent minimal estimates of the deaths which would have occurred at ages under 55 under pre-insulin conditions but which were postponed by insulin either (a) to some age over 55, or (b) to some age under 55 with assignment of death to some cause other then diabetes. With regard to the latter eventuality, the death of a diabetic who has been receiving insulin will usually have mention of diabetes as a contributory cause and will be assigned to diabetes in classification except when the associated cause is an infective condition, acute intercurrent disease or general disease such as cancer. Prolongation of life of young adults means a greater risk of dying before 55 from those causes taking precedence over diabetes in classification, and some fraction of the 500 deaths must be so accounted for, but these are probably more than offset by an increased incidence which the basis of calculation has not allowed for.

If this is so, the number of deaths in defect, 530 in 1933, can be regarded as the excess of deaths postponed from the age group 45–55 to the group 10 years older over the deaths postponed from the group 10 years younger to the group 45–55. The expected deaths at 45–55 numbered 637, of which 530 or 83 per cent. were on this assumption postponed to an age group 10 years older, and from this it follows that the average lengthening of life of the diabetics who in the pre-insulin period would have died before 55 has been about 8 years. This estimate is an average for all diabetics in the population who would have died before 55, whether insulin treated or not, and it is similar to an estimate reached from clinical experience in the U.S.A.\*

At ages 55–65 mortality steadily increased up to 1915 for both sexes, declined abruptly in the period of food restriction, and was again rising from 1920 to 1922 (Diagram 4). From 1923 onwards the male rate at 55–65 has not appreciably changed whilst the female rate has continued to increase. Standardized male mortality at ages over 65, which had not regained the 1911–14 level by 1922, remained stationary until 1925 and then rose rapidly to 1928, with a further increase in 1932. The rise in the corresponding female rate has been sustained with few interruptions since 1918.

The reasons for the continuous increase in death-rates attributed to the senile form of diabetes, due in part to rising incidence perhaps but in greater part to increasing recognition of the condition and mention of it on death certificates, has been frequently commented upon. Having regard to (a) the steep upward trend of registered diabetes mortality at ages over 55 from 1861-70 to 1915, when the period of food restriction resulted in a profound and prolonged interruption in this trend, (b) the transfer of deaths from earlier ages owing to postponement of the fatal issue by insulin therapy, and (c) the fact that for various reasons the new therapy is less frequently applied to diabetics of advanced age, it is not surprising that registered mortality at ages over 65 continues to increase. It can be shown that, if the death-rates at 55-65, 65-75 and over 75 had increased year by year since 1920-22 by the same mean annual increments as were operative during the undisturbed period from 1901-10 to 1915, the expected deaths at ages over 55 in 1933 would be 4,487. The actual deaths registered numbered 5,054, an excess of 567 which is approximately equal to the deficiency calculated above at ages under 55. The recent trend of the mortality rates could therefore be adequately explained by a transfer of deaths up the age scale (sufficient to postpone about 500 deaths in each year from before 55 to after that age), superimposed upon a resumption since 1921 of the pre-1915 trend of mortality rates at the various ages.

\* Joslin, Dublin and Marks. Amer. J. of Med. Sci. 1934, CLXXXVII, 434.

Table LVIII.-Mortality from Diabetes in 1920-22 and in subsequent

	Stand	lardized	Rates	Courses	The second	de dana	I	1	1	1	1
			Trates.	0-	15-	0.5	Constant and	a summer survey of the	The second second second	and the second second	75
	All ages	0-55	55 and up	0-	13-	25–	35-	45-	55-	65-	and u
65- jand 1		P84. 1	DEATH	RATE	S PER M	ILLION	LIVIN	G.	UA AS	21-1	
Males :					1		1	1	1	1	1
1920-22	93.7	47.9	477.5	14	42	60	69	133	309	661	
1931 1932	88.1	29.5	580.3	12	22	30	38	97	315	821	772
1000	92·4 92·3	28.9	625.6	10	21	30	45	93	320	897	1,310
1933	94.3	28.5	628+2	13	26	30	36	80	325	888	1,326
Females :	A State of the second		a marting		Stand South	Report L		. Real man	1226	1 Sugar and	L STAR
1920-22	90.1	43.1	483.9	16	35	48	62	124	355	050	1 11 100
1931	110.9	33.4	762.0	11	26	31	45	124	473	656 1,097	632 1,218
1932 1933	112.4	32.5	783.3	13	20	29	46	118	485	1,143	1,218
	114.3	33.5	793.0	12	25	30	48	118	470	1,178	1,275

Males :	96 92 87 92 94 97 101 99 94 99	79 72 67 68 67 63 73 65 62 60	110 108 104 112 116 126 125 128 122 131	79 64 79 93 79 93 86 71 86 71	79 69 52 67 74 60 60 57 52 50	80 63 72 60 68 55 60 63 50 50	87 75 62 70 58 55 90 59 59 55 65	74 83 70 68 63 68 79 74 73 70	104 104 93 105 107 107 106 109 102 104	113 105 106 112 116 136 130 130 124 136	114 122 120 124 133 140 150 154 150
1933	99	59	132	93	62	50	52	60	104	136	170 172
Females :	1.101 6	133.600	Linne	COLUMN C	1 marsh	a-seption	to sugar a			and all	
1923          1924          1925          1927          1928          1929          1930          1931          1933	104 98 104 101 112 123 119 123 125 125 127	95 75 80 74 76 79 81 72 77 75 78	$112 \\ 116 \\ 122 \\ 121 \\ 139 \\ 138 \\ 155 \\ 155 \\ 157 \\ 162 \\ 164 \\ 164$	69 69 56 69 69 69 69 69 69 81 75	86 80 86 71 71 74 63 51 74 57 71	92 67 67 73 67 69 65 56 65 65 60 63	95 76 85 82 73 66 84 71 73 74 77	115 80 90 80 91 102 106 99 98 95 95 95	110 110 111 113 131 135 131 133 137 132	112 118 131 127 135 147 157 165 167 174 180	116 116 128 128 173 163 196 193 193 193 202

71(a). Pernicious Anæmia.—The progress of mortality since 1927, when a new and effective treatment came into use for this disease is revealed in Table LIX, where annual rates at various ages are expressed in terms of the corresponding rates in the triennum preceding 1927. The actual rates in greater detail of age in each year from 1922 to 1931 were shown in the Review for 1931, Table XLVIII. In 1933 the standardized rates, which had been increasing since the sudden fall registered in 1928, were below those of 1932, an improvement being noticeable at each separate age except 25–45. For males the greatest relative decline in mortality has occurred at ages 25–45, and for females at ages under 25.

As for diabetes, the new remedies are in general only effective in prolonging life so long as treatment is continued, and unless the patient eventually dies of some acute or general disease to which precedence is given in the classification of deaths due to joint causes, or without mention being made on the certificate of the

85

	-39		MALES.					-	F	EMA	LES	•	
		All Ages*	0-	25–	45-	65-	75 and up	All Ages*	0-	25–	45-	65-	75 and up
		1	MO	RTA	LITY	Z PE	R MILI	LION L	IVIN	IG.	<- 60 <sup>-1</sup>		in sources and the sources
1931 1932 1933		34 39 35	3 5 3	13 13 13	98 111 104	311 368 317	301 339 322	43 49 46	5 5 4	27 29 30	134 149 130	328 379 367	231 235 326
Weithe	and the second	MOR	TAL	ITY	PER	CEN	IT. OF	THAT	IN	1924-	26.		1200
1927 1928 1929 1930 1931 1932 1933	··· ··· ·· ··	98 65 70 76 74 85 76	84 102 78 74 70 106 69	91 59 59 69 54 53 56	96 55 58 71 64 72 68	106 77 86 85 89 106 91	114 92 133 121 149 167 159	97 67 67 72 74 84 79	86 77 66 45 58 56 47	90 56 53 63 58 61 64	98 64 64 68 74 83 72	98 78 84 91 106 102	109 91 109 138 112 162 158

Table LIX.—Mortality from Pernicious Anæmia per Million living in 1931, 1932 and 1933, and per cent. of the rate for 1924–26 in each year 1927 to 1933.

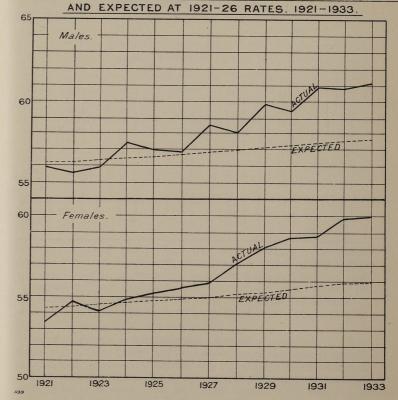
#### \* Standardized.

pernicious anæmia, the expected effect on the mortality statistics would be a temporary reduction in annual deaths at each age, followed by a gradual return to the original total with a higher average age distribution. This assumes a constant incidence of new cases, whereas there is reason to believe that the number of recognised cases of pernicious anæmia and other blood diseases is increasing. The total deaths registered in the 8 years 1926 to 1933 have numbered 2,780, 2,655, 1,854, 1,955, 2,150, 2,226, 2,591, 2,428, which indicates a return by 1932 almost to the 1927 level, and this suggests that any absolute reduction in the fatality of pernicious anæmia brought about by the new remedies has been balanced by an increased incidence or recognition of the disease.

Comparison of the age distribution of the 2,585 deaths in 1925 with that of the 2,591 deaths in 1932 reveals a transfer of deaths up the age scale during the interval, resulting in a decrease of 318 deaths at ages under 55 and an increase of 331 at ages over 65. The average lengthening of life of which this is a sign can be estimated by applying the 1921–26 death-rates to the population at each age in each of the following years, finding from the resulting calculated deaths the expected mean age at death, and comparing these values with the actual mean ages at death from pernicious anæmia in the corresponding years.

Table LX and Diagram 5 indicate that from 1926 to 1933 the rise in actual mean age was greater than the expected rise by  $3\cdot 3$  years for males and by  $3\cdot 5$  years for females. Provided, therefore,

#### DIAGRAM 5. PERNICIOUS AN/EMIA: MEAN AGE AT DEATH, ACTUAL,



that the age-distribution of incidence has not changed in the interval there has been a mean lengthening of life since 1926 for the whole population of pernicious anæmia cases, however treated and of all ages amounting to 3 to  $3\frac{1}{2}$  years.

astrofin	es of quo	Males.	s abiswao	Eel mor	Females.	
92 To 20	Actual.	Calculated.	Difference.	Actual.	Calculated.	Difference
CUNEL O	1.30 97060	inted N	doutlas in	es the B	1100013 17.1	1 SIGET
1921	55.9	56.2	-0.3	$53 \cdot 5$	54.3	-0.8
1922	55.6	56.2	-0.6	54.7	54.4	+0.3
1923	55.9	56.3	-0.4	54-2	54.5	-0.3
1924	57.4	56.4	+1.0	$54 \cdot 8$	54.6	+0.2
1925	57.0	56.5	+0.5	$55 \cdot 2$	54.6	+0.6
1926	56.9	56.7	+0.2	$55 \cdot 5$	54.9	+0.6
1927	58.5	56.8	+1.7	55.9	54.9	+1.0
1928	58.0	57.0	+1.0	57.1	55.1	+2.0
1929	59.8	57.1	+2.7	$58 \cdot 1$	55.2	+2.9
1930	59.4	57.2	+2.2	58.6	55.9	+2.7
1931	60.9	57.4	+3.5	58.7	55.7	+3.0
1932	60.8	57.5	$+3\cdot3$	59.8	55.8	+4.0
1933	$61 \cdot 1$	57.6	+3.5	60.0	55.9	+4.1

### Table LX—Pernicious Anæmia—Actual and Calculated Mean Ages at Death, 1921 to 1933.

The international group No. 71a, with heading "Pernicious Anæmia," on which all these statistics are based, includes also aplastic, essential or hæmolytic anæmias, Addison's anæmia and "progressive" or "profound" anæmias whose cause cannot be ascertained. At ages under 15 when true pernicious anæmia is unusual, these varieties account for a considerable proportion of the deaths assigned to this group.

Agranulocytosis (Agranulocytic Angina).—Although it was possible in 1931 to collect from the literature of this disease records of 225 deaths\* in various countries, only 12 deaths had been registered in England and Wales as due to agranulocytic angina or agranulocytosis, alone or in association with other causes, up to the end of 1932. Of these 2 occurred in 1930, 3 in 1931 and 7 in 1932† In 1933 31 deaths, and in 1934 39, were so attributed, the classification being in some instances to other causes such as pulmonary tuberculosis or lobar pneumonia with agranulocytosis as a contributory or associated cause.

\* "Journal of American Medical Association, 1931, XCVII, 1757. The number of cases was 328. Over 1,000 cases had been reported by the end of 1932 from various countries.

<sup>†</sup> Two deaths also are recorded in the literature which on certification were not attributed to the disease, one in 1928, a female aged 50, the other in 1931, a female child aged 7.

Pending a clearer definition of the disease as an established clinical entity, the deaths were classed until the end of 1934 to sub-groups 115(3) or 115(4) when it was described as angina, or with the unclassified anæmias in No. 71 b(2) when described as agranulocytosis. Since the two descriptions are now regarded as synonyms<sup>\*</sup>, the angina being secondary to the blood condition, and since the latter is not characterised by "anæmia" in the usually accepted meaning of the term but by an aleukæmia affecting the granular leucocytes, from 1935 onwards a new subgroup to comprise both descriptions, with title No. 72 b(2) aleukæmia (agranulocytosis) will be introduced into Tables 6, 7, 21 and 23, and No. 72b aleukæmia (lymphadenoma) will be designated 72 b(1).

Table LXI classifies the 82 deaths attributed wholly or in part to the condition in England and Wales during 1930–34 by sex and age, with distinction of those described as (AA) agranulocytic angina or agranulocytosis with mention of a throat lesion, and those described as (A) agranulocytosis without mention of a throat lesion.

#### Table LXI.—Agranulocytosis : Deaths attributed to the Condition (alone or in association with Other Causes), by Sex and Age, 1930-1934.

A—Agranulocytosis without mention of a throat lesion. AA—Agranulocytic angina, or agranulocytosis with throat lesion.

oda ast	M.   A.   	F. AA.	M. A.	F. AA.	M A.	AA.	1000	7.	M		F	7.	M	202	F	r	М.	F.
0 1 5 10 15		_	5 7 6 (180)	AA.	A.	AA.	A.			P. ANA	1000	ALC: NO						
$\begin{array}{cccccccccccccccccccccccccccccccccccc$		102124	1.15(2)	100				min.	A.	AA.	A.	AA.	А.	AA.	A.	AA.	tes	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	THINH HITTI					111111-01111111						   1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		22     1 11 11 1 1 1		2  323  2111224  1		$ \begin{array}{c}       2 \\       2 \\       1 \\       1 \\       5 \\       1 \\       6 \\       3 \\       6 \\       6 \\       6 \\       6 \\       6 \\       6 \\       6 \\       5 \\       5 \\       1 \\       1 \\       1   \end{array} $

Deaths of females totalled 61, and of males 21. The distribution in the successive decades of age was 3, 9, 12, 10, 11, 15, 14, 7, 1. Of the 19 without mention of a throat lesion 8 were attributed to agranulocytosis without qualification, and the remainder to "agranulocytosis" with mention of anæmia (3), septicæmia or

\* Reports on Public Health and Medical Subjects, Ministry of Health No. 76, 1935.

pyæmia (2), pneumonia and septicæmia (2), pneumonia (1), bronchitis (1), hæmoptysis (1), cerebral hæmorrhage (1). Of the 63 with mention of a throat lesion 33 were attributed to "agranulocytic angina" without qualification, 9 to agranulocytosis (or "agranulocytic anæmia") with an associated throat lesion variously described, and the remainder to agranulocytic angina with mention also of septicæmia (4), pneumonia or œdema of lungs (11), myocardial degeneration (2), uræmia (1), phlebitis (1), nephritis (1), phthisis (1).

The regional distribution was as follows: Greater London 29, remainder of South East 16, South-West 10, Lancashire 8, Yorkshire West Riding 6, Remainder of North Region 3, Birmingham 7, East 2, Wales 1.

#### Table LXII.—Deaths from or associated with Alcoholism; Deathrate per Million from the Combined Causes and from Cirrhosis of Liver not returned as Alcoholic, 1921-1933.

		Series 1		Num	ber of	Death	5.	- Aller			Death r	ate per
		Alcoholism No. 75.			ed as o	connec	ted wit	h alco	holism	•	million	persons.
	No.	No. 75. M. F.	Cirrl of 1 124	iver	He dise 90-		Viol dea 163-	ths		her ses.	Returned as alcoholism or associated	Cirrhosis of liver not returned as
1104	M.	F.	М.	F.	М.	F.	М.	F.	М.	F.	therewith.	alcoholic 124 (b).
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	127 117 104 95 76 84 74 85 49 40 61 43	55 47 47 33 55 39 24 34 49 45 41 34 30	100 103 98 90 87 82 162 210 175 144 162 ,115 115	54 47 54 57 49 50 101 110 83 71 99 62 77	$\begin{array}{r} 41\\ 41\\ 22\\ 36\\ 25\\ 31\\ 40\\ 54\\ 69\\ 46\\ 45\\ 42\\ 52\\ \end{array}$	17 14 12 8 19 20 22 34 38 25 35 19 19	61 52 46 44 34 36 37 30 41 35 24 18 24 18 24	$ \begin{array}{c} 11\\ 16\\ 16\\ 7\\ 6\\ 17\\ 14\\ 10\\ 11\\ 10\\ 2\\ 4\\ 10\\ \end{array} $	125 125 106 120 90 90 176 205 206 147 136 99 79	56 59 57 53 48 58 92 102 75 75 45 45 35	$\begin{array}{c} & 17 \\ 16 \\ 15 \\ 14 \\ 13 \\ 19 \\ 22 \\ 21 \\ 16 \\ 16 \\ 12 \\ 12 \\ 12 \end{array}$	47 46 42 42 44 44 41 40 38 36 34 32 26

75. Alcoholism.—This heading in the International List of causes of death excludes organic disease attributed to alcoholism, so, in order to obtain as complete information as possible with regard to mortality from over-indulgence in alcohol, all the deaths in certification of which any mention of alcohol appears are assembled in Table LXIII.

Although the conditions of medical certification can scarcely be expected to admit of a full and reliable return of deaths due, in part or altogether, to alcoholism, experience has shown that the figures in Table LXIII and its predecessors have in the past fluctuated in remarkable harmony with other indices of alcoholic intemperance, and are thus not without value as indicative of at least the relative extent of this form of mortality in different years, even though they Table LXIII.—Deaths from or connected with Alcoholism—1933.

	and the state of the second				11/1			10.50				-					_
		All .	Ages.	Und	er 25	2	5-	3	5-	. 45	5-	5	5-	6	5	75	5-
	Chapter outside the	M.	F.	М.	F.	М.	<b>F</b> .	М.	F.	М.	F.	M.	F.	М.	F.	М.	F.
75.	Deaths attributed solely to alcoholism	43	30	120		6	1	7	5	7	10	12	8	10	6	1	-
	attributed to other causes in nction with alcoholism-	1000					N. S. S. S.		1000			and a second	(A.M.	e set	tre		
11.	Influenza	8	1	_	-	-		2		4	-	2	-	-	1	-	-
15.	Erysipelas	2	-	-		-	-			2	-		-	-	-	-	-
23.	Tuberculosis of the respira-	1	1		11-1	1 Aler	22	1 El	- A CO	1	1	1 in	1-1-1	122			
34.	tory system	1	-	_		-	_	_		1	-	-		-		-	-
45-53.		5	1		0.229	1	1200			2	1	2		1	-	-	-
54 (a)	Fibroid of uterus	-	1	-	-	-	-	1			1	1 total		-	1	=	-
57-2.	Osteo-arthritis	1	1	-		-				1.	ST. B.	100		1	1		-
59. 60.	Diabetes Scorbutus	1	1		_						1	_			_		-
70 (a)	Purpura hæmorrhagica	1	1		-			-		-			-	1	-	-	-
71 (a)	Aplastic anæmia	-	1	-	-			-		-	1	-				-	-
76.	Paraldehyde poisoning	1	8-8	的表示的	17	1277	0.1.2.3		STATE!	1	10.00	1	1.000	-	200	ATE .	-
80. 82.	Tabes dorsalis Cerebral hæmorrhage, apo-	P Ches	10 The sec	- Farmer	Inint	the same	These	- and	10-1	Barrie a	astr is	1					-
04.	plexy, etc	5	1		-		-	2	-	2	-			1	1	-	-
84 (b)	Other forms of insanity	2	-				-	1		1		and the same	and the second		and the second second	-	-
85.	Epilepsy	2	5	-	-	1	-	1 1	2	3	2	1	1	_	and a	-	-
87 (b) 92.	Neuritis, neuralgia Valvular disease of heart	5	3			10.550		1	4	2	-	2	-	3	1	_	2
	1) Fatty heart	11	3			1		3	1	3	2	4	-		-	_	-
	2) Cardiovascular degeneration	3	1	( <del></del> );	1					-	-		1	3			-
93 (b : 3	3) Other or unspecified myo-					1755				3	anan i	5		4	1	3	
00 ()	cardial disease	18	8	-		2		1	2	3	4	5	-	4	1	3	1
93 (c)	as acute or chronic	8	1		100		126.00	1	1	2		4		1	_	1	-
94.	Diseases of the coronary		10.00				200		1	1000		12.11.20					
	arteries	3	1			-	-	-	-	-	-	1	-	2	1	-	-
95 (b:2	2) Heart disease (undefined)	15	$\frac{2}{2}$		1000	-	-	-	1			$\begin{vmatrix} 1\\ 2 \end{vmatrix}$	1	3	1	_	1
97. 106.	Arterio-sclerosis Bronchitis		2					Kange	136	37	-	-	1	1	i	1	-
107.	Broncho-pneumonia	4	4		-		_		-	2	1	1	1		2	1	-
108.	Lobar pneumonia	9	1		-	1	-	4		1	-	3	1	-	-	-	-
110 (2)	Pleurisy	1	1	+		1	-	-	1					1			-
112. 115 (3)	Asthma Diseases of the tonsils	2						2	-	_		_	_				_
117.	Ulcer of the stomach or		100.5						12	Aller	1.32	1.42			1.184		1991-
	duodenum	5	-	-	-	-	-	1	-	2	-	2	2	-	3	-	-
118 (1)	Inflammation of the stomach	5	5		-	_				4	1	1	2		0		
	Diarrhœa and enteritis DFemoral hernia	-	1		I				1	-	-	-	-	_	-	-	-
122 (b)	Intestinal obstruction		1	-	-	-	-	-	1200	-				-	1	-	-
124 (a)	Cirrhosis of the liver	115	77	+	-	2	-	7 2	7	31	20	37	29 1	31	15	7	6
	Nephritis	7	3	-1	-		_	2	-	3	1	1	-		-	-	
133(a) 133(b)	Pyonephrosis Cystic kidney		1		_		_		2-			-		-	1	-	
152 (1)	Cellulitis of back	1	-			-		-		1	-	-			-	-	-
163-171	. Suicide	3	3			-			2	2	1	1		-		-	-
183.	Accidental drowning Injury by fall	11		1	The	100-00	TIN	$\left  \begin{array}{c} -1 \end{array} \right $	mart	1	2	4	2	4	1	1	
186 (pt.)	Injury by crushing (vehicles,	11	0			- The	-	-	1		-	110 11	-	1			
100 (pt.)	railway, etc.)	3				1	-	-		2				-		-	-
	Other violence	6	2	1	1 - 1	-		4	15-5	1000	-	1	1	1	1	-	-
	TOTAL	313	171	1		15	1	42	23	83	49	89	49	68	39	15	10
	101111						100				1		1000			1-	

cannot be taken as measuring it absolutely. During the half century prior to 1926 the mortality rates derived from such tabulations fluctuated in close correspondence with the records of consumption of alcohol (*see* Diagram II in Review for 1929).

After 1926 the change in the form of the medical certificate produced a temporary disturbance, consisting, as Table LXII indicates, in a sudden increase in deaths attributed to various causes with mention of alcoholism. Violent deaths with associated alcoholism were unaffected, numbering 53, 51, 40, 52, 45, in the five years from 1926 to 1930, and then falling. Deaths attributed to heart diseases with mention of alcoholism increased from 51 in 1926 to 107 in 1929, but in more recent years have fluctuated about 70. The death-rate per million due to cirrhosis of the liver with mention of alcohol increased from 3 in 1926 to 8 in 1928, and has since declined to 4 in 1932 and 5 in 1933 (Table 7), whereas the rate for cirrhosis without mention of alcohol has declined continually from 44 in 1926 to 26 in 1933. Deaths attributed to causes other than violence, heart disease or cirrhosis of the liver, with mention of alcoholism, increased from 148 in 1926 to 281 in 1929, but have rapidly declined since to 114 in 1933.

The number of deaths attributed solely to alcoholism without mention of other causes, 73, is the lowest recorded.

82. Cerebral Hæmorrhage, Apoplexy, etc.—The revised form of the International List (1929) in use since 1931 combines in one group, No. 82, the causes of death which constituted No. 74, cerebral hæmorrhage, apoplexy, etc., No. 75, paralysis of unstated origin (mostly hemiplegia), and No. 83, cerebral softening, in the former classification. The last two groups are of diminishing importance, their contributions forming  $4 \cdot 5$  and  $1 \cdot 0$  per cent. respectively of the total in 1933, compared with  $7 \cdot 9$  and  $3 \cdot 1$  per cent. respectively in 1921.

The deaths assigned to this heading in 1933 numbered 25,720 (males 11,215, females 14,505). The standardized rates, 404 per million for males and 399 for females, were the lowest recorded. The true frequency of these causes of death since 1926 is somewhat masked by an increasing tendency, encouraged by the introduction in 1927 of the new form of medical certificate, to state the disease causing the hæmorrhage, which has resulted in a transfer of deaths from cerebral hæmorrhage to arterio-sclerosis, myocardial disease and chronic nephritis, three of the chief diseases with which cerebral hæmorrhage is most frequently associated in the certification of causes of death. It is difficult to estimate the extent of the transfer to myocardial disease and chronic nephritis, but any vitiation of comparability with past records in respect of arterio-sclerosis can to a great extent be overcome by adding the deaths from cerebral vascular lesions associated with arterio-sclerosis, No. 97 (1) and (2), separately tabulated since 1921 (as 91b: 1 in the 1921-30 classification) to those from cerebral hæmorrhage without statement of cause.

The crude death-rate from the combined headings (Nos. 82 and 97 (1) and (2)) was 903 for males and 1,005 for females. When standardized, however, to eliminate the effect of the increasing age of the population, the male rate of 628 and the female rate of 576 per million are remarkably close to the rates of 1921, namely, 640 for males and 592 for females.

90–95. Heart Diseases.—The number of deaths allocated to this cause, 108,087, 51,412 of males and 56,675 of females, was as usual larger than for any other item in the list of causes.

These numbers are equal to crude death-rates per million of 2,656 for males and 2,700 for females, which are the highest recorded for each sex during the present century. When standardized, the revised rates are considerably reduced to 1,896 for males and 1,616 for females, but still remain in this form the highest in any year for males and in any year except 1929 for females (Table 8).

As pointed out in previous Reviews the recent increase of crude mortality (Table 7) from heart diseases is due, among other causes, to the increasing age of the population and to rapid increase of the record of myocardial degeneration in certification of the deaths of old people. Table LXIV shows how the rates quoted above for 1933 have been affected by these influences, and what, but for them, would have been the course of recent mortality from diseases of the heart. This has been done by ascertaining and deducting

Table LXIV.—Deaths in Standard Million from Heart Diseases at all ages, and from senile myocarditis at ages over 65 in 1921 and 1931-33; also the mortality in each year 1922-33 per cent. of that in 1921.

		trees red	Males.	with 7.9	Females.					
		All Heart Diseases.	" Senile Myo- carditis " (see text).	Col. 1 less col. 2.	All Heart Diseases.	" Senile Myo- carditis " (see text).	Col. 4 less col. 5.			
<del></del>		(1)	(2)	(3)	(4)	(5)	(6)			
1921	201021	1,203	154	1.049	1,107	145	962			
1931		1,845	746	1.099	1,592	646	946			
1932		1.848	779	1,069	1,560	661	899			
		1.896	818	1,078	1,616	. 705	911			

Rates for subsequent years per cent. of those for 1921.

1922	 108	129	105	110	129	107
1923	 101	136	95	102	134	97
1924	 105	165	97	107	158	99
1925	 110	203	96	110	192	98
1926	 108	219	92	107	210	92
1927	 117	259	97	118	248	98
1928	 123	296	97	122	285	97
1929	 153	450	109	150	427	108
1930	 142	421	101	134	388	96
1931	 153	484	105	144	446	98
1932	 154	506	102	141	456	93
1933	 158	531	103	146	486	95

from the standardized death-rate from all heart diseases (Table 8) that portion of it for which chronic myocardial disease (other than fatty heart) at ages over 65 was responsible in each year 1921–33, that is to say, the deaths at this age in the standard million derived from the three groups 93b (2), 93 (b) (3) and 93 (c), corresponding to No. 90 (7) prior to 1931. The rates for the years 1922 to 1930 were shown in detail in Table L of the Review for 1931.

The crude death-rate from heart disease has increased since 1921 by 89 per cent., but the standardized rate has increased by 58 per cent. for males and 46 per cent. for females. When further allowance is made for the disturbing influences mentioned above, the increase is seen to have been only 3 per cent. for males and there has been a decrease of 5 per cent. for females.

Table LXIV also shows how rapid has been the increase for each sex of mortality ascribed to senile myocarditis, the rates for 1933 being about five times those of 1921. Its contribution to total heart disease mortality has increased from 13 per cent. in 1921 to 46 per cent. in 1933. Another change in the medical terminology of heart disease is reflected in the rise in the standardized death-rate attributed to "disordered action of the heart," now separately classified in the International List as group No. 95 (a), from 6 per million for each sex in 1919 to 37 for males and 46 for females in 1933. This increase is doubtless mainly at the expense of "heart disease (undefined)" for which the standardized rates have fallen since 1922 from 271 to 78 for males and from 250 to 73 for females.

The progressive rise since 1920, commented on in previous Reviews, in the standardized mortality assigned to diseases of the coronary arteries and angina pectoris, No. 94, continued in 1933. For males this rate has risen from 32 in 1920 to 224, and for females from 13 to 80. Part of this has been due to the transfer, since mid-1927, of deaths due to atheroma and sclerosis of the coronary arteries from the arterio-sclerosis group, as pointed out in the Review for 1928 (p. 100), but the increase since 1928, more than doubling the rate for each sex in 5 years, represents a real change in the frequency with which death is attributed to coronary disease. Comparison of the death rates per million at various ages, in 1928 and 1933 is made below.

			0-	35-	45-	55-	65–	75 & up
$Males \left\{ \right.$	1928		2	39	168	492	1.022	1.264
maics	1933		2	71	391	1,027	2,249	3,171
Females	1928		0	7	34	143	414	624
- cindics J	1933	••	1	18	80	313	898	1.618

The increase in the short space of 5 years amounts to 130 per cent. at ages 45–55, 110 to 120 per cent. between 55 and 75, and over 150 per cent. at ages over 75.

104-114. Diseases of the Respiratory System.—The total number of deaths allocated to these diseases was 56,240, or 1,432 more than in 1932. The standardized death-rate for males, 1,442 per million, is the lowest recorded, save in 1930 and 1932, and the rate for females, 1,043, is lower than in any year except 1930 (Table 8). The March quarter was responsible for 47 per cent. of the deaths, compared with 44 in 1932 and 47 in 1931 (see Review for 1931, Table LI). The remarkably low respiratory mortality in February and March, having regard to the very high influenza death-rate in January and February, is revealed in Table LXXXIX, and also below.

The seasonal deaths assigned to respiratory diseases, without mention of influenza, and from influenza with and without mention of respiratory complications, may usefully be compared with the corresponding figures for mid-1926 to mid-1927, a year which suffered almost the same influenza mortality as 1932–33, and for mid-1929 to mid-1930, a year of low influenza prevalence.

		without espirator mplicatio		ni s r	with espirator mplicatio		Diseases of respiratory system.			
	1926–7	1929–30	1932–3	1926–7	1929–30	1932–3	1926–7	1929–30	1932–3	
July August September October December January February March March May June	114 76 104 212 297 252 1,130 2,558 1,374 383 199 153	98 87 81 141 159 196 233 232 257 204 142 89	$78 \\ 58 \\ 75 \\ 150 \\ 177 \\ 385 \\ 2, 560 \\ 1,701 \\ 429 \\ 236 \\ 136 \\ 74$	120 82 77 245 381 378 2,868 6,871 3,143 565 285 161	126 81 77 212 351 318 389 532 565 348 228 111	67 56 67 232 854 8,942 5,434 783 347 162 99	$\begin{array}{c} 2,719\\ 2,263\\ 2,424\\ 4,333\\ 6,071\\ 7,643\\ 12,555\\ 16,160\\ 9,482\\ 5,577\\ 4,674\\ 3,846\end{array}$	2,443 3,590 4,815 4,920 5,881 6,601 7,255 5,073 4,072	$\begin{array}{c} 2,264\\ 2,040\\ 2,098\\ 3,353\\ 3,630\\ 5,769\\ 12,507\\ 8,619\\ 5,332\\ 4,076\\ 3,085\\ 2,583\end{array}$	

The 1927 epidemic reached its maximum in February, whereas that of 1933 produced most deaths in January. The March quarter deaths were as follows :—

	1927.	1930.	1933.
Influenza without respi- ratory complications	5,062	722	4,690
Influenza with respira- tory complications	12,882	1,486	15,159
Respiratory disease	38,197	19,737	26,458

A more complete mention on the death certificate of influenza as the cause of respiratory deaths in 1933 than in 1927 is suggested by these figures, but the total excess of deaths from respiratory disease, with or without associated influenza, over the number in 1930 was 20,394 in 1933, compared with 29,856 in 1927. It is also noticeable that although deaths from respiratory disease, without associated influenza, during the epidemic period from December 1932 to February 1933 exceeded those of the corresponding months of the healthy winter of 1929–30, very low levels of mortality from this cause were reached in the months just preceding and following this period.

The decline in pneumonia mortality rates at various ages in recent years is indicated in Table LXV. The three years 1922, 1927 and 1933, which are separated for comparison as influenza years, were characterised by almost the same degree of influenza mortality, the total deaths registered from that cause being 21,498 22,263 and 22,890 respectively. At each age except 5–15 and over 75 these years show a progressive decline in pneumonia rates, and this is also evident at every age when the normal years 1925 and 1930 are compared.

Table LXV.—Pneumonia (All forms): Death rates per Million living at various ages in several years from 1911-20 to 1933.

and to m	1911–20.	Norma	al years	In	fluenza ye	ears	1933 per cent of
i if she does	an Jac.	1925.	1930.	1922.	1927.	1933.	1911–20
Iales—	March 1	+ aborto	ha alt a	Charles and	Lange day	1	-
0	5,497	4,808	3,318	6,180	5,265	3,696	67
5- ·· 15- ··	273	204	168	186	226	169	62
25-	374	213	172	240	212	170	45
35-	605 838	349 727	288	428	321	255	42
45-	1,262	1,030	612 975	749	677	553	66
55-	1,985	1,575	1,335	1,031 1,699	984	928	74
65-	3,095	2,812	2,234	3,065	1,464 2,818	1,320	66
75 and up	4,500	5,175	3,978	4,878	5,102	2,017 4,510	65 100
emales-			Suchau		a Depus	1993, 9 <u>0</u> ;	12010124
0	4,564	3.921	2,571	5,029	4,143	2,939	64
5	270	191	142	181	189	146	54
15-	206	. 115	92	122	114	101	49
25	320	204	134	228	184	151	47
35	402	283	228	330	297	280	70
45	576	440	313	475	422	386	67
65-	1,061 2,148	883	666	995	862	710	67
75 and up	2,148	2,109	1,521	2,171	2,048	1,563	73
ro and up	3,000	4,503	3,508	4,210	4,355	4,168	110

Comparison of 1933 with 1930 shows that, despite the epidemic 1933 registered lower pneumonia rates for males between the ages 15 and 75. Since 1911–20 the decline has exceeded 50 per cent. at ages 15–35, and has exceeded 25 per cent. at every age under 75 for each sex.

140–150. The Puerperal State.—Deaths and their Classification. The number of deaths assigned to diseases of pregnancy, childbirth and the puerperal state was 2,618 (Tables 6, 21 and LXVI), of which 378 or 14.4 per cent. were assigned to abortion, 252 or 9.6 per cent. to ectopic gestation and other accidents and toxæmias of pregnancy, and the remainder to diseases and accidents of childbirth at full term.

In addition 85 deaths from criminal abortion were assigned to various forms of violence, e.g., suicide, murder, etc., in accordance with the verdicts recorded by the coroners' juries (Tables 25 and LXVI), and 828 deaths of pregnant or parturient women who suffered from various non-puerperal diseases (Table LXVII) were classified to those diseases. The assignment of deaths, attributed to a non-puerperal cause, in association with pregnancy or the puerperal state, to the puerperal group on the one hand or to the non-puerperal cause on the other is carried out in accordance with rules of precedence outlined in the Manual of the International List of Causes of Death.

It should be remembered that the 828 deaths defined by this process as "not classed to pregnancy but returned as associated therewith," or in shorter terminology as " classed to non-puerperal causes," resulted in large part from risks to which the general population of women was exposed and a large proportion of them would have occurred if these women had not been pregnant. Every pregnant woman is exposed to about the same hazards of dying from non-puerperal causes as if she had not been pregnant, and if she does so die the fact of pregnancy or recent parturition is usually mentioned on the death certificate on the grounds that notwithstanding that normal childbearing is a physiological process it is difficult to assert categorically that in the presence of some serious disease it did not, by diminishing the reserves of strength or by some other means, render recovery more difficult. The introduction of the new form of certificate in 1927 undoubtedly resulted in a more complete recording of associated childbearing, since this might in many instances be regarded as " contributing to death but not related to the immediate cause," though neither " primary " nor " secondary " in the terminology of the old form of certificate.

It was suggested in the Review for 1927 (p. 79) that part of the jump in associated deaths noticed in that year was due to this change, and it is perhaps best demonstrated by contrasting the subsequent trend of associated deaths (excluding those assigned to influenza which depend on the presence or absence of an epidemic) with the trend of non-septic puerperal deaths, each in terms of the mean annual deaths in 1924–26 taken as 100.

		1924–6 mean)	1927	1928	1929	1930	1931	1932	1933	
Puerperal causes	non-septio	The second s	93	97	91	90	87	89	87	
	influenza	)								
	ciatedchild		110	110	120	112	122	98	104	

No change in the application of the rules of precedence of puerperal over non-puerperal causes was made with the introduction of the new certificate, and the different trends cannot be explained by transfer from the one group to the other. The fall in the number of deaths assigned to puerperal causes other than sepsis is accounted for by the decline in births, but the deaths assigned to other causes having mention of pregnancy or childbirth, instead of falling in sympathy, increased for several years and these deaths during 1931-33 were 8 per cent. in excess of 1924-26 compared with a 12 per cent. deficiency of puerperal non-septic deaths. On this basis it may be estimated that more complete mention of associated childbearing on the new form of medical certificate of death accounts for about one-fifth of the deaths now assigned to causes other than puerperal (Table LXVII) and therefore of the rates from nonpuerperal causes (Tables LXXII, LXXIII) and this should be borne in mind when comparing recent rates with those prior to 1927.

It is difficult to estimate what proportion of deaths of pregnant or recently confined women escape inclusion in one or other of these groups. A number of abortion deaths are doubtless attributed to non-puerperal causes without mention of the abortion, but apart from these it seems probable that the great bulk of deaths of married women from any cause between the 4th month of pregnancy and one month after confinement find their way into these groups, and that those who escape are compensated for by the considerable number included with mention of pregnancy of less than 4 months duration or occurring more than one month after confinement. On that assumption the annual number of deaths due to nonpuerperal risks to be expected amongst the married women who were pregnant during the year can be approximately estimated by regarding each as exposed to the non-puerperal death rate of married women for the appropriate age during an average period of 6 months. The estimated legitimate live and still births in 1933 to married women at ages 15-25 numbered 124,420, at ages 25-35 331,200 and at 35-45 123,080, and applying to these completed pregnancies the non-puerperal death rates during 1930-32 amongst married women derived from Table XXXIV, the expected deaths number 1,560 in the full year or 780 in half a year (or if they were exposed to the non-puerperal death rates of single women, the expected number would be 989 for the half year. Actually 771 deaths of married women were classed to non-puerperal causes with mention of pregnancy or childbearing.

This supports the view that the number of deaths which are assigned by the methods applied in England and Wales to "nonpuerperal causes but associated with pregnancy or childbearing" approximately represents the number which ought properly to be so assigned, and that this group of deaths ought not to be laid at the door of childbearing.

It is true that Table LXVII contains a considerable number of deaths which would more properly be classed as puerperal—

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some of these are specified below in the comment on that table but these tend to be balanced by the inclusion in Table LXVI of deaths following puerperal sepsis of slight degree associated with serious non-puerperal disease, such as lobar pneumonia or pre-existent kidney disease, which, owing to the high precedence always accorded to sepsis over such diseases, are classed to the puerperal cause. In order to ascertain what modification of the distribution of deaths between the puerperal and associated groups would result if the allocation was freed from all such rules of selection of joint causes and based in every instance upon the order of causation stated by the certifying practitioner, the first quarter's deaths for 1934 were classified by both methods with the following result.

ALL XXIII NOT THIS SHOULD BE DETENDED	By method laid down in Manual.	By preference as stated on Certificates.
'Puerperal'' group	767	752
'Puerperal'' group	255	242
indeterminate	Main and in a state of	28
Percentage of determinate deaths assigned to "puerperal" group	75.0	75.7

The indeterminate group consists of certificates completed in such a way that no opinion could be formed as to which was thought to be the most important cause.

It is evident that the total distributions between the puerperal and non-puerperal groups resulting from the two methods are in agreement within a small margin of probable error, and this lends further support to the conclusion arrived at above, by an independent process of reasoning.

The addition of the non-puerperal deaths in toto to the deaths assigned to puerperal causes in order to produce a total rate of "mortality from or associated with pregnancy or childbirth," as in Table LXXII, only implies that in this rate are included the deaths from all causes whatsoever (other than criminal abortion) in the course of whose registration it is ascertained that the woman was pregnant or had been confined within a significantly short period. The procedure with regard to the classification of deaths from jointly stated causes at present differs so widely in different countries that the statement of a total rate based upon such a simple definition provides the only possible means of international comparison, but even when so used it is necessary to bear in mind the differing completeness of certification of associated pregnancy in countries employing different forms of certificate.\* Whilst these considerations seem to justify the continued statement of the combined rate for certain purposes, this total rate must be regarded as an over-

\* Comparability of Maternal Mortality Rates in the United States and certain Foreign Countries. Washington, 1935.

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statement of the immediate mortality risk which childbearing involves.

Assessment of puerperal mortality in a form which will be comparable with that of past and future years is also complicated by (1) changes in classification mainly due to the international revisions, (2) the sudden interest in abortion deaths as distinct from other puerperal deaths, (3) the absence of statistics of multiple births and abortions, and (4) the establishment of still-birth registration in 1927. The need for maintaining continuity whilst at the same time making full use of the additional data becoming available at various times in recent years makes a multiplication of rates unavoidable.

Changes of Grouping in 1911, 1921 and 1931 which have affected comparability of the rates may be summarised as follows. In 1911 deaths from puerperal mastitis, previously included with puerperal septicæmia or fever, were transferred to a new group puerperal diseases of the breast," and have since remained in that group, this transfer from the sepsis group to "other puerperal causes" being responsible for the slight differences in the two series of "puerperal sepsis" rates in Table LXXII. Deaths from puerperal nephritis and albuminuria, previously assigned to diseases of the kidneys, were brought within the puerperal causes as new groups, this addition in conjunction with the transfer of mastitis deaths accounting for the differences in the two series of rates from other puerperal causes in Table LXXII. From that year also "hæmorrhage of pregnancy" was separated from puerperal hæmorrhage, whilst ectopic gestation, "uncontrollable vomiting" and puerperal embolism were separated from other accidents of pregnancy and of childbirth in the annual reports, although the International List did not distinguish them until later revisions.

From 1931 post-abortive sepsis was separated from the general group of puerperal sepsis when abortion was specified, and antepartum hæmorrhage was transferred to the group of non-septic abortion. The latter heading was subdivided for convenience in Tables 6 and 7 into two sub-groups, (1) deaths from "hæmorrhage following abortion" which prior to 1931 had been distinguished only in the detailed table of the Text volume, but elsewhere merged in the old groups of " abortion " and " other accidents of pregnancy," and (2) deaths from "abortion without record of hæmorrhage" which comprised those deaths without mention of hæmorrhage included in the old "abortion" group. In the same year chorea and vomiting of pregnancy were transferred to the new group of "other toxæmias of pregnancy" along with undefined "toxæmia" deaths which had previously been included under the heading puerperal albuminaria and convulsions. Deaths attributed to puerperal tetanus" were brought within the puerperal causes, the number so described being much too small to appreciably affect the rates. Puerperal thrombosis was also transferred from the

embolism group to " puerperal phlegmasia alba dolens not returned as septic."

In all tables where deaths or rates are shown for a series of years, the transfers necessary to insure comparability with previous years have been effected as far as possible but for certain of the changes in 1931 this could not be done. Thus some of the transfers involved in the formation of the new group of "other toxæmias," No. 147, in 1931, could not be carried out for the preceding years, and in making comparisons with such years in Tables 6, 7, LXXI, LXXIV or LXXV, the two groups 146 and 147 must be considered in conjunction. (This does not apply to Table LXXVI where the necessary transfer of deaths in 1930 has been effected.) For a similar reason No. 141, abortion without sepsis, is comparable before and after 1931, but its sub-divisions taken individually (Tables 6 and 7) are not. This also applies to No. 148, puerperal phlegmasia alba dolens, the subheads shown in Tables 6 and 7 not being comparable before and after 1931 owing to the transfer of puerperal thrombosis from (b) to (c), though the group as a whole is comparable. With these exceptions no serious error is likely to be involved in reading the tables as they stand, so long as it is remembered that no correction has been or can be made for the gradual changes in fashion or mode of description of the various puerperal causes by certifying medical practitioners. For the years prior to 1911 comparability is made possible by the calculation of a duplicate series of rates (Table LXXII).

Abortion deaths with sepsis were not separated from the comprehensive group of puerperal sepsis in the International List until 1931, but from 1926 deaths from post-abortive sepsis were separately counted where the duration of pregnancy was specified, the number being stated in a footnote to the detailed table of the Text volumes, though still included under the "puerperal sepsis" heading until the end of the decade. It is not possible therefore, to ascertain the total number of abortion deaths in years prior to 1926, but for each year 1926 to 1933 the deaths attributed to or associated with abortion, defined in Tables 6, 7, 25 (supplementary group VI) and in the note to Table LXVII, have been brought together in Table LXVIII. The heading "post-abortive sepsis" includes all deaths attributed to puerperal sepsis where abortion or miscarriage is said to have occurred excepting those in which the duration of pregnancy is stated to have been 7 months or over. Group No. 141 comprises deaths attributed to abortion, miscarriage (not further defined), or to premature birth or confinement stated or found on inquiry to have occurred after less than 7 months' gestation, retention of dead ovum, accidental hæmorrhage of pregnancy or ante-partum hæmorrhage. Criminal abortion comprises only inquest cases, the 85 deaths in 1933 being classed to suicide (52), murder (2), manslaughter (6), offences against the person (1), and open verdicts (24).

#### Table LXVI.—Deaths of Women classed to Pregnancy and Childbearing, 1933.

			Civil	Condi	tion.	1				Ages.			
	Cause of Death.	All Ages.	Single.	Married.	Widowed.	10-	15-	20-	25-	30-	35-	40-	45 and up- ward
40.	Post abortive sepsis	257	30	220	7	-	7	34	51	69	73	21	2
	Single	=	30	220	-	-	52	14 20	- 6 43	1 67	4 67	19	2
	Widowed			220	7		4	20	- 2	1	2	15	-
	Scarlet fever	1	1	-		-	1		Non-		The state of	1	
	Bacillus coli infection	1	1	-	-	-	-	-	-	-	1	-	1
	Pneumococcal infection Staphylococcal infection	1		1					1	The second	1		
	Streptococcal infection	11	1	10	-	-	-	2	· · 2	3	2	1	1
	Gas gangrene	1	1	1	-	-	-		- Antonio		1 3	-	-
	Septic phlegmasia alba dolens, phlebitis and thrombosis	4	1	4	1	I TOR	-	Trol	Sales 1	(assess)	3	-	
	Septic pneumonia	2	-	1	1	_	-	1	1 1 1 1	1	1	-	-
	Septicæmia	119	15	103	1	-	2	18 3	20 2	33	35	11	-
	Sepsis	11 17	2	9 17			1	3	4	7	3	3	
	Pelvic peritonitis	6	-	4	22	-	-	1	1	2	2		-
	Peritonitis	29 10	5	22	2	16.3	1	52	93	8	4 2	22	-
	Metritis	1	1	1		1		4	-	1	-	-	
	Endometritis	15	1	14	-	-	2		5	4	4	-	-
	Parametritis Perimetritis	3	-	3	-	-	-	1	• 1	1	1	1	1
	Perimetritis Erysipelas	1		1 1				-	1	_	Contrainty of		
	Pyæmia	6 5	1	5	-			- 1	200	2	3	- 1	-
	Pelvic cellulitis	5	-	5		-		1	- 1	3	1	-	-
	Pelvic abscess	3	1	2				-	1	1	1	_	
	Other specified septic conditions "Puerperal fever"	6	1 -	5	1	-	-	-		2	4	-	-
11	"Puerperal fever"	$1 \\ 121$	9	1 109	3	-	1	10	19	26	45	1 18	2
	Abortion not returned as septic Single	121	9	109	-		1		19	20	40	10	-
	Married		-	109	-	-	-	37	17	23	42	18	2
	(1) Hæmorrhage following abor-	108	8	98	32	-	1	9	16	$\frac{1}{23}$	2 40	17	2
	tion.	108	0	30	4	-	1	9	10	40	40	17	-
	Single	-	8	-	-		1	27	2	2	1		-
	Married Widowed	_		98	2	- was	-	7	14	20 1	38 1	17	2
	(2) Without record of hæmorr-	13	1	11	ĩ	_		1	. 3	3	5	1	-
	hage.			1211					1.	12017403	12 AF		
	Single Married	1	1	11	-	-		1	3	3	4	1	Janin
	Widowod	_			1	_					1	-	_
12.	Ectopic gestation	90	777	81	*2	-	2	5	22	30	22	*8	1
			7	81	_		2	1 4	- 20	1 29	$\frac{2}{20}$	7	1
	Widowed				*2				1			*1	
3. (	Other accidents of pregnancy	22	1	20	1	-	-	7	2	6	2	1	- 4
	Single Married		1	20				1 6	2	5	2	1	4
	Widowed	-	-		1	_		_		1 -	_		
	Hydatidiform mole,	8	1 .	7	- 1	- ANTER	-	• 4	- 1	-		1	2
	Carneous mole Hydramnios	1 4		14				1	_	1	-	1	2
	Hydramnios Retroverted gravid uterus "Pregnancy" (unqualified)	2	-	2	_	101	11-		and the second	-	2		
	" Pregnancy " (unqualified)	7	-	6	1	-	-	2	1	4		-	-
4. 1	Puerperal hæmorrhage Single	269	6 6	260	3		2	23	65	67	68 2	41	3
	Married		-	260			2	22	62	67	65	39	3
	Widowed	107	-	100	3	-	-	-		-	1	2 27	-
	(a) Placenta prævia	137	3	132	2	2.0	T	9	29	31	38 1	27	3
	Married		-	132		_		8	28	31	37	25	3
	Widowed	100	-		2	-	-				-	2	
	<ul> <li>(b) Other puerperal hæmorr- hage.</li> </ul>	132	3	128	1	-	2	14	36	36	30	14	1900
	Single	-	3	1			1	_	2	Dame -	1		
	Married	-		128	-		2	14	34	36	28	14	1
	Widowed Post partum hæmorrhage	69	3		1	The second second	2		21	17	1	9	-
	Adherent or retained placenta	49	3	66 48	1		2	10	14	17	17	4	
	Accidental hæmorrhage	14	100000000	14		1000	Tar. an	1	1	5	6	1	10 Section

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	n	0	
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Table LXVI—continued.

			Civil (	Condit	ion.	. Ages.							
	Cause of Death.	All Ages.	Single.	Married.	Widowed.	10-	15-	20-	25-	30-	35-	40-	45 and up- wards
145.	Puerperal sepsis not returned	804	45	756	+3	_	26	137	*241	186	*156	53	5
	as post-abortive. Single	-	45	_	-		4	18	11	3	6	3 50	
	Married Widowed	_	_	756	+3	-	22	118 1	229 *1	183	149		-
	(a) Puerperal septicæmia and pyæmia.	803	45	755	†3	-	26	137	*240	186	*156	53	5
	Šingle Married	_	45	755	_	_	4 22	18 118	11 228	3 183	6 149	3 50	5
	Widowed Scarlet fever	-	_	1	†3	_	_	1	*1	· 1	*1		;
	Streptococcal infection	37		37 1	-	-	1	6	15	8	6	1	I
	Pneumococcal infection Staphylococcal infection	1 2	-	12	-	-		_	1		$\left  \frac{-}{1} \right $		
	Bacillus col infection Gas gangrene	5		5	-	_	-	1		1 9	29	17	$\left  \begin{array}{c} - \\ 1 \end{array} \right $
	Septic phlegmasia alba dolens, phlebitis, throm-	38	-	38	-	-		4	•	5			
	bosis. Septic pneumonia	14	1	13	-		-	2	7	3	2	-	-
	Septic endocarditis Septicæmia	4 295	10	4 284	*1	1	13	49	2 84	1 74	1 •56	18	1
	Sepsis	110 32	84	101 28	*1		4	17 10	*28	23	31 5	73	1
	ræmia	12	1	11				3	4	4	1	-	-
	Peritonitis	71 4	3	68	-	-	3	13	19 1	20	13	3	-
	Salpingitis Metritis	8	2	6	-	-	-	5	1 9	1 8	17	2	-
	Endometritis Parametritis	30 11	2	27		1-	-	4	7	2	1 2	ī	
	Erysipelas Pyæmia	11 21	2	9 21	=		-	1	<b>3</b> 10	42	7	1	-
	Pelvic cellulitis	26	4	22	-		1	7	13	4		1	1
	Other specified septic con- ditions	9	1	8	-	-	1	1	4		3		
	"Puerperal fever" (b) Puerperal tetanus	56	6	50			3	12	18	8	7	8	_
	Single	-		-	-		-	-	$\left  \begin{array}{c} - \\ 1 \end{array} \right $	_	-	1 =	=
	Widowed	-	-	-	-		.	-	-	-	-	-	-
146.	Puerperal albuminuria and con- vulsions	372	25	345	2	1		76	106	69	1 State	40	4
	Single Married	1 =	25	345		1	. 11	11 65	5 101	66	58		and the second second
	Widowed	-	-	-	2	-	·	-	-		2		
147.	Other toxæmias of pregnancy Single	140	16	124			2	41 9		3	-		
	Married Widowed	=		124	200 200000		2		-	1 1 2	-	14	100 Mar
	Chorea Toxæmia of pregnancy	973	27	66			- 1	5		A 1 1 1 1 1 1 1 1	and the second second	11	1
	Puerperal Toxæmia	256	1 -	2				1 23		17		3	
140	Puerperal phlegmasia alba dolens						- 3	20	44	35	38	33	2
110	embolism and sudden death	-			<b>`</b>  `		- 2	1 1/19/16		1	1		
	Single Married	-	6	168			- 1	Carlos Carlos	Contraction of the	100 P 10 9 9 9 9	and the second second second	33	100 200
	(a) Puerperal phlegmasia alba dolens not returned as		2	52	$\frac{1}{2}$ 1			e	14	11	2 - Personal	State Street	
	septic		. 2					1		. 1	-		
	Married	-	-	- 5		-   -		5		and the second second			
	Widowed (b) Puerperal embolism and	120				-   -	- 3	14	30	2	4 28	3 21	
	sudden death Single	-				-   -	- 2		- 1		- 1		
	Married	1. 11		- 11	6		- 11	14	4 29	2	4 27	7 2	-

\* Including 1 divorced woman. † Including 2 divorced women.

			Civil	Condi	tion.	a shears	ale accordente			Ages.			
-	Cause of Death.	All Ages.	Single.	Married.	Widowed.	10-	15-	20-	25-	30-	35-	40-	45 and up- ward
149.	Other accidents of childbirth	311	16	291	4		9	49	86	71	74	20	2
	Single Married		16	291	_	-	27	7 42	4 82	1 69	270	19	2
	Widowed	-			4		-	-	-	1	2	1	
	Contracted pelvis	80	2	78	-	-	2	13	25	20	17	3	-
	Craniotomy	$\begin{vmatrix} 1\\20 \end{vmatrix}$	2	1 18			1	3	6		5	and The	
	Malpresentation	30	-	30	-	-	-	9	4	7	6	4	
	Version	2	-	1 8	1	-	-	-	3	2	1	1	1 -
	Difficult and prolonged labour	8	7	64	3		4	11	27	16	2 13	3	-
	Cæsarean section (reason un-	16	i	15	-	-	i		3	4	6	2	18-2
	stated)† Rupture of uterus	26		05		3	ha-	- Lint			0	5	the se
	Laceration of uterus	20	1	25		_		4	2	6	8	0	1
	Laceration of cervix	i	-	î	-	-			1	1	00	-	0-
	Laceration of vagina	1	-	1	-	-	-	1	-	-	-	1	1
	Repair of perineum Inversion of uterus	1 9	1	1 8				$\frac{1}{2}$	4	1	1	Tak.	1
	Subinvolution of uterus	1	-	1		-	-	11		-	î	10-4-	1
	Uterine inertia	13	2	11	-	-		1	8	2	3	1	-
	Rigidity of cervix	2 13		13		100	1	2	2	2	24	2	10T
	Precipitate labour	3		3		-	-	-	4	3	-	-	
	Stillborn	1	-	1	-		-		-	-	1	-	-
150	Twinbirth Other or unspecified conditions of	8 57		8 56	-	-	$\frac{1}{2}$	28	1	1	4	5	2
100.	the puerperal state	3/	1	30		-	2	0	17	10	13	3	Z
	Single		1		-		-	1		the state	-	-	-
	Married	-	-	56	-	-	2	7	17	10	13	5	2
	Widowed (1) Puerperal insanity	11	1	10	-	-	-	3	5	2	1		-
	Single	-	i	-	_	_	_	1	_	-	-	-	
	Married		-	10	-		-	2	5	2	1	-	-
	(2) Puerperal diseases of the	17	-	17	-	-	1	1	8	3	1	2	$\left  \begin{array}{c} -1 \\ 1 \end{array} \right $
	breast	17		11				-	0	3	1	-	- 1
	Single			-	1	-	-			-	-	-	
	Married Widowed	-		17.	-	-	1	1	8	3	1	2	1
	(3) Childbirth (unqualified)	29	-	29		_	$\left  \begin{array}{c} - \\ 1 \end{array} \right $	4	4	5	11	3	
	Single		-	-	-	-	-		-		-	-	
	Married		-	29	-	-	1	4	4	5	11	3	1
	(with secondary causes as		T	- x6	-	-	-						
	follows) :										Const Balling		191 3
	Anæmia	4		4		-	-		1	1	1	1	
	Myocarditis	1 3	_	1 3		_		_	1	-	12		
	Pneumonia	5		5	_	_		1	2	1	-	1	_
	Broncho pneumonia	4		4	-		1	-		-	3	-	
	Pleurisy	1	-	1		-	-	1	-	1		-	
	Without stated secondary	10		10				2		2	4	1	1
	cause						Carlos I.						
	Total	2,618	162	2,430	+26	1	69	410	*687	596	*573	*254	28
	Single	2,010	162	-,400	+20		20	67	37	15	19	204	
	Married			2,430			49	342	646	577	544	245	27
	Widowed	)	-		<b>‡26</b>	-	Contra Carlo	1	*4	4	*10	*6	1
							1000		100.24	12/2 200	or cont		
	Criminal abortion (see Table 25)	85	24	52	*9	-	1	19	20	25	18	1	1
	Single Married	-	24		-	-	1	11	. 9	3		-	
	Widowed	_		52	*9			8	10	19 *3	13 5	1	1
	The second s	and the second	121 319	au .	0	No. Contraction	ST.S.	1000			-	to have	C. PAST

Including 1 divorced woman.
† In addition Cæsarean section was stated to have been performed in the case of 109 deaths included in other headings in this table—concealed accidental hæmorrhage of pregnancy 1, hydramnios 1, placenta prævia 10, accidental hæmorrhage 3, puerperal albuminuria and convulsions 9, toxæmia of pregnancy 6, contracted pelvis 51, malpresentation 4, hydrocephalic fœtus 1, difficult labour 17, ruptured uterus 3, rigidity of cervix 2, twinbirth 1.
‡ Including 3 divorced women.

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Table LXVI—continued.

Table LXVII—Deaths of Women not classed to Pregnancy and Childbearing, but returned as associated therewith, 1933.

				No. 1		Ages.	· ···		
Lan A	Cause of Death.	All Ages.	15-	20-	25-	30-	35–	40-	45 and up- wards.
1	Enteric fever	1		1	4				
. 7	Measles	1	1	199 <u>0</u>	-		-	·	-
8	Scarlet Fever	3	-	16	2	1	22	19	1
11 23	Influenza	129	1	16	31	39	44	19	
23	tem	73	3	18	28	12	8	3	1
24-32		12	_	4	2	3	1	2	
34 (b)	(c) Syphilis acquired or un-							a production of the	
	specified	8		1	2	2	2	1	and the state
	Gonococcal cervicitis	1			1		1	1	
36(a)	0	2 15		2	1	3	3	5	2
	Non-malignant tumours of fe-	10							
	male genital organs	19		1	2	5	8	2	1
54 (b)	55 (b) Tumours of other sites	2		1	1			Starstern	-
56	Rheumatic fever	8		1		4	2	1	1
59	Diabetes	17		2	5	6.	3		1
$ \begin{array}{c} 65 & (2) \\ 66 & (a) \end{array} $	G ::	1		1		States a		1	
66 (b)		8			4	. 1	1	2	
66 (c)	Thyroid insufficiency	1				· ·	2.00	1	-
66 (e)	Thyroiditis	1			1		1	1000	
68 `	Adrenal insufficiency	1		-		1		-	-
71(a)		17			4	4	7	1	1
71(b)		$\begin{vmatrix} 1\\2 \end{vmatrix}$				1	1		
72(a) 82(a)	Leukæmia Cerebral hæmorrhage	4		1	1	2			
84	Other forms of insanity	3		1	1	1	-		
85	Epilepsy	9		1	4	.2		2	100
87 (b)	Neuritis, neuralgia	2			1		-	1	-
	Disseminated sclerosis	3					2	1	-
87 (e)		1	-			1	1		
90	Pericarditis	17.		4	1	2	14.00		
	) Malignant endocarditis ) Mitral valve disease	83	2	13	26	22	17	3	-
	, 4, 5) Other or unspecified valvu-		Provide State	10-06		1.1.1.17			
	lar disease	27		5	7	5	6	4	-
	) Acute myocarditis	1		-	1				
	(1) Fatty heart	8	-	2	1	3	1	1	1
	(2) Cardiovascular degeneration	1			1		1		
93 (b	) (3), 93 (c) Other or unspecified myocardial disease	28		5	5	- 5	10	3	
94	Diseases of the coronary ar-						1 Ann	a de la composition	
- Section of the	teries, angina pectoris	3		-	1	1		1	
95	Other diseases of the heart	9		1-	2	3	3	1	-
96	Aneurysm	1			-		1	-	-
	3) Arterio sclerosis	1					-		1
99	Other diseases of the arteries	23	-		-	2	3		
	1) Varix 2) Other diseases of the veins	3			1				
100 (: 106	Bronchitis	7	1		2	200	3	2	4 23 th
107	Broncho-pneumonia	25	1	3	6	7	7	1	1
		A Catton S		. States	- AND	1 14 14	a bacheses	The second second	1 13 200

### Table LXVII—continued.

including three assessment of	Ages.							
Cause of Death.	All Ages	15-	20-	25-	30-	35-	40-	45 and up- wards.
108       Lobar pneumonia          109       Pneumonia (not otherwise defined)          110       (1)       Empyema          110       (2)       Other pleurisy.          111       Congestion and hæmorrhagic infarct of lung, etc.          111       Congestion and hæmorrhagic infarct of lung, etc.          111       Asthma.           112       Asthma.           114       (b)       (2)       Pulmonary abscess (nature unstated)          115       (1)       Dental abscess.           115       (3)       Diseases of the tonsils          115       (3)       Diseases of the stomach          115       (3)       Ulcer of the stomach          117       (a)       Ulcer of the duodenum          118       Other diseases of the stomach          119       & 120 (a) (1)       Colitis          119       & 120 (a) (2)       Gastro-enteritis          121       Appendicitis           122	69 14 1 2 9 1 1 4 2 2 9 1 1 4 2 2 9 1 1 4 2 2 9 1 1 4 2 2 9 1 1 4 2 2 9 1 1 4 2 9 9 1 1 4 1 2 9 9 1 1 1 1 2 2 9 9 1 1 1 1 1 1 2 2 9 9 1 1 1 1 1 1 1 1 2 2 9 9 1 1 1 1 1 1 1 1 1 1 1 1 1			14 3 	$ \begin{array}{c c} 21 \\ 4 \\ -1 \\ 1 \\ 3 \\ -2 \\ -1 \\ 2 \\ -2 \\ -1 \\ 12 \\ \end{array} $	15           5           1	9 2 	
<ul> <li>125 (1) Acute yellow atrophy</li> <li>126 (1) Biliary calculi with cholecystitis</li> <li>128 Diseases of the pancreas</li> <li>131 Chronic nephritis</li> <li>133 (a) Pyelitis.</li> <li>133 (b) Other diseases of the kidney and annexa</li> <li>134 (a) Ureteric calculus</li> <li>139 (a) (1) Oöphoritis</li> <li>139 (a) (1) Oöphoritis</li> <li>152 (1) Cellulitis right leg</li> <li>153 Pemphigus</li> <li>154 Acute osteomyelitis of sacrum</li> <li>156 (a) Pneumococcal arthritis</li> <li>163–198 Violence</li> <li>176 (a) Sacrum</li> </ul>	$     \begin{array}{c}       1 \\       34 \\       1 \\       3 \\       55 \\       3 \\       2 \\       1 \\   $		9 3 	10 	4 1 17 1 1 1 1 1 1	$ \begin{array}{c} 1 \\ 8 \\ -2 \\ 16 \\ -1 \\ -1 \\ -1 \\ -1 \\ -1 \\ -1 \\ -1 \\ -1$		3
TotalSingleMarriedWidowed	828* 50 771 7	10 1 3 7 	20	15	4	185 4 .77 4	95 4 91	14 14
Associated with abortion (included above) Single Married Widowed	97 6 90 1	1	8 1 7 -	17 3 14 —	36 1 34 1	20 20 —	15 1 14 	1111

\* Of these 828 deaths, 230 were stated to be associated with pregnancy, 97 with abortion, 42 with premature delivery, 5 with delivery at full term, and 454 with childbirth. Cæsarean section was stated to have been performed in the case of 45 of these deaths, of which 21 were attributed to ileus following Cæsarean section and assigned to No. 122 (b) above (see p. 109 for corresponding numbers in 1921 to 1932).

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#### Table LXVIII.-Deaths attributed to, or associated with, Abortion. 1926-33.

Old List No.	New List No.	-00 -20 -00 -21	1926.	1927.	1928.	1929.	1930.	1931.	1932.	1933
Part of 146	140 141	Post-abortive sepsis Abortion not returned as	222	215	224	238	300	229	262	257
Part of 143c	141	septic :	72	72	47	51	59	97	105	108
143a		(2) Without record of	86	82	77	67	65	21	12	13
199, 202	VI (Table	hæmorrhage. Criminal abortion (inquest cases).	51	47	57	67	67	79	69	85
	25).	Total attributed to abortion.	431	416	405	423	491	426	448	463
	E.	Associated with abortion but not classed to it.	?	?	83	182*	77	77	90	97
		Total attributed to, and associated with, abortion.	?	?	488	605	568	503	538	560

The excessive number of deaths associated with abortion but not classed to it in 1929 was partly due to the influenza epidemic of that year and partly to the allocation to abortion rather than to childbirth for that year only of 63 deaths said to be associated with premature delivery without definition as to length of gestation

It should be noted that abortions resulting from other complications of pregnancy are still classed to Nos. 143, 146, 147 and do not appear under any of the "abortion" headings unless there is some other associated condition causing the death to appear in Table LXVII. Such abortions, which are secondary to a toxæmia or some other morbid condition of pregnancy, even if they could all be ascertained by special inquiry, are in a class by themselves and there would seem to be little justification for adding them to Table LXVIII.

It has been frequently alleged that the increase in mortality from puerperal sepsis may be due to increase in the proportion of deaths from septic abortion. The percentage ratios of deaths classified to puerperal sepsis and stated to have occurred after abortion to the total deaths from puerperal sepsis for the years 1926-33 are as follows :----

1926.	1927.	1928.	1929.	1930.	1931.	1932.	1933.	
20.0	20.9	18.9	20.5	24.1	21.8	$26 \cdot 4$	$24 \cdot 2$	

Many medical certificates, however, contain no mention of whether the sepsis followed abortion or delivery at term, and during 1932 inquiry was made regarding a sample of 100 deaths attributed to "puerperal sepsis" and having no statement as to the duration of pregnancy. The result was that 4 were assigned to post-abortive sepsis (No. 140) and 96 to puerperal sepsis not returned as abortion (No. 145), 90 of the latter being definitely stated as "full-term," 4 as premature but over 28 weeks' gestation, and 2 presumably full term. The residual number of deaths from puerperal sepsis with no statement as to duration of pregnancy was 412, and assuming the sample of 100 to have been representative, 4 per cent. of these, or 16 deaths, probably also belonged to the septic abortion group.

When this correction was made, the post-abortive sensis deaths were raised to 278 and the total attributed to abortion to 464, or including those associated with abortion, 554. If it is further desired to make the 1929, 1930, 1931 and 1933 totals comparable with the 1932 figures corrected in this way, the sepsis deaths having no statement numbered 637, 670, 537 and 515 in those years and 4 per cent. of these numbers should be transferred to the abortion totals in Table LXVIII. The 63 deaths mentioned in the note below that table should also be omitted from the "associated with abortion" total in 1929. The effect of these corrections upon the mortality rates from abortion in each year from 1929 is explained in the note below Table LXXIII.

Table LXVI gives particulars of all deaths assigned in 1933 to the puerperal state with detail of cause within each international heading 140 to 150, and of criminal abortion deaths, according to the civil condition and age of the deceased. Subdivision of each main heading into 3 lines now makes it possible to distinguish the ages at death from the specified cause for single, married or widowed women separately. The relative distribution of these deaths according to cause is seen from Table LXIX to have undergone considerable changes since 1921. Puerperal sepsis comprised 35.4 per cent. of the total of puerperal deaths plus criminal abortion

#### Table LXIX.-Deaths from certain puerperal causes per cent. of all puerperal causes plus criminal abortion, 1921-25, 1926-30 and 1933.

	Reph	bis esta	1933.	is garle	Render	1921- 25.	1926- 30,	1933.
	Single. Married.				<u>elense</u>	ha 2011	al walle	
all courses of a series	15-25.	25-45.	15-25.	25-35.	35-45.	Wor	ages.	
Puerperal sepsis (140, 145) Abortion (all forms) Puerperal hæmorrhage (not abortion).	41·4 39·5 35·4 32·6 1·0 5·8		40.6 9.3 6.0	41.7 14.3 10.3	35.5 19.9 13.0	35·4 ? 13·5	39·8 15·0 11·5	39·3 17·1 10·0
Puerperal albuminuria and toxæmias.	24.2	18.6	27.6	17.7	16.6	19.4	20.0	18.9
Puerperal phlegmasia alba dolens.	3.0	3.5	5.0	6.2	8.7	9.1	6.7	6.5
Other accidents of childbirth	9.1	8.1	12.3	12.1	11.1	7.8	9.4	11.5

during 1921-25, but by 1933 the percentage had increased to 39.3. Age and civil condition have little influence upon this ratio. Puerperal phlegmasia alba dolens has declined relatively to the total, though not in recent years, and the proportion of puerperal hæmorrhage deaths has also declined. Increasing precision of certification has probably caused some transfer from these to other groups. The albuminuria and toxæmia deaths continue to form about one-fifth of the total, but the proportion is considerably higher for young women under 25. Other accidents of childbirth formed 7.8 per cent. in 1921-25, but this had risen to 11.5 per cent. by 1933.

Abortion deaths (including those classed to the headings of criminal abortion) form  $17 \cdot 1$  per cent. of the total in 1933 compared with  $15 \cdot 0$  in the quinquennium 1926–30. Amongst single women, whether under or over 25 years of age, abortion deaths form about one-third of the total, but amongst the married the percentage increases with advancing age from  $9 \cdot 3$  at 15-25 to  $19 \cdot 9$  at 35-45.

Table LXVII gives, in detail of the International List, the nonpuerperal causes to which deaths stated to have been complicated by the existence of the puerperal state were assigned in 1933. The largest numbers in the table are-influenza 129, mitral valve disease 83, tuberculosis of the respiratory system 73, lobar pneumonia 69, chronic nephritis 55, intestinal obstruction 40, and acute yellow atrophy of the liver 34. The number classed to influenza was greater than in the preceding 3 years (23, 94, 55) but less than in the epidemic year of 1929 (155). Phthisis, lobar pneumonia and mitral disease are given precedence over puerperal conditions as a rule on the ground of their infective nature or prior origin in point of time. When lobar pneumonia originates after delivery, some puerperal cause is not infrequently stated on the certificate of death as the "morbid condition giving rise to" the pneumonia (in 10 deaths out of the 69), but the assignment is made in accordance with the rules of precedence in the Manual, that is to the puerperal cause in cases of sepsis or phlegmasia alba dolens but to lobar pneumonia otherwise.

Similar considerations apply to intestinal obstruction, and in this instance, owing to increasing attribution of deaths to paralytic ileus following operative procedures involving abdominal section, this group has become somewhat overweighted. Ileus following operative procedures has always been accorded the same preference, in the classification of joint causes, as other forms of ileus, and in 1933 21 deaths attributed to ileus, mostly paralytic, following Cæsarean section are included under the heading 122 (b) Intestinal obstruction in Table LXVII (5 in 1921). Whilst it is desirable that where death from paralytic ileus follows such operations as Cæsarean section the classification should be made to the cause requiring the operation, such a change of classification would interfere with the comparability of the statistics with those of preceding years, and it is considered preferable to continue the assignment of such deaths to this group during the present decade but to indicate the number so included in a note below Table LXVII.

Although no national statistics are available of the frequency with which *Cæsarean section* is resorted to, this frequency has certainly increased during the past decade, and this is reflected in the increasing number of deaths with mention of this operation, partly assigned to puerperal and partly to non-puerperal causes (Table LXX). In 1921–23 and succeeding triennia to 1930–32,

Table LXX—Deaths with Mention of Cæsarean Section, 1921–1933.

Assigned to Puerperal Causes.							Assigned	Total with		
148	Placenta prævia.	Con- tracted pelvis.	Albumin- uria, etc.	Other specified.	Reason not stated.	Total.	Intes- tinal Obstruc- tion.	Other Causes.	Total.	mentio of Cæsarea Section
1921          1922          1923          1924          1925          1926          1927          1928          1929          1930          1931          1933	4 5 1 7 9 6 5 9 15 11 14 13 10	19 9 39 31 40 24 40 55 43 54 46 51	3 9 8 6 8 16 10 16 9 8 16 10 9	13 255 32 32 30 56 46 17 255 41 38 39	50 20 33 4 10 5 2 2 8 5 10 9 16	89 68 85 88 90 97 97 113 104 92 135 116 125	5 7 5 11 11 11 10 8 11 11 11 23 16 22 21	18 13 18 13 18 12 23 24 35 27 32 30 24	23 20 23 24 29 22 31 35 46 50 48 52 45	112 88 108 112 119 119 128 148 150 142 183 168 170

these deaths averaged 103, 117, 142 and 164 per annum, and in 1933 numbered 170. Prior to 1924 the reason for resorting to Cæsarean section was often unstated, but from that year onwards has been ascertained for all except a small residue of deaths. In 1931–33, 29 per cent. of the total deaths were assigned to contracted pelvis, 7 per cent. each to placenta prævia and eclampsia, 23 per cent. to other specified puerperal causes, 7 per cent. to some unstated puerperal cause, 11 per cent. to intestinal obstruction and 16 per cent. to other non-puerperal causes.

Deaths attributed to chronic nephritis in conjunction with puerperal sepsis or phlegmasia alba dolens are assigned as a rule to the puerperal cause, but if associated with other puerperal conditions the assignment is usually to chronic nephritis on the ground of its presumed priority in point of time. An examination of the certificates of the 55 deaths included in Table LXVII reveals the fact that in the case of 10 a preference for the puerperal condition as the underlying cause seemed to be expressed by the certifying practitioner and in the case of 43 a preference for chronic nephritis. A test carried out on the first quarter's deaths of 1934 shows that this over-assignment to chronic nephritis of the non-septic deaths is almost offset by an 'over-assignment to the puerperal cause of deaths in which a slight degree of sepsis played a part.

Acute yellow atrophy of the liver occupies a somewhat anomalous position in Table LXVII, its exclusion from the category of "other toxæmias of pregnancy" being in accordance with a decision of the International Conference of 1929. It may be noted as an indication of the trend of opinion as to the significance of this disease that in the case of 22 deaths out of 34 assigned to this cause with associated childbearing in 1933, preference for the puerperal condition as underlying cause was expressed by the certifier. Analysis of the 828 deaths in Table LXVII according to the views of the certifying practitioner gave the following result.

Preference given to puerperal cause.		Chart of Concession
By order of statement on certificate	••	108
Otherwise (chiefly coroners' cases)	••	11
Preference given to non-puerperal cause.		
By order of statement on certificate	• •	541
Otherwise (chiefly coroners' cases)	••	44
Preference not clearly expressed.		
Inverted or impossible order Puerperal cause		7
of statement, but prefer- (Non-puerperal cause		49
ence apparently intended [ Doubtful		18
tor		50
Other doubtful forms of statement	•••	

In all about 126 deaths would, if the alternative system of assignment were adopted, be transferred to the puerperal group, but, as ascertained above from the complete sample of both groups in the March quarter of 1934, this change would be balanced by a transfer in the opposite sense of approximately the same number of deaths now classed to the puerperal group (e.g., deaths attributed jointly to pneumonia or kidney disease with puerperal sepsis of slight degree.)

Table LXXI analyses the deaths assigned to each principal puerperal cause and to criminal abortion, according to *civil condition* 

Table LXXI—Maternal Deaths	from Various	Causes by
Civil Condition and age,	1924 to 1933.	tion and the

Inter- national List No.			nie.	1924.	1925.	No.	1927.	1928.	1929.	1930.	1931.	1932.	1933.
11 203-	tio a bhi to	entes fel		Numt	per of l	Deaths	<b>1</b>	et es al	ng 1	e anna	12/11	1 2/1	
140-150	Childbir	Pregnancy th and the al State : ges		} 2,847	2,900	2,863	2,691	$\left\{\begin{array}{c} 153\\ 2,741\\ 27\end{array}\right.$	165 2,601 25	2,650	2,423	2,409	
		15-	${S \atop W \atop W}$	} 494	547	514	447	$\left\{\begin{array}{c} 79\\ 432\\ 1\end{array}\right.$	93 412 —				88 391 1
o car		25-	${ S \atop W \atop W}$	} 1,325	1,362	1,394	1,340	$\left\{\begin{array}{c} 59\\ 1,340\\ 10\end{array}\right.$	57 1,328 8	50 1,378 12	1,257	1,251	
an deser		35-	${ S \atop W }$	} 982	943	. 921	862	$ \left\{\begin{array}{c} 15 \\ 935 \\ 14 \end{array}\right. $	837	863	718	771	789
		45 and up	${S \atop W}$	} 46	48	34	42	$ \left\{\begin{array}{c} -34\\ 2 \end{array}\right\} $					
140 &	145 Puerperal	sepsis All Ages	${ S \atop W }$	} 1,018	1,110	1,112	2 1,027	$\left\{\begin{array}{c} 72\\ 1,100\\ 13\end{array}\right.$	1,075	5 1,153	960	908	97
45 (E)	uitopos *	15- 25- 35- 45 and up	All	200 499 313	542	2 567	520	594 350	603 303	7 656	54 54 27	1 534	54 30

### Table LXXI.—continued.

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	Tąp	1		211,	and the second		and and	With the second	-	-		
Inter- national List No.	ad an time (start inter	1	924.	1925.	1926.	1927.	1928.	1929.	<b>193</b> 0.	1931.	1932.	1933.
			Num	ber of	Deaths	s.						
140	Post abortive sepsis ${  S \\ All Ages } { S \\ M \\ W }$	}	?	?	<b>22</b> 2	215	$\left\{\begin{array}{c}20\\198\\6\end{array}\right.$	27 205 6	26 271 3	34 189 6	38 219 5	30 220 7
	15- All 25- ,, 35- ,, 45 and up ,,		~~~~	~~~~~	~~~~	~~~~	????		????	40 113 75 1	45 127 88 2	41 120 94 2
141	$\begin{array}{c} \text{Abortion not returned} \\ \text{as septic} \\ \text{All Ages} \end{array} \begin{cases} \text{S} \\ \text{M} \\ \text{W} \end{cases}$	}	179	156	158	154	$\left\{\begin{array}{c} 4\\ 120\\ -\end{array}\right.$	3 114 1	6 115 3	5 113 —		9 109 3
	15- All 25- ,, 35- ,, 45 and up ,,		14 76 85 4	11 60 80 5	15 70 69 4	13 64 71 6	7 59 53 5	9 48 59 2	8 45 70 1		56	11 45 63 2
142	$\begin{array}{c} \text{Ectopic gestation} \\ \text{All Ages} \end{array} \begin{cases} \text{S} \\ \text{M} \\ \text{W} \end{cases}$	}	73	87	94	98	$\left\{\begin{array}{c}3\\81\\2\end{array}\right.$	5 79 2	4 68 1	4 74 1	4 77 2	7 81 2
	15- All 25- ,, 35- ,, 45 and up ,,		6 39 27 1	9 54 24 —	8 44 40 2	10 54 33 1	8 42 32 4	6 48 31 1	2 41 29 1	6 40 32 1	3 46 33 1	7 52 30 1
143	$\begin{array}{c} \text{Other accidents of} \\ \text{pregnancy.} \\ \text{All Ages} \end{array} \begin{cases} \text{S} \\ \text{M} \\ \text{W} \end{cases}$	}	20	19	19	25	$\left\{ \begin{array}{c} 2\\ 12\\ -\end{array} \right.$	2 14	2 14 		2 17 	1 20 1
	15- All 25- ,, 35- ,, 45 and up ,,		4 10 5 1	-9 10 -	4 8 6 1	3 10 8 4	3 8 2 1	2 8 5 1	1 9 5 1	5 6 9 3	3 10 6 —	7 8 3 4
144	Puerperal hæmorrhage All Ages $\begin{cases} S \\ M \\ W \end{cases}$	}	390	373	339	327	$\left\{\begin{array}{c}12\\314\\5\end{array}\right.$	15 294 4	16 329 3	10 276 3	7 280 4	6 260 3
	, 15- All 25- " 35- " 45 and up "	tia.	33 174 173 10	43 166 157 7	33 161 139 6	35 146 142 4	41 152 132 6	27 139 143 4	41 164 136 7	35 140 111 3	28 133 123 7	25 132 109 3
145	$\begin{array}{c} \text{Puerperal sepsis not} \\ \text{returned as post-} \\ \text{abortive.} \\ \text{All Ages} \\ \begin{cases} \text{S} \\ \text{M} \\ \text{W} \end{cases} \end{array}$	}	?	?	890	812	$\left\{\begin{array}{c} 52\\902\\7\end{array}\right.$	50 870 3	53 882 9	42 771 8	38 689 2	45 756 3
	15- All 25- " 35- " 45 and up "		~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		~~~~~~		~~~~	~~~~	192 428 200 1	143 407 168 11	163 427 209 5
146	Puerperal albuminuria and convulsions, All Ages { W	}	524	499	524	537	$\left\{\begin{array}{c} 38\\518\\1\end{array}\right.$	35 486 3	34 427 6	31 342 2	24 346 3	25 345 2
	15- All 25- " 35- " 45 and up "		146 215 154 9	132 233 127 7	124 239 153 8	116 267 148 6	128 250 173 6	128 253 138 5	96 228 138 5	100 178 93 4	98 165 106 4	92 175 101 4
147	Other toxæmias of pregnancy. All Ages { W	}	54	56	57	45	$\left\{\begin{array}{c}2\\43\\-\end{array}\right\}$	4 60 2	8 57 1	7 124	13 137 1	16 124
	15– All 25– " 35– " 45 and up "		15 24 15	18 26 11 1	23 23 11 	10 28 7 	13 20 12 	18 31 17 	21 30 15	30 73 26 2	30 79 40 2	43 61 35 1

of the deceased in each year since 1928, and according to age (for all women regardless of civil condition) in each year since 1924. Deaths classed to non-puerperal causes with associated pregnancy or child-bearing, separating those associated with abortion since 1928, are also given in the same table, these being collated from Table LXVII and its predecessors since 1924. The age-specific rates of mortality calculated from this analysis are given in Tables LXXV and LXXVI.

Rates of Mortality.—Maternal mortality rates should properly be based upon the number of pregnancies, but this number cannot be ascertained owing to the absence of statistics of abortions and of multiple births. It is, therefore, necessary to choose between some approximation to this number, such as the registered annual births, and the total living population of women of the specified class whether pregnant or not. In the Reviews for years 1921-30, crude death rates per million women of all ages were shown in

### Table LXXII.—Mortality of Women in per Thousand Children born

nestiten etnome	noit da nitaro		tion in use l onwards.	ationerica tradition	cality, p	‡ Total Mortality from or			
Year.	Puerperal Sepsis.	Other Puerperal causes.	Total Puerperal Mortality.	* Non- puerperal causes.	Puerperal Sepsis.	Other Puerperal causes.	Total Puerperal Mortality.	† Non- puerperal causes.	associated with pregnancy or childbirth
1891–95 1896–1900 1901–05 1906–10 1911–15 1916·20 1921–25 1926–30	$ \begin{array}{c}\\\\ 1\cdot 42\\ 1\cdot 51\\ 1\cdot 40\\ 1\cdot 73 \end{array} $	$ \begin{array}{c}\\\\ 2 \cdot 61\\ 2 \cdot 61\\ 2 \cdot 50\\ 2 \cdot 54\\ \end{array} $	$ \begin{array}{c}\\\\\\ 4 \cdot 03\\ 4 \cdot 12\\ 3 \cdot 90\\ 4 \cdot 27 \end{array} $	$ \begin{array}{c}\\\\ 0.99\\ 1.68\\ 1.14\\ 1.24 \end{array} $	$\begin{array}{c} 2 \cdot 60 \\ 2 \cdot 12 \\ 1 \cdot 95 \\ 1 \cdot 56 \\ 1 \cdot 50 \\ 1 \cdot 59 \\ 1 \cdot 48 \\ 1 \cdot 78 \end{array}$	$ \begin{array}{r} 2 \cdot 89 \\ 2 \cdot 57 \\ 2 \cdot 32 \\ 2 \cdot 18 \\ 2 \cdot 31 \\ 2 \cdot 29 \\ 2 \cdot 21 \\ 2 \cdot 23 \\ \end{array} $	$5 \cdot 49  4 \cdot 69  4 \cdot 27  3 \cdot 74  3 \cdot 81  3 \cdot 88  3 \cdot 69  4 \cdot 01$	$ \begin{array}{c}\\ 1 \cdot 29\\ 1 \cdot 26\\ 1 \cdot 21\\ 1 \cdot 92\\ 1 \cdot 35\\ 1 \cdot 50\\ \end{array} $	
1911          1912          1913          1914          1915	$     \begin{array}{r}       1 \cdot 43 \\       1 \cdot 39 \\       1 \cdot 26 \\       1 \cdot 55 \\       1 \cdot 47     \end{array} $	2·44 2·59 2·70 2·62 2·71	3.87 3.98 3.96 4.17 4.18	1.04 0.97 0.91 0.95 1.09	$     \begin{array}{r}       1 \cdot 52 \\       1 \cdot 47 \\       1 \cdot 34 \\       1 \cdot 63 \\       1 \cdot 56 \\     \end{array} $	$ \begin{array}{r} 2 \cdot 15 \\ 2 \cdot 31 \\ 2 \cdot 37 \\ 2 \cdot 32 \\ 2 \cdot 38 \\ \end{array} $	3.67 3.78 3.71 3.95 3.94	$   \begin{array}{r}     1 \cdot 24 \\     1 \cdot 17 \\     1 \cdot 16 \\     1 \cdot 17 \\     1 \cdot 38 \\   \end{array} $	$ \begin{array}{r} 4 \cdot 91 \\ 4 \cdot 95 \\ 4 \cdot 87 \\ 5 \cdot 12 \\ 5 \cdot 27 \\ \end{array} $
1916          1917          1918          1919          1920	1.38 1.31 1.28 1.67 1.81	$2 \cdot 74$ $2 \cdot 58$ $2 \cdot 51$ $2 \cdot 70$ $2 \cdot 52$	4 · 12 3 · 89 3 · 79 4 · 37 4 · 33	0·94 0·95 3·81 1·93 1·13	$     \begin{array}{r}       1 \cdot 47 \\       1 \cdot 39 \\       1 \cdot 35 \\       1 \cdot 76 \\       1 \cdot 87 \end{array} $	$ \begin{array}{r} 2 \cdot 40 \\ 2 \cdot 27 \\ 2 \cdot 20 \\ 2 \cdot 36 \\ 2 \cdot 25 \end{array} $	$   \begin{array}{r}     3 \cdot 87 \\     3 \cdot 66 \\     3 \cdot 55 \\     4 \cdot 12 \\     4 \cdot 12 \\     4 \cdot 12   \end{array} $	1 · 19 1 · 18 4 · 05 2 · 18 1 · 34	5.064.847.606.305.46
1921          1922          1923          1924          1925	$     \begin{array}{r}       1 \cdot 38 \\       1 \cdot 38 \\       1 \cdot 30 \\       1 \cdot 39 \\       1 \cdot 56     \end{array} $	$2 \cdot 53$ $2 \cdot 43$ $2 \cdot 51$ $2 \cdot 51$ $2 \cdot 52$	$   \begin{array}{r}     3 \cdot 91 \\     3 \cdot 81 \\     3 \cdot 81 \\     3 \cdot 90 \\     4 \cdot 08   \end{array} $	$   \begin{array}{r}     1 \cdot 09 \\     1 \cdot 35 \\     1 \cdot 01 \\     1 \cdot 16 \\     1 \cdot 07   \end{array} $	$     \begin{array}{r}       1 \cdot 46 \\       1 \cdot 46 \\       1 \cdot 38 \\       1 \cdot 48 \\       1 \cdot 62     \end{array} $	$ \begin{array}{r} 2 \cdot 25 \\ 2 \cdot 12 \\ 2 \cdot 22 \\ 2 \cdot 22 \\ 2 \cdot 24 \\ \end{array} $	3.71 3.58 3.60 3.70 3.86	$     \begin{array}{r}       1 \cdot 29 \\       1 \cdot 58 \\       1 \cdot 22 \\       1 \cdot 36 \\       1 \cdot 29     \end{array} $	5.00 5.16 4.82 5.06 5.15
1926          1927          1928          1929          1930	$   \begin{array}{r}     1 \cdot 60 \\     1 \cdot 57 \\     1 \cdot 79 \\     1 \cdot 80 \\     1 \cdot 92   \end{array} $	$2 \cdot 52$ $2 \cdot 54$ $2 \cdot 63$ $2 \cdot 53$ $2 \cdot 48$	$ \begin{array}{r} 4 \cdot 12 \\ 4 \cdot 11 \\ 4 \cdot 42 \\ 4 \cdot 33 \\ 4 \cdot 40 \end{array} $	$   \begin{array}{r}     1 \cdot 02 \\     1 \cdot 32 \\     1 \cdot 20 \\     1 \cdot 49 \\     1 \cdot 19   \end{array} $	1.64 1.63 1.85 1.83 1.96	$2 \cdot 23 \\ 2 \cdot 20 \\ 2 \cdot 30 \\ 2 \cdot 24 \\ 2 \cdot 19$	3.87 3.83 4.15 4.07 4.16	$   \begin{array}{r}     1 \cdot 27 \\     1 \cdot 60 \\     1 \cdot 47 \\     1 \cdot 75 \\     1 \cdot 43   \end{array} $	5 · 14 5 · 43 5 · 62 5 · 82 5 · 59
1931 1932 1933	1.66 1.61 1.83	$2 \cdot 45 \\ 2 \cdot 60 \\ 2 \cdot 68$	4 · 11 4 · 21 4 · 51	1 · 44 1 · 16 1 · 43	1.71 1.68 1.90	$2 \cdot 22 \\ 2 \cdot 33 \\ 2 \cdot 42$	$3.93 \\ 4.01 \\ 4.32$	$1 \cdot 62 \\ 1 \cdot 36 \\ 1 \cdot 62$	5·55 5·37 5·94

 \* 828 deaths in 1933 (Table LXV).
 † 828 deaths in Table LXV, 112 from puerperal nephritis and albuminuria, and 1 from puerperal tetanus in 1933. ‡ See last paragraph on page 98 with reference to the meaning of this rate.

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Table LXXI—continued.

Inter- national List No.	e a linna linne linne li such		19	24.	1925.	1926.	1927.	1928.	1929.	1930.	1931.	1932.	1933.
Number of Deaths.													
148	Puerperal phlegmasia albadolens, embo- lism and sudden death. All Ages	{S M W	}	244	240	202	175	$\begin{cases} 6\\212\\1 \end{cases}$	8 169 3	9 180 1	9 179	5 195	6 168 1
	15 25 35 45 and up	All "		26 128 84 6	41 116 81 2	24 110 67 1	19 92 63 1	25 108 82 4	17 97	27 97 64 2	27 107 53 1	25 90 84 1	23 79 71 2
149	Other accidents of childbirth. All Ages	${S \\ M \\ W}$	}	235	247	272	251	$\left\{\begin{array}{c} 14\\290\\3\end{array}\right.$	10 263 1	13 231 2	11 289	12 271 3	16 291 4
	15– 25– 35– 45 and up	All " "		40 106 81 8	42 109 93 3	38 132 99 5	32 137 77 5	42 149 114 2	45 137 91 1	34 123 84 5	44 168 81 7	45 155 85 1	58 157 94 2
150	Other or unspecified conditions of the puerperal state. All Ages	S M W	}	110	113	86	52	$\left\{\begin{array}{c} -51\\ 2\end{array}\right.$	6 47 —	4 76 1	3 43 2	3 72 1	1 56 —
	15– 25– 35– 45 and up	All ,, ,,		10 54 45 1	15 47 48 3	16 40 30	14 22 15 1	11 27 14 1	11 25 15 2	8 47 26	12 19 16 1	8 44 24 —	10 27 18 2
	Criminal Abortion All Ages	S M W	}	38	67	51	47		22 40 5	12 45 10	20 56 3	20 45 4	24 52 9
	15- 25- 35- 45 and up Deaths assigned to other causes but associated	All ,, ,, ,,		12 13 13 	17 33 17 —	12 28 11 —	14 22 11 —	12 33 12 —	19 36 12 —	12 36 18 1	14 45 20 —	16 43 9 1	20 45 19 1
	with childbearing. All Ages	S M W	}	849	759	709	861	$\left\{\begin{array}{c} 49\\732\\9\end{array}\right.$	44 904 12	46 719 9	39 868 4	38 670 5	50 771 7
	15- 25- 35- 45 and up	All "		120 399 319 11	108 362 279 10	120 318 255 16	113 397 334 17	128 367 284 11	148 476 321 15	98 372 298 6	126 425 346 14	110 331 266 6	125 409 280 14
	Deaths assigned to other causes but associated with abortion. All Ages	S M W	}	?	?	?	?	83	119	77	77	90	$\left\{\begin{array}{c} 6\\90\\1\end{array}\right.$
2100	15 25 35 45 and up	All "	HR.	?????	~~~~~		~~~~	8 44 30 1	21 64 33 1	11 37 29	9 39 29	13 39 38 —	9 53 35
	Deaths assigned to other causes but associated with pregnancy and childbirth (not abortion). All Ages	S M W	2	?	?	2	?	707	2)s.()	697	834	623	
	15 25- 35- 45 and up	₩ All "	٢	r ?????				707 120 323 254 10	841 127 412 288 14	87 335 269 6	834 117 386 317 14	97 292 228 6	116 356 245 14

or	asso	ociated	l with	Child	lbirth
ali	ve. 1	1891 - 1	933.		* (15E

Table 5 for each puerperal cause, but from 1931 rates based upon the total births registered in each year have been substituted (Table 7). Rates of mortality from combined puerperal causes per 1,000 live births have been given in the text of the Reports since 1902, and in Table LXXII such rates are given from 1891-95 according to the classification in use prior to 1911, and from 1911 onwards according to both the old and revised systems.

Reliable statistics of stillbirths have been available since 1928. and as the total births, *i.e.*, live and still births, provide a closer approximation to the number of women exposed to the risk of dving from puerperal conditions than do live births alone, maternal mortality rates have been calculated since that year on both bases, and will continue to be so calculated for a sufficient period to enable statistical continuity to be assured. It will be observed from Table LXXIII that while the rates on the wider basis are naturally lower than those based on live births the relative changes from year to year remain practically unchanged.

Since the mortality assigned to causes No. 144-150 (that is to say, causes other than abortion, ectopic gestation or other accidents of pregnancy) occurs almost entirely in women whose pregnancy has lasted 28 weeks or over, the women at risk of death from these causes would properly be measured by the number of confinements resulting during the year in one or more live or stillbirths plus the number of women who died from these causes undelivered plus the number of women pregnant over 28 weeks who died from other causes without childbirth supervening. The number in the second category must be small compared with the total deaths from causes No. 144-150, and the number in the last category having no mention of pregnancy on the certificate, which would consequently escape inclusion in Table LXVII, may be presumed to be small compared with the number of deaths after the 28th week of pregnancy which are recorded in that table. It follows that the number at risk to be added to the live and still birth confinements will be less than the total deaths assigned to groups No. 144-150 plus those deaths included in Table LXVII which were not associated with abortion, which would mean an addition of 2,859 in 1933, or of 5 per 1,000 to the number of live and still births in the year (605,497). On the other hand, owing to multiple births, the number of confinements resulting in a live or still birth is about 1 per cent. less than the total of all the births registered, which would necessitate a *deduction* of that order from the total live and still births. It may be contended, however, that since the mortality risk is greater in a multiple confinement, the number of births gives as good a measure of the exposures to risk as the number of confinements resulting in those births.

The amount of the net correction of mortality rates for all these factors would be so small and would vary so little from year to year or from place to place that its effect on any comparisons between

rates would be inappreciable, and the calculation of maternal mortality from causes No. 144-150 upon the simple total of live and still births is a practical expedient which seems open to little objection.

Ectopic gestation (No. 142) and other accidents of pregnancy other than abortion (No. 143), which are events presumably tending to occur in a constant proportion of pregnancies from causes not usually under control, may also be related to the births without serious objection as giving an approximate relative measure from year to year or from place to place, though not an absolute measure, of the total pregnancies.

It may be urged with some force, however, that with regard to abortion there is less justification for calculating mortality rates from this cause on the basis of the number of live and still births. The risk of death from abortion is a function of the number of abortions, and there is no particular reason to suppose, since natural processes are allowed to have less complete control than formerly in the matter of child-bearing, that the number of abortions has been falling in recent years in proportion to the number of births, nor indeed that the number has necessarily been falling at all. In the absence of knowledge as to the number of abortions, it would seem reasonable to relate the abortion deaths to the number of women of reproductive age in the population, and to calculate an abortion rate on this basis, together with a maternal mortality rate excluding abortion based on the births.

The various rates of mortality calculated on these different bases for comparability with rates in past and future years are given in Tables LXXIII-LXXVII, the principal rates being collected together

Table	LXXIII.—Mortality of	Women	i in	Or	associated	with	child-
	birt	th. 1928-	-33.				

The start of the second		1928.	1929.	1930.	1931.	1932.	1933
Per 1,000 Live Births	Puerperal sepsis	$1 \cdot 79$ $2 \cdot 63$ $4 \cdot 42$ $1 \cdot 20$	$ \begin{array}{c c} 1 \cdot 80 \\ 2 \cdot 53 \\ 4 \cdot 33 \\ 1 \cdot 49 \end{array} $	$     \begin{array}{r}       1 \cdot 92 \\       2 \cdot 48 \\       4 \cdot 40 \\       1 \cdot 19     \end{array} $	1.66 2.45 4.11 1.44	$ \begin{array}{c} 1 \cdot 61 \\ 2 \cdot 60 \\ 4 \cdot 21 \\ 1 \cdot 16 \end{array} $	1 · 83 2 · 68 4 · 51 1 · 44
Per 1,000 Live and Still-births.	Puerperal sepsis Other puerperal causes Total puerperal causes Non-puerperal causes Puerperal causes other than abortion Non-puerperal causes, excluding deaths associated with abortion.	$\begin{array}{c} 1\cdot 72\\ 2\cdot 52\\ 4\cdot 25\\ 1\cdot 15\\ 3\cdot 74\\ 1\cdot 03\end{array}$	$ \begin{array}{r} 1 \cdot 73 \\ 2 \cdot 43 \\ 4 \cdot 16 \\ 1 \cdot 43 \\ 3 \cdot 63 \\ 1 \cdot 25 \end{array} $	$     \begin{array}{r}       1 \cdot 84 \\       2 \cdot 38 \\       4 \cdot 22 \\       1 \cdot 14 \\       3 \cdot 59 \\       1 \cdot 03     \end{array} $	$   \begin{array}{r}     1 \cdot 59 \\     2 \cdot 35 \\     3 \cdot 95 \\     1 \cdot 38 \\     3 \cdot 42 \\     1 \cdot 27   \end{array} $	$   \begin{array}{r}     1 \cdot 55 \\     2 \cdot 49 \\     4 \cdot 04 \\     1 \cdot 11 \\     3 \cdot 45 \\     0 \cdot 97 \\   \end{array} $	$   \begin{array}{r}     1 \cdot 7 \\     2 \cdot 5 \\     4 \cdot 3 \\     1 \cdot 3 \\     3 \cdot 7 \\     1 \cdot 2 \\   \end{array} $
Per 1,000,000 women { aged 15-45.	Abortion (including criminal) Non-puerperal causes associated with abortion.	42 9	43* 12§	50* 8	43* 8	46* 9	47 10

Note.—Criminal abortion deaths are not included in any of the above rates except where specified. † Associated with pregnancy or child-bearing. • If corrected for puerperal sepsis deaths having no statement as to duration of pregnancy (see text) the estimated rates for 1929 to 1933 are raised to 46, 53, 46, 47, 50, and the residual rates in the line above are decreased by about 0.04 per 1,000. § Corrected in accordance with the note below Table LXVIII.

in Table LXXIII. If based upon live births only, the rate of puerperal mortality (including abortion other than criminal) was 4.51 per 1,000, this rate being useful for comparison with years prior to 1928 (Tables LXXII-LXXIV, LXXVII).

Table LXXIV compares the mortality per 100,000 live births in 1933 with that in 1926–30, 1931 and 1932 from the constituent headings of the group of puerperal causes other than abortion, and where possible, with that in 1911–20. The causes which are increasing are notably ectopic gestation and the group of "other accidents of childbirth." Placenta prævia, other puerperal hæmorrhage, the combined rate for albuminuria and the "other toxæmias," and the puerperal sepsis rate excluding post-abortive sepsis, show little change from the mean rates during 1926–30.

### Table LXXIV.—Puerperal Mortality from various Causes, per 100,000 Live births, 1911–20, 1926–30, 1931, 1932 and 1933.

List No.		1911– 20.	1926– 30.	1931.	1932.	1933.
142	Ectopic gestation	9	13	12	14	16
142	Other accidents of pregnancy	2	3	4	3	4
143 144a	Placenta prævia	12 0	24	22	25	24
144a b	Other puerperal hæmorrhage	> 55 {	26	24	22	23
146	Puerperal albuminuria & convulsions	79	79	59	61	64
147	Other toxæmias of pregnancy		8	21	25	24
148	Puerperal phlegmasia alba dolens, embolism and sudden death	37	29	29	32	30
149	Other accidents of childbirth	?	41	47	47	54
150(1)	Puerperal insanity	4	3	$\begin{vmatrix} 2\\ 2 \end{vmatrix}$	4	2
(2)	Puerperal diseases of breast	1	1	2	2	3
(3)	Childbirth (unqualified)	?	6	4	6	5
-Bülde	Total non-septic causes other than abortion.	246	234	227	241	247
145	Puerperal sepsis not returned as abor- tion.	;	137	130	119	139

The rate per 1,000 total (live and still) births for all puerperal causes is  $4 \cdot 32$ , compared with an average rate of  $4 \cdot 12$  in the preceding five years, or if abortion deaths are excluded the rate is  $3 \cdot 70$  compared with an average of  $3 \cdot 57$  for 1928–32 (Table LXXIII). The latter rate for causes other than abortion increased from  $3 \cdot 43$  and  $3 \cdot 41$  in 1926 and 1927 to  $3 \cdot 74$  in 1928, declined to  $3 \cdot 42$  by 1931 and then increased again (Table LXXV). The rate for non-puerperal causes, associated with pregnancy or childbearing without abortion, is  $1 \cdot 21$  per 1,000 total births compared with an average rate of  $1 \cdot 11$  in the preceding 5 years; the fluctuations in this rate are largely accounted for by the presence or absence of influenza epidemics.

Table LXXV.—Maternal Mortality from Various Causes other than Abortion per 100,000 Live and Still Births (estimated), and from Abortion per 1,000,000 Women Living, by Age of Mother. 1924–1933.

		5 23-0	1924.	1925.	1926.	1927.	1928.	1929.	1930.	1931.	1932.	1933
060	Rates per 1	00,000 Liv	ve and	Still bi	rths (e	stimat	ed at e	each ag	ge)			and the second
142– 150	birth and the puerperal state excluding abortion	All ages 15 25 35-45		*****	343 ? ? ?	341 ? ? ?	374 ? ?	363 ? ?	359 ? ?	342 273 321 468	345 242 320 517	370 292 333 544
142	Ectopic gestation	All ages 15– 25– 35–45	10 3 10 16	12 5 14 15	13 5 11 25	14 6 15 22	13 5 11 22	13 4 13 22	11 1 11 21	12 4 11 24	13 2 13 25	18 18 18 24
143	Other accidents of pregnancy (not abortion)	All ages 15 25 35-45	3 2 2 3	3 2 6	3 2 2 4	4 2 3 5	$2 \\ 2 \\ 2 \\ 1 \\ 1$	2 1 2 4	2 1 2 4	3 3 2 7	3 2 3 5	
44		All ages 15– 25– 35–45	51 18 43 101	50 24 42 96	47 19 41 87	48 21 40 96	48 24 41 90	47 16 38 101	51 24 45 96	44 21 39 84	45 18 38 95	4 1 39 89
45	Puerperal sepsis not returned j as post-abortive	All ages 15– 25– 35–45	~~~~~	~~~~~	123 ? ?	119 ? ?	140 ? ? ?	138 ? ?	140 ? ?	125 116 118 151	114 91 115 130	13: 11 12: 17:
46	Puerperal albuminuria and j convulsions	All ages 15- 25- 35-45	69 81 53 90	67 75 58 77	72 71 61 96	79 70 73 100	81 76 67 117	78 77 70 98	69. 57 62 98	57 61 49 70	58 62 47 82	6 6 5 8
47	Other toxæmias of preg- nancy	All ages 15 25 35-45	7 8 6 9	8 10 7 7	8 13 6 7	7 6 8 5	7 8 5 8	10 11 9 12	10 13 8 11	20 18 20 20	24 19 22 31	2: 2: 1: 2:
48	Puerperal phlegmasia alba dolens, embolism and sudden death	All ages 15 25 35-45	32 14 31 49	32 23 29 49	28 14 28 42	26 11 25 43	32 15 29 56	27 10 27 46	28 16 26 45	29 16 30 40	31 16 25 65	29 10 24 51
	Other accidents of childbirth {	All ages 15 25 35-45	31 22 26 47	33 24 27 57	38 22 34 62	37 19 37 52	45 25 40 77	41 27 38 64	36 20 33 60	46 27 46 61	45 28 44 66	5 4 4 7
50	Other or unspecified condi- tions of the puerperal state (not abortion)	All ages 15– 25– 34–35	14 6 13 26	15 8 12 29	12 9 10 19	8 8 6 10	8 7 7 10	8 7 7 11	12 5 13 18	7 7 5 12	12 5 12 19	1
100 M	Deaths assigned to other causes but associated with pregnancy and childbirth (not abortion)	15	~~~~~	~~~~			103 71 87 172	125 77 113 204	103 52 91 191	127 71 107 239	97 61 83 176	12 7 10 19
4	Rates per million v	vomen livi	ng at 1	he age	in qu	estion	(estim	ated)	evodis.	0 1435		
40	Post-abortive sepsis {	15-45 15 25 35-45			23 ? ?	22 ? ?	23 ?	24 ? ?	31 ? ?	23 11 34 25	27 13 37 29	20 13 30 3
41	Abortion not returned as septic	15–45 15– 25– 35–45	19 4 24 29	16 3 19 28	16 4 22 24	16 4 20 24	13 2 18 18	12 3 15 20	13 2 14 24	12 3 16 16	12 2 15 19	1
	Criminal abortion	15-45 15 25 35-45	4 3 4 4	7 5 10 6	5 3 9 4	5 4 7 4	6 3 10 4	7 5 11 4	7 3 11 6	8 4 13 7	7 5 13 3	.1
	causes but associated with	15-45 15- 25- 35-45	· · · · · ·	~~~~	~~~~	~~~~	9 2 13 10	12 6 19 11	8 3 11 10	8 3 12 10	9 4 12 13	1

Table LXXVI.—Mortality of Married Women at Separate ages from Various Puerperal Causes other than Abortion (per 100,000 Births live and still); and of Married and Single Women from Abortion (per 1,000,000 living), 1930–32 and 1933.

List					Married Wo		
No.				All ages.	15-25.	25-35.	35-45.
42-150	Diseases of pregnancy, childbirth, et excluding abortion	tc., {1930 {1933	-32	343 363	255 291	318 325	482 519
142	Ectopic gestation	{ 1930- 1933		12 14	2 3	11 15	22 22
143	Other accidents of pregnancy (not aborti	on) { 1930 1933	-32	33	2 5	2 2	5 2
144	Puerperal hæmorrhage	{ 1930		47 45	21 19	39 39	89 84
145	Puerperal sepsis not returned as post abort	ive { 1930 1933	-32	124 131	109 112	121 125	143 161
146	Puerperal albuminuria and convulsions	{1930 1933	20	56 60	54 61	48 51	74 79
147	Other toxæmias of pregnancy	{ 1930	300 3 SA	20 21	17 27	19 16	25 28
148	Puerperal phlegmasia alba dolens, e bolism and sudden death	em-{1930 {1933	-32	29 29	16 16	27 23	49 57
149	Other accidents of childbirth	{ 1930	-32	42 50	27	40 46	59 72
150	Other or unspecified conditions of puerperal state (not abortion)	the { 1930	-32	10 10	6 7	10 8	16 15
	Deaths assigned to other causes but associed with Nos. 142–150	cia- }1933		118	75	103	189
				rried Wome ving at age		of Single Million li	Women ving.
		15-25.	25-	35. 35-4	5. 15-25.	25-35.	35-45
140	Post-abortive sepsis {1930-32 1933	55 46	5		7	6	7
141	Abortion not returned as 1930-32 septic	10 14	2:		1*	4*	2*
-	Criminal abortion { 1930-32 1933	12 17	1		4	11	-
_	Total of above {1930-32 1933	77 77	8		12	20	9
-	Deaths assigned to other causes but associated with No. 140-141	17	2		-	4*	2

\* Note.—These rates are based upon less than 5 deaths.

Mortality attributed to abortion, including criminal cases, is 47 per million women aged 15–45, compared with average rates of 43 in 1926–28 and 45 in 1929–31, and a rate of 46 in 1932 (Tables LXXIII, LXXV). Abortion with sepsis accounts for 26 deaths per million women of childbearing age (23 in 1926–28, 26 in 1929–31, 27 in 1932) and criminal abortion for 9 (5 in 1926–28, 7 in 1929–31, 7 in 1932). The rate for non-puerperal causes associated with abortion is 10, compared with an average of 9 in the preceding 5 years.

Table LXXV gives the rates of mortality per 100,000 total births to women of various ages from separate causes in each year since 1924. The numbers of live and still births to women of specific ages have been estimated by means of the fertility rates (for live births) at various ages calculated in the census years 1921 and 1931 and given in Table LXXXVIII of the Review for 1932. The rates for years between 1921 and 1931 are first estimated by simple interpolation assuming equal decrements of fertility at a given age to have occurred in each year. By applying these to the estimated populations of married and of single women in the year, and adjusting the resulting expected live births to equal in aggregate the actual total of registered live and still births in the year in question, the required numbers of live and still births at each age of mother are obtained. The assumption is necessarily made that all births occur within the age limits 15-45, an approximation which results in a slight depression of all the rates, and it is also assumed that still births form a constant ratio to live births regardless of age. The errors involved in these assumptions are so small in effect that they may be disregarded. For years since 1931 the fertility rates of that year have been applied, and the calculated total then adjusted as before to the realised total, this being tantamount to assuming that since 1931 fertility has changed to an equal relative extent at each age, this being the simplest assumption in the absence of data. Owing to the progressive uncertainty of estimates both of the married and single populations and of the fertility rates with increasing interval from the census, the calculation of the rates in Tables LXXV-VI can only be carried on for a few years unless, as is hoped, data of age of mother from birth registration becomes available to replace the numbers of births estimated by this method.

The specific age rates for the abortion and other than abortion components of puerperal sepsis cannot be calculated separately prior to 1931, but the combined rates for both forms of puerperal sepsis per 100,000 total births at the stated age have been as follows in the ten years 1924 to 1933.

	1924.	1925.	1926.	1927.	1928.	1929.	1930.	1931.	1932.	1933.	
All ages	 134	150	154	151	172	173	184	159	155	175	
15-25	 110	133	131	118	139	146	139	141	119	139	
25-35	 122	136	146	141	160	167	179	150	151	163	
35-45	 182	190	193	201	238	216	242	207	198	246	

At ages 15–25 the average of the sepsis rates in the 5 years 1924–28 was 126, and in 1929–33 it was 137, or 9 per cent. higher; at 25–35 the quinquennial averages were 141 and 162, an increase of 15 per cent., and at 35–45 they were 201 and 222, an increase of 10 per cent. The rates of 1933 were equalled or exceeded at

ages 15–25 in each year 1928 to 1931, at 25–35 in 1929–30 only, and at 35–45 not in any of the preceding 9 years. Sudden increases in the sepsis rates are evident in 1925, 1928 and 1933, and pronounced downward movements in 1931 or 1932.

Table LXXV shows that there has been no consistent change in the rate for puerperal sepsis not returned as post-abortive since 1926, the first year for which it can be calculated; the average rate in 1926–29 was 130 per 100,000 births and in 1930–33 it was 128. Amongst married women alone (Table LXXVI) this rate, based upon legitimate births only, is slightly lower than amongst all women (the successive rates in 1928 to 1933 being 137, 136, 137, 123, 113, 131); in 1930–32 the rates were 109 at 15–25, 121 at 25–35 and 143 at 35–45, the corresponding rates in 1933 being 112, 125 and 161.

Despite the decline in fertility, the death rates from postabortive sepsis per million women living have tended to increase, the average of the rates during 1926–29 being 23, and during the last 4 years 27. This rate is not greatly influenced by age either in single or married women (Table LXXVI), though when based upon the whole population of women it naturally changes with age owing to the changing proportion of the married as age advances. The rates amongst the married were lower in 1933 than in 1930–32 at each age. The total death rates attributed to abortion (including criminal cases) per million married women in 1930–32 were 77 at ages 15–25, 89 at 25–35 and 66 at 35–45; in 1933 the rates were lower at ages under 35. The estimated rates per million single women at the corresponding ages in 1933 were 12, 20 and 9 (Table LXXVI).

Puerperal hæmorrhage tends to decline slightly, the average of the rates in 1931–33 amongst all women being 19, 39 and 89 per 100,000 births at the three ages, compared with 20, 42 and 95 in 1924– 26. This is also true of puerperal albuminuria and convulsions, the averages for 1931–33 being 62, 49, 78 at the three ages, compared with 76, 57, 88 for 1924–26, but this decline is offset by the increase of rates for other toxæmias of pregnancy from 10, 6, 8 in 1924–26 to 22, 20, 26 in 1931–33. The increase in mortality rates assigned to "other accidents of childbirth," from average rates of 22, 33, 59 in 1924–28 to 28, 42, 65 in 1929–33, is also partly offset by a fall in the rates for other or unspecified conditions owing to greater precision in certification.

The distribution throughout the country of the mortality ascribed to childbirth is outlined in Table LXXVII. Sepsis mortality was higher, in the towns than the rural districts, and, as in the preceding year, the London rate was lower than that of the rural aggregate. The sepsis rate was highest in North II, I and III, Wales coming next in order; the East gave the lowest rate.

Mortality from non-septic causes was highest in the small towns and lowest in London, the latter rate being the lowest in the table, as in 1931 and 1932. Wales registered the highest rates, followed by North II, III and IV. The range of regional variation was, as usual, less for septic than non-septic causes.

Table LXXVII—Distribution throughout England and Wales of Mortality of Women in Childbirth, distinguishing Septic and Other Causes, and of Prevalence of Puerperal Fever and Pyrexia, 1933.

1.51	Per 1,0	00 Live	Births.		Per	1,000 Li	ve and	Still Bi	rths.	ths.
1.15	Deaths.	ben	Ca	ses.	reads	Deaths.	, mai	Cas	ses.	ral Fever" 100 Deaths.
Sepsis.	Other causes.	Total.	" Fever."	" Pyrexia."	Sepsis.	Other causes.	Total.	" Fever."	" Pyrexia."	" Puerperal Fever " Cases per 100 Deaths
1 · 83 1 · 66 1 · 77	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	4 · 51 3 · 86 3 · 83	3·6 3·7 4·1	$10.0 \\ 11.0 \\ 12.7$	1·75 1·61 1·72	2.572.131.99	4·32 3·73 3·71	3.5 3.6 3.9	9.6 10.7 12.3	197 225 229
$1 \cdot 49$ 2 \cdot 02 2 \cdot 27 2 \cdot 32	$2 \cdot 41$ 3 \cdot 19 2 \cdot 71 3 \cdot 53	$3 \cdot 90 \\ 5 \cdot 21 \\ 4 \cdot 98 \\ 5 \cdot 85$	3·3 3·6 2·7	8·5 9·9 7·8	$1 \cdot 44$ $1 \cdot 93$ $2 \cdot 18$ $2 \cdot 21$	$2 \cdot 33$ $3 \cdot 04$ $2 \cdot 60$ $3 \cdot 37$	3·77 4·97 4·77 5.59	$3 \cdot 1$ $3 \cdot 4$ $2 \cdot 6$ $3 \cdot 0$	8·2 9·5 7·5	218 179 119 133
$2 \cdot 22$ 1 · 73 1 · 83	$3 \cdot 50 \\ 3 \cdot 14 \\ 2 \cdot 16$	5.72 4.87 4.00	4·1 3·9 3·3	$   \begin{array}{c}     10 \cdot 4 \\     11 \cdot 0 \\     9 \cdot 5   \end{array} $	$2 \cdot 12 \\ 1 \cdot 65 \\ 1 \cdot 76$	$   \begin{array}{r}     3 \cdot 33 \\     2 \cdot 99 \\     2 \cdot 07   \end{array} $	$5 \cdot 45 \\ 4 \cdot 64 \\ 3 \cdot 83$	3·9 3·7 3·2	9·9 10·5 9·1	184 224 181 191
$1 \cdot 63 \\ 1 \cdot 40 \\ 1 \cdot 45$	$2 \cdot 40$ $2 \cdot 46$ $2 \cdot 76$	4.03 3.86 4.21	$2 \cdot 6$ $3 \cdot 5$ $3 \cdot 3$	8·8 9·3 10·4	1.56 1.35 1.39	$2 \cdot 30$ $2 \cdot 37$ $2 \cdot 64$	3.86 3.71 4.03	$2.5 \\ 3.4 \\ 3.1$	8·4 8·9 10·0	16 25 22 18
$2 \cdot 20$ $2 \cdot 14$	3.85 4.07	6.05 6.21	4·4 2·7	7·1 6·3	$2.07 \\ 2.01$	3.64 3.84	5·71 5·85	4·2 2·6	6·7 5·9	202 129
$1 \cdot 85 \\ 1 \cdot 74 \\ 1 \cdot 69$	$3 \cdot 01 \\ 3 \cdot 00 \\ 1 \cdot 97$	4.87 4.74 3.67	2.8 2.5 4.5	8.6 6.9 14.8	1.77 1.67 1.64	$2 \cdot 88$ $2 \cdot 87$ $1 \cdot 91$	$4 \cdot 65 \\ 4 \cdot 55 \\ 3 \cdot 54$	2.7 2.4 4.4		244 155 143 263 195
	Sepsis. 1 · 83 1 · 66 1 · 77 1 · 49 2 · 02 2 · 27 2 · 32 2 · 27 1 · 73 1 · 94 1 · 63 1 · 45 2 · 18 2 · 18 2 · 214 1 · 89 1 · 85 1 · 74	Deaths.           Sepsis.         Other causes.           1.83         2.68           1.66         2.20           1.77         2.06           1.49         2.41           2.22         3.50           2.22         3.50           1.73         3.14           1.83         2.46           1.92         2.27           2.73         3.14           1.83         2.46           1.49         2.44           2.22         3.50           1.73         3.14           1.83         2.46           1.49         2.41           2.22         3.50           1.43         2.40           1.43         2.46           2.41         2.40           2.20         3.85           2.14         4.07           1.85         3.01           1.74         3.00           1.69         1.97	Deaths.           Sepsis.         Other causes.         Total.           1:83         2:68         4:51           1:66         2:20         3:86           1:77         2:06         3:83           1:49         2:41         3:90           2:27         2:71         4:98           2:22         3:50         5:72           2:33         3:14         4:87           1:63         2:04         3:98           1:63         2:40         4:03           1:49         2:44         3:90           1:49         2:41         4:87           1:83         2:16         4:00           1:43         2:40         4:03           1:43         2:40         4:03           1:43         2:40         4:03           1:43         2:40         4:03           1:43         2:40         4:03           2:20         3:85         6:05           2:14         4:07         6:21           1:85         3:01         4:87           1:85         3:01         4:74           1:85         3:01         4:74 <t< td=""><td><math display="block">\begin{array}{c c c c c c c c c c c c c c c c c c c </math></td><td><math display="block">\begin{tabular}{ c c c c c } \hline \$L\$ beaths. \$Cases. \$Cases. \$causes. \$causes. \$r\$ total. \$causes. \$ca</math></td><td><math display="block">\begin{tabular}{ c c c c c c c } \hline \$L\$ Cases. \\ \hline \$Cases. \\ \hline \hline \$Cases. \\ \hline \$Cases. \\ \hline \hline \$C</math></td><td><math display="block">\begin{tabular}{ c c c c c c } \hline \$L\$ Cases. \$L\$ Deaths. \$L\$ Cases. \$L\$ Deaths. \$L\$ Cases. \$L\$ Deaths. \$L\$ Cases. \$L\$ Ca</math></td><td><math display="block">\begin{array}{ c c c c c c c } \hline &amp; Cases. &amp; Deaths. \\ \hline \\ \hline \\ Sepsis &amp; Other causes. &amp; Total. &amp; \$\frac{1}{5}\$, \$\frac</math></td><td><math display="block"> \begin{array}{ c c c c c c } \hline &amp; Cases &amp; Cases \\ \hline \\ \hline \\ Sepsis &amp; Other \\ causes &amp; Total \\ \hline \\ Sepsis &amp; Other \\ causes &amp; Total \\ \hline \\ \hline \\ \hline \\ \\ \hline \\ \hline \\ \hline \\ \hline \\ \\ \hline \\ \\ \hline \\ \hline \\ \\ \hline \\ \\ \hline \\ \\ \hline \\ \hline \\ \hline \\ \hline \\ \\ \hline \\ \hline \\ \hline \\ \hline \\ \\ \hline \\ \hline \\ \hline \\ \hline \\ \\ \hline \\ \hline \\ \hline \\ \hline \\ \\ \hline \\ \\ \hline </math></td><td><math display="block"> \begin{array}{ c c c c c c } \hline &amp; </math></td></t<>	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{tabular}{ c c c c c } \hline $L$ beaths. $Cases. $Cases. $causes. $causes. $r$ total. $causes. $ca$	$\begin{tabular}{ c c c c c c c } \hline $L$ Cases. \\ \hline $Cases. \\ \hline \hline $Cases. \\ \hline $Cases. \\ \hline \hline $C$	$\begin{tabular}{ c c c c c c } \hline $L$ Cases. $L$ Deaths. $L$ Cases. $L$ Deaths. $L$ Cases. $L$ Deaths. $L$ Cases. $L$ Ca$	$\begin{array}{ c c c c c c c } \hline & Cases. & Deaths. \\ \hline \\ \hline \\ Sepsis & Other causes. & Total. & $\frac{1}{5}$, $\frac$	$ \begin{array}{ c c c c c c } \hline & Cases & Cases \\ \hline \\ \hline \\ Sepsis & Other \\ causes & Total \\ \hline \\ Sepsis & Other \\ causes & Total \\ \hline \\ \hline \\ \hline \\ \\ \hline \\ \hline \\ \hline \\ \hline \\ \\ \hline \\ \\ \hline \\ \hline \\ \\ \hline \\ \\ \hline \\ \\ \hline \\ \hline \\ \hline \\ \hline \\ \\ \hline \\ \hline \\ \hline \\ \hline \\ \\ \hline \\ \hline \\ \hline \\ \hline \\ \\ \hline \\ \hline \\ \hline \\ \hline \\ \\ \hline \\ \\ \hline $	$ \begin{array}{ c c c c c c } \hline & & & & & & & & & & & & & & & & & & $

• Excluding Greater London.

Puerperal fever notification.—The records of cases of puerperal fever and pyrexia notified are collated with those of births and of deaths from this cause in Table LXXVII. The proportion to live births of puerperal fever cases notified is 36 per 10,000. This rate rose from 30 in 1927 to 40 in 1930, and fell to 35 in 1932, and may have been affected by the compulsory notification of "puerperal pyrexia," which was in force throughout the period, having commenced on October 1, 1926. The records of notifications under both headings will be found in Tables 28–29 in full detail of locality. The highest fever rates were recorded for Wales I, North III and Greater London, the pyrexia rates being highest in Greater London, North IV and the South West. The fever rate was lowest in Midland II, and the pyrexia rate in Wales II.

The proportion of puerperal fever cases to sepsis deaths is lowest in North I and II and in Wales II as in 1932, and highest in the East, Greater London and the South West; the range of variation in the regions being from 119 to 251 cases notified per 100 deaths. In London the ratio was 267. 186. Crushing by Motor Vehicles (not on railways).—Apart from 397 deaths on railways and 49 caused by aircraft, there were 5,934 accidental deaths attributed to mechanically-propelled vehicles in 1933, 4,447 of males and 1,487 of females. The rate of mortality per million persons was 147 compared with 141 in 1932, 147 in 1931 and 159 in 1930. In Table LXXVIII, the allocation of deaths to the different types of mechanically-propelled road vehicles is shown. The deaths classified as "Others" in 1933 are made up as follows :—

Motor cab, 41; motor char-a-banc, 61; motor tractor, 1; steam roller, 3; other or undefined motor, 7, and collisions involving a motor vehicle without statement as to which of the vehicles caused the death, 1,416.

It is regrettable that the last of these items is so large, since the lack of specification of the vehicle causing death renders the analysis of Table LXXVIII less complete than it would otherwise have been. It is also regrettable that the distinction between the occupants of vehicles and pedestrians or cyclists cannot always be made from the records of death certification, nor do the records furnish the information necessary for a satisfactory analysis of deaths according to the locality in which the accident occurred.

### Table LXXVIII.—Deaths, and Death Rates per Million Living, caused by various Types of Road Motor Vehicles in each year—1928–33.

			De	aths.			Rate per Million Living.						
	1928.	1929.	1930.	1931.	1932.	1933.	1928.	1929.	1930.	1931.	1932.	1933.	
Electric tram Motor car	101	89	73	74	52	66	2.6	2.2	1.8	1.9	1.3	1.6	
Motor van, lorry,	1,550	1,660	1,643	1,688	1,646	1,773	39·2	41·9	41·3	42·2	40·9	43·9	
etc.	938	1,162	1,273	1,209	1,111	1,180	23·8	29·3	32·0	30·2	27·6	29·2	
Motor omnibus	557	584	692	529	447	421	14·1	14·7	17·4	13·2	11.1	10·4	
Motor cycle	1,043	1,162	1,286	1,083	983	965	26·4	29·3	32·3	27·1	24.5	23·9	
Others	1,007	1,095	1,375	1,309	1,432	1,529	$25 \cdot 5 \\ 131 \cdot 6$	27·6	34·5	32·7	35·6	37·9	
Total motor vehicles	5,196	5,752	6,342	5,892	5,671	5,934		145·2	159·3	147·3	141·1	147·1	

Deaths attributed to the motor omnibus have fallen progressively since 1930, the total registered deaths in the causation of which this type of vehicle was concerned (alone or in collision with some other vehicle) being 852, 699, 595 and 559 in the four years 1930 to 1933. The same applies to the motor cycle, for which the corresponding totals have been 2,091, 1,797, 1,783, 1,727, but for the motor car this total, after remaining almost stationary during 1930–32, rose sharply in 1933 (2,219, 2,257, 2,291, 2,527).

Pedal cycles are known to have been concerned in or responsible for the following accidental deaths :---

1929, 1930, 1931, 1932, 1933,

				· · · · · ·			
Dedal evelop alone	5	M	207	258	235	308 95	345
Pedal cycles alone	•• 5	F	47	61	84	95	345 105
Pedal cycle in collision with other vehicles	}	M	232	294		431	
redar cycle in comsion with other venicles	·· 1	F	23	34	35	49	64
Total (see note below Table LXXX)		P .	509	647	663	883	1.058

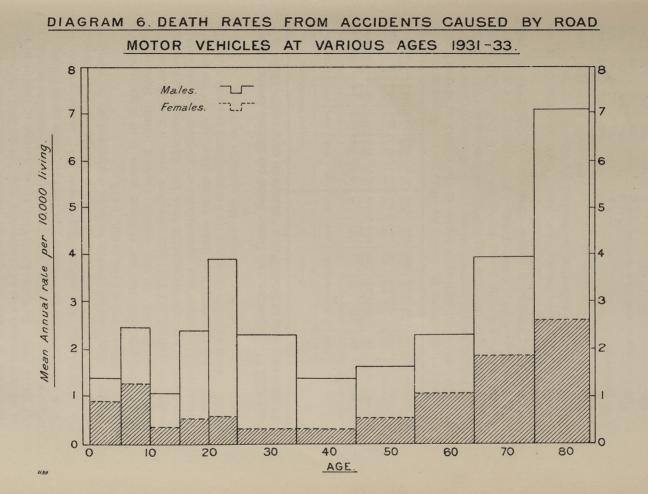


Table LXXIX compares the mean annual death rates per million living due to accidents caused by all forms of road motor vehicles at various ages in 3 triennial periods 1925–27, 1928–30 and 1931–33. In each of these periods the male rate at all ages has been more than three times the female rate. This excess is present at each age, but the ratio of male to female risk increases with age to a maximum exceeding 7 at 20–25, then declines to about 2 at 55–75 and again increases slightly in old age.

	els.W.		Males.	i atsoluti		Females,	
oldsi <del>ye</del>		1925–27.	1928–30,	1931-33.	1925-27.	1928–30.	1931-33
0 5		107	142	143	55 92	87	88
0	and the state of the	195 102	250 132	242	92	129 40	133
C Contraction of the	and a marker with	151	231	238	26 32	50	37 52
10		233	365	393	30	57	55
F		146	221	228	30 22	31	33
F and shares and a state		112	147	142	23	33	33
F		134	166	160	36	57	53
5		170	239	228	75	95	104
5		301	400	395	140	190	186
5 and over		490	738	711	179	276	260
All ages .		159	226	225	48	71	72

Table LXXIX.—Death rates per Million living from All Accidents caused by Road Motor Vehicles, by Sex and Age. 1925–27, 1928–30 and 1931–33.

From 1925–27 to 1928–30 the male rate at all ages rose by 42 per cent. and the female rate by 48 per cent. The changes which took place in the mean rates from 1928–30 to 1931–33 were, however, remarkably slight, the female rates remaining almost unchanged at each age under 45, whilst the male rates showed a rise for young adults balanced by a fall for boys of school age and men over 35.

The graphical representation of the relation of mortality rates with age in Diagram 6 clearly indicates the existence of 3 ages of maximal risk, the composite curve being the resultant of the various curves for pedestrians, cyclists and occupants of motor vehicles (which are unfortunately inseparable). These three ages of maximal risk are the age of commencing pedestrian activity uncontrolled by experience, 5–10, the age of great motor driving activity not fully restrained by a sense of responsibility, 20–25, and old age with its physical inability to escape many traffic dangers.

The trend of mortality risks according to age for pedestrians separately in 1933 has been analysed for Great Britain as a whole in the Ministry of Transport's Report on Fatal Road Accidents in that year, and also the numbers of deaths at various ages of motor cyclists and pedal cyclists. The numbers of deaths of pedestrians resulting from road accidents which were reported to the police during the year, per million total population estimated in Great Britain at each age, as taken from that Report, were as shown below :

Age.	Males. 1	Females.	Age.	Males. F	emales.	Age	Males. 1	Females.
0-	 149	81	30	. 33	13	60-	 184	118
5-	 219	137	35	. 33	18	65-	 295	141
10-	 44	26	40	. 48	23	70-	 432	213
15-	 30	15	45.	. 69	32	75-	 664	234
20-	23	16	50	. 85	47	80-	 938	390
25-	 14	11	55	. 113	78	85-	 896	279

At the two ends of life these rates approximate to the mortality rates for 1931–33 comprising all males or females registered as dying as a result of motor accidents in England and Wales (Table LXXIX), but at intermediate ages they bear a ratio to the latter which becomes minimal at ages 20–25 and then increases.

Table 25 analyses according to sex and age the accidental deaths caused by each type of vehicle, and in Table LXXX those caused by the more important motor road vehicles, and also by pedal cycles, during 1931–33 are classified by sex and age. In this table a group of collisions in which a pedal cycle was involved together with another vehicle is shown separately from other collisions but as explained in the note below the table this group does not comprise all such accidents, some being included in other groups.

# Table LXXX.—Accidental Deaths\* caused by Various types of Road Motor Vehicles and by Pedal Cycles, by Sex and Age. 1931–33.

		All ages.	0-	5-	10-	15-	20-	25-	35–	45-	55-	65-	75 & up.
Electric tram	$ \left\{ {}_{F}^{M} \right\}$	125	4	52	31	3	22	8 2	10 4	3	24 12	29 16	20 24
Motor-car	$ \left\{ {{}_{\rm F}^{\rm M}} \right\}$	3,307 1,800	197 133		117 59	138 56	78	325 121	239 105	348 199	456 305	489 314	348
Motor-van, lorry	$\dots \left\{ \begin{smallmatrix} M \\ F \end{smallmatrix} \right\}$	2 512 988	288 146		185 56	195 37	32	224 33	174 39	180 73	250 105	135	129
Motor omnibus	$ \left\{ {}_{\mathrm{F}}^{\mathrm{M}} \right\}$	903 494	96 56	143 93	64 26	67 27	53 20	78 30	79 39	88 39	85 69	95 71	55
Motor cycle	$\dots \left\{ {}_{\mathrm{F}}^{\mathrm{M}} \right\}$	2,424 607	43 33	49 18	13 6	218 47	675 78	67	185 52	133 50	162 94	181 98	122 64
†Collisions involving cycle	pedal $\left\{ \begin{matrix} M \\ F \end{matrix} \right\}$	1,284 148	1	22 5	129 19	258 38	28	22	131 12	141 15	143 6	70 3	11
†Other collisions	$ \left\{ {}_{F}^{M} \right\}$	2,160 259	5 7	6	15 9	277 41	687 51	649 53	239 34	160 25	76 18	36 12	10
Other mechanical	$road \begin{cases} M \\ F \end{cases}$	272	14 10	34 21	16 7	16 9	12 3	26 10	23 8	38 15	38 21	39 26	16
transport. Total	{M F	12,987 4,510	648 386	1,173 632	542 183	1,172 255	2,003 292	2,163 338	1,080 293	1,105 419	1,234 630	1,162 675	705
Pedal cycle	$ \left\{ \begin{matrix} M \\ F \end{matrix} \right\}$	888 284	3 5	21	67 8	140 20	81 23	96 10	82 10	81 26	117 47	106 74	94 51

\* Including "open verdicts."

t Comptising only those collisions where it is not known which of the vehicles actually caused death; where this is known the collision is included under the appropriate heading. The proportion of male to female deaths varies considerably according to the vehicle causing death and according to age, the percentage ratios being as follows :---

				All						65 and
				Ages.	0-5.	5-15.	15-25.	25-45.	45-65.	over.
Motor car				184	148	185	270	250	160	164
Motor bus				183	171	174	255	228	160	158
Motor van,	lorry			254	197	219	546	553	242	161
Pedal cycle	CARLE IN		120.	313	?	489	514	890	271	160
Motor cycle		1	199.1	399	130	258	714	696	205	187
Collisions	betwe	en	pedal							
cycle and	l other	vehi	cle	868	?	629	645	1,003	1,352	2,700

Male excess of deaths is greatest for collisions involving a pedal cycle, motor cycle accidents coming next, and is least for motor car and bus accidents. Even at the early age of 0-5 years the greater risks taken by boys than girls in street play are reflected in the excess of 97 and 71 per cent. for fatalities caused by commercial vehicles and buses respectively and the smaller excess of 48 and 30 per cent. for motor car and motor cycle fatalities, the excess of boys over girls in the population at this age being only 2 per cent. At 5-15 the male excess is greater than at 0-5 for each vehicle, fatalities in which pedal cycles were involved being 5 or 6 times as frequent for boys as for girls, whilst those due to other vehicles were about twice as frequent. The much greater participation of young adult males in the driving of motor cycles and commercial vehicles, and in the riding of pedal cycles, results in male deaths numbering 5 to 10 times the female deaths at 15-45, after which age the contrasts become gradually less except for collisions involving pedal cycles (in which the rider is generally the victim).

Table LXXXI compares the age distributions of deaths, per 1,000 of all ages, in 1931–33 with the corresponding distributions in 1925–30. The quinquennium of age having the greatest number of deaths is 20–25 for accidents involving motor cycles and 5–10 for other types of motor vehicles. For deaths caused by pedal cycles the decennium of age having the greatest number of deaths is 15–25 for males and 65–75 for females, whilst for deaths due to collision involving a pedal cycle 15–25 contributes the greatest mortality for each sex. The distributions of the populations by age, given at the foot of the table, indicate the extent to which the proportions at risk differed in the two periods.

Out of 1,000 male deaths caused by all motor vehicles those of boys at the school ages 5–15 numbered 158 in 1925–30 and 132 in 1931–33, whilst for motor cars alone the proportion fell from 221 to 164 and for motor cycles from 33 to 25. The decline in death rate of boys at ages 10–15 since 1928–30, shown in Table LXXIX, together with these comparisons, seems to indicate that the recent school instruction of boys in the matter of avoiding street accidents has been effective in reducing their excessive liability to these fatalities. Out of 1,000 female deaths caused by motor cars those Table LXXXI.—Accidental Deaths at Various Ages Caused by Different Types of Road Vehicles, per 1,000 at all ages. 1925–30 and 1931–33.

toyo the of the	Sex.	Period.	All ages.	0-	5-	10-	15-	20-	25-	35-	45-	55-	65-	75 and up
Deaths caused by—		AN COMPANY						e si por		-		1		
Electric tram	Р {	1925–30 1931–33	1,000 1,000	58 26	45 36	13 21	17 16	26 21	58 52	84 73	104	147 187	234 235	186 229
Motor car	м {	1925–30 1931–33	1,000 1,000	76 60	172 129	49 35	42 42	56 68	77 98	80 72	108 105	130 138	127 148	83 105
and an and	F	1925–30 1931–33	1,000 1,000	82 74	166 131	36 33	28 31	34 43	49 67	67 58	111 111	155 169	169 175	103 108
Motor van, lorry	Р {	1925–30 1931–33	1,000 1,000	118 124	200 212	98 69	89 66	57 61	77 73	65 61	74 72	89 101	81 103	52 58
Motor omnibus	Р {	1925-30 1931-33	1,000	98 109	161 169	77 64	90 67	61 52	87 77	75 85	104 91	103 110	96 119	48 57
Motor cycle	M	1925–30 1931–33	1,000	17 18	24 20	9 5 15	98 90	256 279	228 265	93 76 56	83 55 99	75 67 153	73 75 159	44 50 97
	F{	1925-30 1931-33 1925-30	1,000 1,000 1,000	68 54 56	46 30 105	15 10 53	91 77 94	107 129 143	109 110 142	56 86 88	99 82 94	153 155 93	159 162 83	97 105 49
All mechanically pro-	мţ	1925-30 1931-33 1925-30	1,000	50 93	90 152	42 43	94 90 59	143 154 63	142 167 71	83 67	94 85 98	93 95 128	90 141	49 54 85
B been Really and	F { M	1923-30 1931-33 1931-33	1,000	86 3	132 140 24	43 41 76	57 158	65 91	75	65 92	93 91	140 132	149	89
Pedal cycle { Collisions involving pedal {	F M	1931 - 33 1931 - 33 1931 - 33	1,000	18	35 17	28 100	70 201	81 131	35 164	35 102	92 110	165 111	261 55	180
cycle	F M	1931–33 1931–33	1,000	$\frac{1}{1}$	34	128	257 139	189 333	149 305	81 106	101 65	41 26	20 13	
motor cycle {	F	1931-33	1,000	21	16		183	278	220	110	68	26	16	10
Population per 1,000 at	м {	1925–30 1931–33	1,000	87 78	91 84	87 88	95 85	91 88	149 164	131 132	121 119	88 94	45 51	18 17
all ages :	F {	1925–30 1931–33	1,000	79 70	81 76	79 79	87 79	85 85	159 162	143 143	125 127	89 96	51 58	22 23

at ages 5–15 numbered 202 in 1925–30 and 164 in 1931–33, the corresponding proportions for motor cycles being 61 and 40, but, as Table LXXIX shows, there is no evidence of any recent improvement in the mortality rate for girls of school age when deaths caused by all forms of motor vehicle are combined.

The reduction of the heavy excess mortality of boys over girls since 1925-30 is evidenced by the following ratios of male per 100 female deaths in the two periods, the decline in ratio being greatest at 10-15.

Ages		0-	5-	10-	15-	20-25
1925–30		180	206	362	472	674
1931–33	• •	168	186	296	460	686

Larger proportions of motor car and motor cycle deaths now occur between ages 20 and 35 than formerly (Table LXXXI), the change being greater than can be accounted for by the age distributions of the population. This is doubtless due to the more rapidly increasing use of motor vehicles by young adults than at other ages. The increases noticeable in the proportions at ages over 55 are mainly accounted for by the higher proportion of old people in the populations at risk.

199, 200. **Ill-defined Diseases.**—These headings in the International List of Causes of Death, to which 1,315 deaths have been allocated, exclude the ill-defined diseases of infancy and old age, 127

and hereing families	Ca		of Death, 1933.
Subject of Inquiry.	Replies received.	Replies ampli- fying previous information.	Deaths allocated as the result of inquiry to certain headings.
Croup	11	10	Diphtheria 1, Laryngismus stridulus 3, Laryngitis 3.
Membranous laryngitis	1	1	Diphtheria 1.
Pyæmia, septicæmia, etc.	175	133	Diseases of the teeth and gums 7, Diseases of the tonsils 19, Puerperal sepsis 3, Diseases of the skin 28.
Tuberculosis	144	144	Tuberculosis of the respiratory system 88, Tuberculosis of central nervous system 5, Tuberculosis of intestines and peritoneum 6, Tuberculosis of vertebral column 7, Tuberculosis of other bones and joints 4, Tuberculosis of skin and subcutaneous tissues 2, Tuberculosis of lymphatic system 7, Disseminated tuberculosis 8, Other forms of tuberculosis 5.
Cancer (part or organ not stated).	1,189	1,118	Part or organ stated in 1,092 cases.
Cerebral tumour (P.M. cases).	281	256	Tuberculosis of central nervous system 3, Cancer 133, Glioma 60.
Tumour of other sites	847	644	Syphilis 6, Cancer 477.
Rheumatism	602	600	Rheumatic fever 192, Chronic rheumatism 2, Rheumatoid arthritis 2, Rheumatic heart disease 396.
Encephalitis	217	179	Influenza 25, Polioencephalitis 4, Encepha- litis lethargica 69, Tuberculosis of central nervous system 2, Syphilis 10, Other forms of encephalitis 26.
Basal or basic menin- gitis.	19	15	Cerebro-spinal fever 2, Tuberculosis of central nervous system 4, Meningitis- other forms 4.
Posterior or post basal or post basic menin- gitis.	33	29	Cerebro-spinal fever 19, Tuberculosis on central nervous system 2, Meningitis- other forms 3.
Cerebro-spinal menin- gitis	119	112	Cerebro-spinal fever 97, Tuberculosis of central nervous system 1, Meningitis— other forms 8.
Spinal sclerosis	22	19	Other diseases of the spinal cord 8, Dis- seminated sclerosis 8.
Cerebral sclerosis	7	7	Disseminated sclerosis 2.
Paraplegia	23	15	Syphilis 1, Other diseases of the spinal cord 4, Disseminated sclerosis 2.

Table LXXXII.—Replies to Inquiries respecting Indefinitely Certified Causes of Death, 1933.

Table LXXXII—continued.

Saithaa's white itali	Tab	Constant of the second states of the	Continued.
Subject of Inquiry.	Replies received.	Replies ampli- fying previous information.	Deaths allocated as the result of inquiry to certain headings.
General paralysis (out- side asylums).	16	15	General paralysis of the insane 14.
Paralysis	18	14	Other diseases of the spinal cord 1.
Aortitis, arteritis and endarteritis.	102	88	Syphilis 41, Aneurysm 2, Arterio-sclerosis 2.
Fibroid phthisis	77	73	Tuberculosis of respiratory system 60, Chronic interstitial pneumonia 8.
Hæmoptysis	23	18	Tuberculosis of respiratory system 9, Aneurysm 1.
Stomatitis	18	18	Thrush, aphthous stomatitis 1.
Stricture of œsophagus	23	19	Cancer 10.
Hæmatemesis	25	19	Cancer 3, Ulcer of stomach or duodenum 10.
Pyloric stenosis, ob- struction, etc.	48	43	Cancer 13, Ulcer of stomach or duodenum 24.
Jaundice	41	29	Cancer 4, Biliary calculi 3.
Peritonitis	95	84	Influenza 1, Cancer 9, Ulcer of stomach or duodenum 6, Appendicitis 22, Hernia 2, Intestinal obstruction 4, Puerperal sepsis 5
Pemphigus of infants	41	36	Syphilis 6.
Hydrocephalus	52	46	Cerebro-spinal fever 2, Tuberculosis of central nervous system 2, Congenital hydrocephalus 31.
Violence	457	433	Precise form of suicide 106, Drowning 3 Injury by fall 68, Injury in mines and quarries 27, Injury by crushing 95.
Syncope, Heart Fail- ure.	116	100	Influenza 1, Tuberculosis of respiratory system 2, Diseases of the heart 61 Arterio-sclerosis 5, Bronchitis 5.
Operation	590	561	Cancer 40, Tumours of female genita organs 50, Ulcer of stomach or duodenum 47, Appendicitis 13, Hernia, Intestina obstruction 44, Biliary calculi 88, Other diseases of the gall bladder 21, Diseases of the prostate 22, Diseases of the female genital organs 38, Congenital malforma tions 4, Violence 7.
Other indefinite forms of certification.	2,356	1,988	
Total	7,788	6,866	

158 and 162 (b). In the more comprehensive sense resulting from their inclusion, the deaths from ill-defined causes in 1933 numbered 19,300, or 3.89 per cent. of the total, as compared with 4.19 in 1932 and 9.67 in 1911.

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Inquiries sent to medical practitioners and coroners requesting further information as to indefinitely certified deaths amounted to 8,485, and to these 7,788 replies were received, with results to classification, some of the most important of which are set out in Table LXXXII.

The total additions to certain definite headings resulting from these inquiries were as follows :—To influenza, 75; to encephalitis lethargica, 72; to cerebro-spinal fever, 122; to tuberculosis of the respiratory system, 186; to other forms of tuberculosis, 117; to venereal diseases, 133; to cancer, 748; to diseases of the spinal cord, 29; to general paralysis of the insane, 16; to disseminated sclerosis, 17; to arterio-sclerosis, 40; to ulcer of stomach and duodenum, 140; to appendicitis, 63; to biliary calculi, 113; to chronic nephritis, 57; to diseases of the prostate, 55; to puerperal sepsis, 81; to congenital malformations, 70.

In addition to the foregoing, 1,821 inquiries were addressed to medical practitioners who had initialled statement "B" on the back of the new form of medical certificate, thereby indicating the possibility of their being in a position to furnish additional information respecting the certified cause of death as the result of a P.M. or laboratory examination which was not available at the time of signing the certificate. Of the 1,582 replies received to these inquiries, 810 amended the original certification.

Anæsthetics.—The usual annual statement of deaths during or connected with the administration of an anæsthetic is continued. This is obtained by secondary tabulation of these deaths, since the primary tabulation, represented by Table 21, classified all such deaths to the disease or injury on account of which the anæsthetic was administered.

The total number of deaths in Table LXXXIII, 768, is 19 more than in 1932, and is the largest number yet recorded. During the years for which fully comparable figures can be stated these deaths first increased slowly from 276 in 1911 to 366 in 1920, declined to 336 in 1922, rose to 446 and remained about that level to 1925. They then increased rapidly to 730 in 1929, and have risen further in the last two years.

For the years before 1911 the record is contained in the tables of accidental deaths, but certain causes—strangulated hernia and cancer—were at this time preferred in tabulation to the anæsthetic used. In 1933 the 768 deaths included 113 associated with cancer, and 40 with hernia. So for comparison with the years prior to 1911 the number of deaths should be reduced to 615. But during 1901–10 the deaths ranged from 133 (1901) to 234 (1910).

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Table LXXXIII.—Deaths under or connected with the Administration of various Anæsthetics—1933.

	Age.														
Anæsthetic.	All Ages.	0-	1-	5-	10-	15-	20-	25-	30-	35-	40-	45-	50-	55-	65-
Chloroform $\dots \dots \prod_{F}^{M}$	52 31	2 -	4 _	42	3	$\left  \frac{-}{2} \right $	28	-2	23	44	3 6	5 -	4 -	13 3	6 1
Chloroform and ether $\left\{ \begin{matrix} M \\ F \end{matrix} \right\}$	91 87	-1	5 2	6 7	4 2	7 3	9 11	3 8	1 8	5 10	6 4	8 13	5 4	21 7	11 7
Chloroform, ether and ethyl chloride $\begin{cases} M. \\ F. \end{cases}$	2 6		$\left  \begin{array}{c} -\\ 1 \end{array} \right $	2 3	- +	12-1-	19 <u>6</u> 14 1975	1		1-1-0			1.1	1	2
Chloroform, ether and nembutal F.	1	-	-	-		-	(7.)	-	x-	1	-		-	1	3-1
Chloroform, ether and percaine M.	1	-		-	14	-	-	-	12		24)	1		1	-
Ether $\dots \dots \dots \dots \dots \prod_{F}^{M} F$	134 115	12 2	24 19	10 7	5 7	6 5	87	3 7	2 10	3 5	11 6	5 10	11 7	16 16	18 7
Ether and ethyl chloride $\dots \left\{ \begin{matrix} M \\ F \end{matrix} \right\}$	31 26	2 1	6 4	8 6	1 1	3 1	3 -	1 1	$\begin{array}{c}1\\2\end{array}$	-1	1-1	2 4	1	3 1	1 3
Ether, ethyl chloride and novocaine M.	. 1		-	- A 9 3	1.10	1-1-	-		-	-	-	1	-	-	T
Ether and ethylene M	. 1	1. E.C	-	-	-		-	-	-	-	-	-	1	-	-
Ether and avertin F.	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-
Ether and nembutal F.	1	-	-	-	-	-	-	-	-	1	-	-	-	-	-
Ether and percaine F.	1	-	5	5	1	17	-	-	-	-	-		10	1	-
Ethyl chloride $\dots \dots \dots \prod_{F}^{M}$	84	2 -	41	- 1	1	10		$\left  \begin{array}{c} -\\ 1 \end{array} \right $			1 -	-1	-	-	
Ethyl chloride and A.C.E. mixture $\dots \begin{cases} M \\ F. \end{cases}$	. 1	-		1 -	T T		- 1	-		111			1 1	-	- 1
A.C.E mixture $\cdots \begin{cases} M \\ F. \end{cases}$	4 1	1	1 _			1-1	11		1-1	-	L	-	$\left  \begin{array}{c} -\\ 1 \end{array} \right $	2	-
Nitrous oxide $\dots \dots \dots \prod_{F_{r}}^{M}$	. 34 24		$\frac{1}{2}$	1 1	1	2 3	2 2	2 1	2 1	21	1	2 3	1 3	9 5	9 2
Atropine $\cdots \begin{cases} M \\ F_{r} \end{cases}$	. 1	-	1 1		1	10	- +	1 1	-	1 _	121-15	104	1 10		
Avertin $\dots \dots \dots \dots \prod_{F_{r}}^{M}$	. 5 4		-	1-1-		- 1	-	E-	2 -	1 1	17		1 -	<del>-</del> 1	1 -
Cocaine M	. 3	-	-	-	-	1	-	-	T	-	-	-	-	-	2
Cocaine and adrenalin M	. 1	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Drenocaine M	. 1	-		-	-	-	-	-	-	-	107	1	1	-	-
Durocaine $\dots \dots \dots \prod_{F}^{M}$	$\begin{vmatrix} 3\\2 \end{vmatrix}$		E		-		=	-	-		-	1 _	11	111	111
Evipan M	. 1	-	12	-	-	-	1-	-	-	1	-	-	22	-	1
Nembutal F	. 1	-	-	- Day	-	-	T.E	1	-	-	-	10	-	-	-
Neocaine $\dots \dots \dots \prod_{F}^{M}$	. 1	11			-					$\left  \begin{array}{c} -\\ 1 \end{array} \right $					1 _
Novocaine $\dots \dots \dots \prod_{F}^{M}$	. 16 7	- 1	1	+	-	-	-	2 1	1 -	1 -	- 1	2 -	2 -	3 2	4 2
Novocaine and adrenalin $\dots \begin{cases} M \\ F \end{cases}$	15 GBATTE	- 1	- 1			1-1-1	1.1		-	-	11	1-1-1-			1 -
Novocaine and spinocaine M	and the states	44		1	-	-	-	-	4			1	-	1	1
Novutox M	. 1	112	4	(CLC)	12	-	-	-	-	-	0	-	10	1	1028
Percaine $\cdot$ $\cdot$ $\cdot$ $\cdot$ $\cdot$ $\cdot$ $\cdot$ $\cdot$ $\left\{ \begin{smallmatrix} M \\ F \\ H \end{smallmatrix} \right\}$	11 12	-	-	1-1-1-	- 1			$\left  \frac{1}{2} \right $		$\left  \frac{1}{1} \right $	1	1	- 1	34	64

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Table LXXXIII—continued.

String a substance of the	Anæsthetic,				Age.												STERNER STATES	
Anæs	tnetic	30.8	8972479 J	All Ages.	0-	1-	5-	10-	15-	20-	25-	30-	35-	40-	45-	50-	55-	65-
Percaine and adrenali	n		F.	1	-	-	-	-	-	-	-	-	1	-	-	-	-	i Tre
Planocaine	122 D	det to	M.	4	-	-	-	-	-	14.50 10 m	5	-	1	-70	-	1	1	1
Spinocaine			$ \left\{ \begin{smallmatrix} M.\\ F. \end{smallmatrix}  ight.  ight.$	3 5				-					-	-1		-	2 2	1 2
Stovaine	••	••	$ \left\{ {}^{\mathrm{M.}}_{\mathrm{F.}} \right.$	5 5		-	-				$\left  \frac{-}{1} \right $		1 -			2 -	1 3	1 1
Tropococaine		•••	$ \left\{ {_{\mathrm{F.}}^{\mathrm{M.}}} \right.$	$\frac{1}{2}$	- 1		-	- 1		-1	-		1 -	1-1			E I	1
Kind not stated	••		$ \left\{ \begin{smallmatrix} M. \\ F. \end{smallmatrix}  ight.  ight.$	6 2	1	2		-	1	- 1		$\left  \begin{array}{c} -\\ 1 \end{array} \right $		-			1 -	1
Total			$\cdot \cdot \begin{cases} M. \\ F. \end{cases}$	425 343	20 6	47 29	32 27	15 12	20 15	24 32	11 25	11 25	19 26	23 18	27 31	29 17	78 47	69 33

Subject to allowance, on the scale indicated by this reduction, for the more comprehensive nature of the figures from 1911 onwards, the records of the present century may be compared as in Table LXXXIV.

Table LXXXIV.—Deaths under or associated with Anæsthesia, 1901-33.

		1	]	Males								F	emale	es.			
Allages	0-	5-	15-	25-	35-	45-	55-	65-	All ages	0-	5-	15-	25-	35-	45-	55-	65-
95 125 167 188 229 361	14 26 30 36 40 56	20 20 23 25 28 47	9 12 14 25 20 30	13 16 20 27 18 26	16 18 28 22 27 37	11 16 24 20 36 50	7 9 16 19 37 62	4 8 10 13 24 53	53 77 116 119 169 288	6 7 14 11 20 29	9 14 17 16 17 29	7 9 15 14 17 29	11 18 16 21 30 44	8 11 22 22 29 51	8 10 18 17 25 49	3 4 10 7 17 34	2 3 5 9 12 23
204 185 262 245 249	30 29 45 51 43	29 21 37 30 25	16 16 29 21 17	16 9 17 25 23	19 27 38 21 28	34 30 35 42 39	30 35 34 39 45	30 18 27 16 29	133 151 184 184 193	16 16 22 26 22	23 15 23 11 14	16 12 14 30 15	24 29 23 29 43	21 31 32 31 32	19 26 32 21 29	11 12 23 18 23	3 10 15 18 15
306 328 384 414 375	57 43 63 66 51	43 51 41 61 41	23 25 30 31 39	29 20 23 25 34	34 30 43 43 34	39 42 55 63 52	43 70 67 64 68	38 47 62 61 56	250 268 272 316 332	32 24 29 35 27	22 28 21 35 39	29 29 27 27 33	35 46 44 52 45	44 47 45 52 66	51 40 44 50 58	23 35 33 43 35	1 19 29 22 29
413 416 425	60 66 67	51 49 47	44 37 44	36 29 22	41 45 42	51 58 56	73 68 78	57 64 69	310 333 343	27 24 35	40 40 39	23 33 47	60 60 50	55 58 44	43 42 48	38 36 47	24 40 33
												Section Section	A State		en a	ls 10	.00
100 113	100 120		100 179	100 135	100 79	83	119	130	103	100 79	100 94	93	131	100	94	100 70	100 180
216 247 249	187 200 220	204 222 213	214 314 264	130 180 145	132 146 161	242	388 456 425	530 570 640	248 267 287	143 207 193 171 250	100 171 235 235 229	193 153 220	275 375 375	232 250 264	272 239 233	340 380	240 460 480 800 660
	ages 95 125 167 188 229 361 204 185 262 245 249 306 328 384 413 416 425 413 416 425 413 416 425 100 113 137 216 247 249	ages         0-           95         14           125         26           167         30           188         36           229         40           361         56           204         30           185         29           262         45           249         43           306         57           328         43           306         57           328         43           344         66           425         67           * Exclu         113           100         100           113         120           137         133           216         187           247         200           249         220	ages         0-         5-           95         14         20           125         26         20           167         30         23           188         36         25           229         40         28           361         56         47           204         30         29           185         29         21           262         45         37           249         43         25           306         57         43           328         43         51           384         63         41           414         66         61           375         51         41           413         60         51           416         66         49           425         67         47           * Excluding         1         100           100         100         100           113         120         109           137         133         122           216         187         204           247         200         222           249 </td <td>All ages         0-         5-         15-           95         14         20         9           125         26         20         12           167         30         23         14           188         36         25         25           229         40         28         20           361         56         47         30           204         30         29         16           185         29         21         16           262         45         37         29           245         51         30         21           249         43         25         17           306         57         43         23           328         43         51         25           384         63         41         39           413         60         51         44           416         66         49         37           425         67         47         44           100         100         100         100           113         120         109         179           137</td> <td>All ages         0-         5-         15-         25-           95         14         20         9         13           125         26         20         12         16           167         30         23         14         20           188         36         25         25         27           229         40         28         20         18           361         56         47         30         26           204         30         29         16         16           185         29         21         16         9           262         45         37         29         17           245         51         30         21         25           249         43         25         17         23           306         57         43         23         29           328         43         51         25         20           384         63         41         30         23           413         60         51         44         36           416         66         49         37         29</td> <td>ages0-5-15-25-35-9514209131612526201216181673023142028229402820182736156473026372043029161619185292116927262453729173824551302125212494325172328306574323293432843512520303846341302343413605144364141666493729454256747442242* Excluding deaths from car1ater periods company100100100113120109179135791371331221439096216187204214130132247200222314180146249220213264145161</td> <td>All ages         0-         5-         15-         25-         35-         45-           95         14         20         9         13         16         11           125         26         20         12         16         18         16           167         30         23         14         20         28         24           188         36         25         25         27         22         20           229         40         28         20         18         27         36           361         56         47         30         26         37         50           204         30         29         16         16         19         34           185         29         21         16         9         27         30           262         45         37         29         17         38         35           249         43         25         17         23         28         39           306         57         43         23         29         34         39           328         43         51         25         20</td> <td>All ages         0-         5-         15-         25-         35-         45-         55-           95         14         20         9         13         16         11         7           125         26         20         12         16         18         16         9           167         30         23         14         20         28         24         16           188         36         25         25         27         22         20         19           229         40         28         20         18         27         36         37           361         56         47         30         26         37         50         62           204         30         29         16         16         19         34         30           185         29         21         16         9         27         30         35           262         45         37         29         17         38         35         34           249         43         25         17         23         28         39         45           306         57</td> <td>All ages0-5-15-25-35-45-55-65-95142091316117412526201216181698167302314202824161018836252527222019132294028201827363724361564730263750625320430291616193430301852921169273035182624537291738353427245513021252142391624943251723283945293065743232934394338328435125203042704738463413023435567624146661312543636461375514139343455686441360514436415173574166649372945&lt;</td> <td>All ages       0-       5-       15-       25-       35-       45-       55-       65-       All ages         95       14       20       9       13       16       11       7       4       53         125       26       20       12       16       18       16       9       8       77         167       30       23       14       20       28       24       16       10       116         188       36       25       25       27       22       20       19       13       119         229       40       28       20       18       27       36       37       24       169         361       56       47       30       26       37       50       62       53       288         204       30       29       16       16       19       34       30       30       133         185       29       21       16       9       27       30       35       18       151         262       45       37       29       17       38       35       34       27       184         &lt;</td> <td>All ages       0-       5-       15-       25-       35-       45-       55-       65-       All ages       0-         95       14       20       9       13       16       11       7       4       53       6         125       26       20       12       16       18       16       9       8       77       7         167       30       23       14       20       28       24       16       10       116       14         188       36       25       25       27       22       20       19       13       119       11         229       40       28       20       18       27       36       37       24       169       20         361       56       47       30       26       37       50       62       53       288       29         204       30       29       16       16       19       34       30       30       133       16         185       29       21       16       9       27       30       35       18       151       18         245       51       3</td> <td>All ages       0-       5-       15-       25-       35-       45-       55-       65-       All ages       0-       5-         95       14       20       9       13       16       11       7       4       53       6       9         125       26       20       12       16       18       16       9       8       77       7       14         167       30       23       14       20       28       24       16       10       116       14       17         188       36       25       25       27       22       20       19       13       119       11       16         229       40       28       20       18       27       36       37       24       169       20       17         361       56       47       30       26       37       50       62       53       288       29       29         204       30       29       16       16       19       34       30       30       133       16       23         249       43       25       17       23       28       39<!--</td--><td><math display="block">\begin{array}{ c c c c c c c c c c c c c c c c c c c</math></td><td>All ages       0-       5-       15-       25-       35-       45-       55-       65-       All ages       0-       5-       15-       25-         95       14       20       9       13       16       11       7       4       53       6       9       7       14       9       18         167       30       23       14       20       28       24       16       10       116       14       17       15       16         188       36       25       25       27       22       20       19       13       119       11       16       14       21         2940       28       20       18       27       36       37       24       169       20       17       17       30         361       56       47       30       26       37       50       62       53       288       29       29       29       44         204       30       21       16       9       27       30       35       18       151       16       15       12       29       29       29       24       43       25       17<td><math display="block">\begin{array}{ c c c c c c c c c c c c c c c c c c c</math></td><td><math display="block"> \begin{array}{ c c c c c c c c c c c c c c c c c c c</math></td><td><math display="block"> \begin{array}{ c c c c c c c c c c c c c c c c c c c</math></td></td></td>	All ages         0-         5-         15-           95         14         20         9           125         26         20         12           167         30         23         14           188         36         25         25           229         40         28         20           361         56         47         30           204         30         29         16           185         29         21         16           262         45         37         29           245         51         30         21           249         43         25         17           306         57         43         23           328         43         51         25           384         63         41         39           413         60         51         44           416         66         49         37           425         67         47         44           100         100         100         100           113         120         109         179           137	All ages         0-         5-         15-         25-           95         14         20         9         13           125         26         20         12         16           167         30         23         14         20           188         36         25         25         27           229         40         28         20         18           361         56         47         30         26   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 53       288         204       30       29       16       16       19       34       30       30       133         185       29       21       16       9       27       30       35       18       151         262       45       37       29       17       38       35       34       27       184         <	All ages       0-       5-       15-       25-       35-       45-       55-       65-       All ages       0-         95       14       20       9       13       16       11       7       4       53       6         125       26       20       12       16       18       16       9       8       77       7         167       30       23       14       20       28       24       16       10       116       14         188       36       25       25       27       22       20       19       13       119       11         229       40       28       20       18       27       36       37       24       169       20         361       56       47       30       26       37       50       62      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The increase since 1911–15 is very general in its application to sex and age, but is relatively greater at ages over 55, and least for males aged 25–45.

Prior to 1921 deaths of males were in excess of those of females

Table LXXXV.—I	eaths under or as	ssociated with the	ne Administration
of Various	Anæsthetics in	each year, 1922	2 to 1933.

	Sex.	1922.	1923.	1924.	1925.	1926.	1927.	1928.	1929.	1930.	1931.	1932	1933,
Anæsthetics of the Methane series :—							1919						
Chloroform (alone) {	M. F.	36 27	54 33	56 32	43 40	54 47	48 53	75 36	63 41	51 37	58 37	52 36	52 31
Ether (alone) $\dots $ $\left\{$	M. F.	39 31	73 50	60 52	.61 52	105 67	101 72	118 108	142 121	126 130	134 114	130 118	134 115
Chloroform and Ether {	M. F.	48 34	73 53	90 61	91 57	89 78	100 69	120 80	116 93	115 87	126 79	103 68	91 87
A.C.E. mixture {	M. F.	3 6	10 6	9 2	11 3	9 8	9 2		3 6	1 3	10	3 5	4 1
Ether and Ethyl chloride $\left\{ \right.$	M. F.	1		11	7 3	10 7	15 17	9 7	12 13	16 16	28 10	24 19	31 26
Other mixtures, in- cluding chloroform or	M.	1	5	3	5	4	4	6	8	5	2	8	6
ether.*	F.	1	5	5	2	7	7	3	4	5	8	11	11
Ethanesal $\dots$ $\{$	M. F.	1 5	1	=	1	and the second		an a	roland <u>en prov</u> ersi	and dates		and the second second second	
Ethyl chloride (alone) {	M. F.	111	3 3	1 1	5 6	43	8 6	6 3	7 3	6 4	3 11	777	8 4
BarbituricAcid group— { Nembutal, Evipan	M. F.		_		_	_		=	_	_	3	=	1 1
Avertin (alone) $\dots$	M. F.	=	=	=	-	_		-	1 1	1 1	2 3	5 4	5 4
Avertin with cocaine {     derivative.	M. F.	-	-	-	_	-		_		•	1	2	_
Nitrous oxide {	M. F.	6 1	86	9 4	5 4	9 6	13 19	18 12	27 11	23 18	21 22	36 27	34 24
Opium or Morphine and their preparations with	М.	-	-	-	1	-	1		10 1000 7 100	1	-	1	
atropine, hyoscine or co- caine derivative.	F.	-	1	1		100	100 - 100 100 - 100	-		1	1	1	-
Cocaine and its prepara- tions and substitutes (without any of above):—				1.33					福禄	49.46 69.			
Stovaine {	M. F.	5 6	6	$\begin{vmatrix} 2\\1 \end{vmatrix}$	2 5	3 6	4 5	23	36	43	22	6 6	5 5
Novocaine {	M. F.	33		2 1	22	2 1	5 3	9 6	12 3	10 11	6 4	20 9	18 8
Percaine $\dots$ $\{$	M. F.					-	-	-	<u> </u>	$\begin{vmatrix} 1\\ 2 \end{vmatrix}$	7 6	10 13	11 13
Others {	M. F.	1	-	-2		2 3	4	2 4	7 4	$\begin{vmatrix} 3\\2 \end{vmatrix}$	74	8 5	18 10
Miscellaneous or unspeci- fied, including combina-	M.	42	28	12	15	15	16	14	13	12	7	3	7
tions of, or containing the above, not distinguished.	F.	34	26	22	18	17	14	10	9	12	5	2	3
Total {	M. F.	185 151	262 184	245 184	249 193	306 250	328 268	384 272	414 316	375 332	413 310	416 333	425 343

• Including combinations of chloroform or ether with morphia, atropine, nembutal or cocaine derivatives or substitutes.

at almost every age; but in each year since, except 1923, females have been in excess at 25-45 and in a few years at 15-25 and 45-55 also.

The anæsthetic agents recorded on death certificates have altered considerably in recent years, as may be seen from Table LXXXV. A further increase is recorded in 1933 in the deaths associated with ethyl chloride in combination with ether, which numbered 57. The increasing employment of cocaine derivatives is reflected in the very rapid rise in the number of deaths associated with this group of anæsthetics, from 38 in 1931 to 86 in 1933.

It need scarcely be pointed out that these fatalities depend upon the extent to which the various agents are used as well as upon the risk attaching to them. But unfortunately the deaths associated with each type of anæsthetic cannot be collated with the number of its administrations. It is not even possible to say whether, or to what extent, the rapid increase in the number of these deaths implies increased mortality under anæsthetics. The number of administrations is known to be increasing very rapidly, but cannot be estimated. The deaths tabulated, moreover, can only be those under, not those caused by, anæsthesia. It is impossible from certification to distinguish between deaths from operation under anæsthesia and deaths due to the anæsthetic itself.

Of the 768 deaths in 1933 shown in Table LXXXIV, 618 (80 per cent.) were classed to the 22 headings enumerated in Table LXXXVI, the remainder being of very varied causation. The composition of this list changes little from year to year.

# Table LXXXVI.—Classification of Deaths under or associated with Anæsthesia, 1933.

	Cause to which Death was assigned.	Males.	Females.		Cause to which Death was assigned.	Males	Females.
24-32	Non - respiratory tuberculosis.	9	7	122 b	Intestinal obstruc- tion.	24	17
45-53	Cancer	65	48	126	Biliary calculi	7	9
66 b	Exophthalmic goitre	2	11	127 (pt.)	Diseases of the gall	3	8
89 b	Diseases of the mas-	12	14		bladder.		
	toid sinus.		- La Sile	136 a	Stricture of the	4	
104	Diseases of the nasal	5	1	ioner rectify	urethra.	1 the last	2 Par
110 1	fossæ and annexa.			137	Diseases of the pros-	14	
110:1	Empyema	14	5	and England	tate.		C. S.
115:1	Extraction of	13	6	138 (pt.)	Circumcision	5	
(pt.)	teeth.			54 a (pt.)	Uterine fibroids		10
115:3	Diseases of the ton- sils.	26	13	140-150	Childbirth and abor- tion.		50
117	Ulcer of the stomach or duodenum.	31	4	154	Acute infective os- teomyelitis.	5	2
121	Appendicitis	38	27	157	Congenital malfor-	12	7
122 a	Hernia	30	10		mations.	14	
	Aller for for the of the			163–198	Violence	30	20

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The numbers of deaths reported from different classes of nstitutions, etc., in various regions of the country are stated in Table LXXXVII, in which, as place of occurrence is evidently of more interest for these deaths than place of residence, they have been tabulated by area of registration.

### Table LXXXVII.—Deaths under Anæsthetics Registered in 1933. Distribution by Part of Country and Place of Occurrence.

aoquebaoque estraoques beuquese	ties d	Greater London.	South- East excluding Greater London.	North,	Midland.	East.	South- West.	Wales.	England and Wales.
Hospitals	$\ldots {M. \atop F.}$	89 71	44 31	119 90	34 21	15 14	11 13	19 13	331 253
Poor Law Institutio	ons ${M. \atop F.}$	25 23	$\frac{1}{2}$	$\frac{22}{21}$	10 12			$\frac{1}{2}$	60 61
Mental Hospitals	$\ldots \begin{cases} M. \\ F. \end{cases}$		Surger and	er <u>u</u> ni Ba <del>ta</del> fa		10.10 10.10 10.10			四回回。 12十回日
Nursing Homes	$ \left\{ \substack{M.\\F.} \right\}$	3 6	$\frac{1}{2}$	4 4	2	2		2	15 12
Elsewhere	$\ldots \left\{ \substack{M.\\ F. } \right.$	2 1	$\frac{1}{3}$	4 7	6 1	3 3	$\frac{1}{2}$	2	19 17
Total	$\ldots \begin{cases} M. \\ F. \end{cases}$	119 101	47 38	149 122	52 34	21 17	13 16	24 15	425 343

Since most of these deaths occur in institutions to which patients are drawn from wide areas, it is not surprising to find that the ratio of anæsthetic deaths to resident population is highest in Greater London, 26 to each million, and lowest in the Midland and South-West regions, where the ratios are respectively 12 and 14 to each million.

Status Lymphaticus and Anæsthetics.—The deaths from status lymphaticus primarily classified to diseases of the thymus (67) in Table 21 reached a maximum of 202 in 1929, but then fell somewhat precipitately to 138 in 1930. In the last, 3 years they have numbered 143, 154 and 153. In addition to these 153 deaths, there were, in 1933, 50 deaths under anæsthetics in the case of which record was made of the presence of this condition but which have been referred in tabulation to the condition occasioning the administration of the anæsthetic.

The sex and age distribution of these was as follows :----

		All Ages.	0-	5	10-	15-	20-	25-	35-
Males	icen. 1	32	14	8	3	2	4	1	
Females	•••	18	7	5	1	1	1	2	1

### WINTER MORTALITY FROM VARIOUS CAUSES IN 1921–33 IN RELATION TO THE MEAN AIR TEMPERATURE AND INFLUENZA RATE.

In the Supplement to the 81st Annual Report, all deaths registered during the influenza pandemic of 1918–19 with mention of influenza on the certificate were tabulated according to the associated cause, and estimates were also made of the deaths attributed to phthisis, pneumonia, bronchitis and heart disease, which, although influenza was not mentioned as a contributory cause, probably resulted from the epidemic. Thus, during the first quarter of 1919 it was estimated that 32,212 deaths assigned to influenza, 4,738 to pneumonia, 7,402 to bronchitis, 2,010 to heart disease and 821 to phthisis were really attributable to the epidemic. The importance of influenza epidemics in producing fluctuations in the annual deaths attributed to various causes has become increasingly manifest in the last decade and has been frequently pointed out in the Annual Reviews, though no attempt has been made to estimate the amount of this effect since the 1918–19 epidemic.

Since 1920 the epidemics have been virtually confined to the first quarter of the year, as may be seen from the distributions of individual months in the 13 years 1921–33 according to the annual death-rate from influenza per 10,000 in that month (Table LXXXVIII).

Table LXXXVIII.—Months of 1921–1933 distributed according to their Influenza death-rate, and months of the first quarters of these years distributed also according to their Mean Air Temperatures.

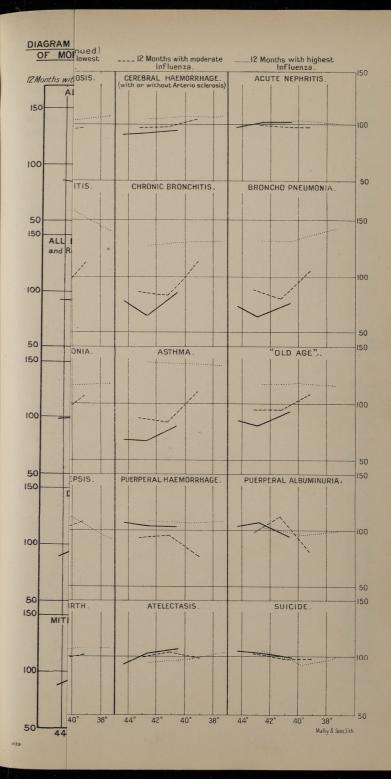
Influenza death-rate	December.	ary.	lary.	nom ngill	21 s 197 i	ths.	Mont	hs of M to th	arch qu eir mea	arters d in air te	istribut mperat	ed acco ures.	rding
per 10,000.	Dece	January	February	March	April.	Other months	33°—	35°—	37°—	39°—	41°—	43°	45°
$\begin{array}{c} 0 - \\ 5 - \\ 10 - \\ 15 - \\ 20 - \\ 25 - \\ 30 - \\ 35 - \end{array}$		7 3 1 	5 3 1 2 - 2		94					$     \begin{array}{c}       2 \\       3 \\       3 \\       1 \\       2 \\       - \\       2     \end{array} $	7 1 1	5 1 	3 1

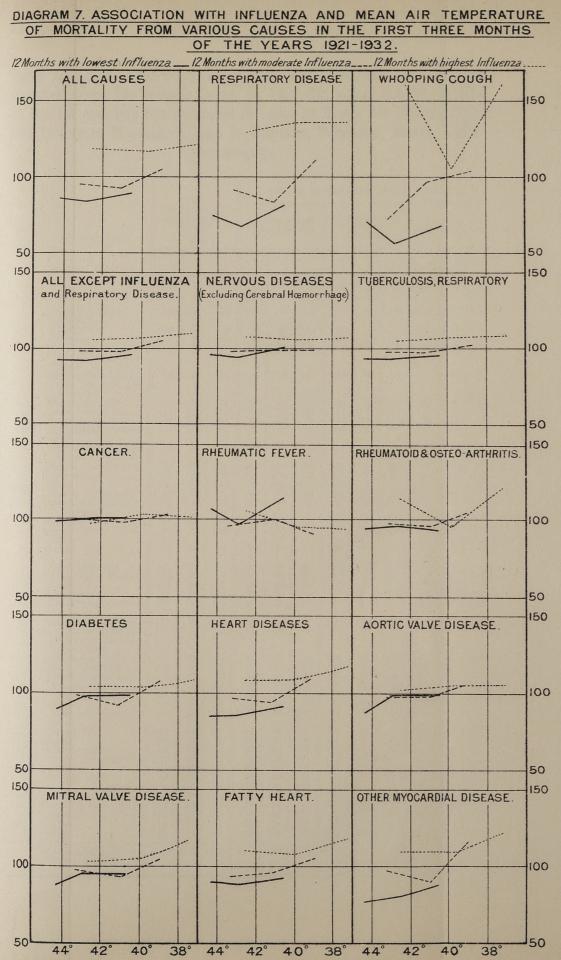
Any correlation between influenza deaths and those attributed to other causes is therefore most likely to be found in the mortalities of January, February and March.

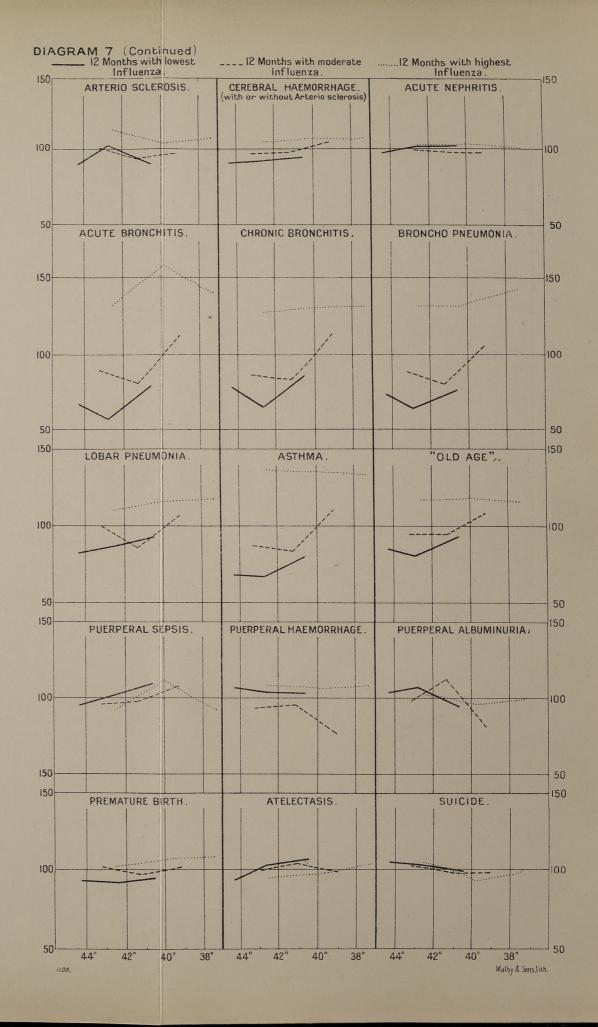
The tabulation of monthly deaths from separate causes (Table 23) since 1921 makes it possible to calculate the deaths expected from a given cause in January, February or March on the basis of the general secular trend due to changes in population, or prevalence of the disease or fashions in certification, and then to relate the fluctuations above or below the expected number to two factors not quite independent of one another, the mean air temperature of the month in England and Wales and the influenza death rate in the month. The mean air temperatures of the three months in the 12 years 1921–32 were respectively  $41\cdot1^{\circ}$  F.,  $40\cdot0^{\circ}$  F. and  $42\cdot4^{\circ}$  F.; and the meteorological conditions may be regarded as sufficiently alike to allow January, February and March to be dealt with together. The tendency for coldness of these months to be attended by greater influenza mortality is indicated by the distribution of the 39 first quarters' months of the 13 years according to their mean temperatures (Table LXXXVIII).

Table LXXXIX shows the percentage ratios of actual to expected deaths attributed to various causes in groups of 4 of the 36 months of January, February and March in the 12 years 1921-32, after first arranging them in ascending order of influenza death rate, separating into the 12 months of lowest rate, 12 of intermediate and 12 of highest rate, and then arranging each set of 12 in order of decreasing mean air temperature in England and Wales. The expected deaths from a given cause in each month have been calculated by drawing a straight line through the mean annual deaths in 1921-26 and in 1927-32, and assuming that the average rate of annual decrement due to progressive secular changes, as given by the slope of this line, was the same for each individual month as for the whole year. The total January deaths in 1921-32 were then distributed over the 12 Januaries on this assumption, and so for the February and March deaths. The deaths which actually occurred in a group of 4 months are then expressed as a percentage of the sum of the calculated deaths in those months.

The mean influenza death rates in each group of months are given at the head of the table and the mean air temperatures in England and Wales at the foot. In the 12 months of lowest influenza the rate ranged from 184 to 346 per million, in the 12 moderate months from 352 to 1,007, and in the 12 epidemic months of highest influenza from 1,012 to 3,519. The mean air temperatures of the 3 groups of 12 were 42.5°, 41.1° and 39.9°, respectively, indicating the tendency for influenza mortality to be greater when the temperature is lower. In Diagram 7 the effect of this correlation between the two variables, which must be borne in mind when using Table LXXXIX, is almost eliminated by plotting the curves on a scale of temperature, so that the effect of the presence of influenza under given temperature conditions is represented by the amount of vertical separation of the graphs at that temperature, and the effect of increasing cold between certain limits of influenza mortality can be inferred from the amount of upward or downward slope of the graphs. As a rough measure of the relative importance of the two factors in their association with the deaths attributed to a specific cause, one may compare the average vertical distance between the overlapping portions of the graphs for high and low influenza with the difference between the vertical heights of the extremities of the graph for low influenza. It is not safe to draw conclusions from the slope of the graph for high influenza.







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Table LXXXIX.—Mortality from Various Causes, per cent. of that expected from the secular trend, in 1921–32, when the 36 months of the 1st quarters are arranged in order of Mean Air Temperature and Influenza Mortality : also in January, February, March, 1933 separately.

	the structure of the		193:			192	1–32.	Actual	l death	s per 1	00 exp	ected.	NT.
List No. (1931)	Cause of Death.		eath ra nt. of 1 1928–	ate in	14		ns with fluenza	2 3 1 10 30 30 5 5	month moder Influer		1 14		s with luenza.
		Jan	. Feb	. Mar	4 Warm	Medium	Cold	4 Morn	Medium	Cold.	4 Warm	Medium.	4 Cold.
	INFLUENZA (Mean rate per Million).	3,35	6 2,30	5 354	290	0 260	0 240	3 57.	1 720	594	2,03	2 1,87	7 2,21
	ALL CAUSES RESPIRATORY DISEASE All except Influenza and Respiratory Di-	s 138 141 115	86	52	74	67	7 81	91	1 83	3 109	129	135	5 135
	seases. NERVOUS DISEASES ex- cept cerebral hæ- morrhage.	94	94	78	95	93	100	97	98	99	107	105	106
9 16 18 23	Whooping Cough Acute Poliomyelitis . Cerebro spinal fever. Tuberculosis, respira-	128 152 183 117	78 174 160 101	44 85 111 84	70 100 94 92	76	79 70	111	116	98 111	169 116 90 105	88 145	126 91
24	tory. Tuberculosis, Nervous	82	89	97	104	98	99	99	100	101	98	103	96
25 36 45-55	System. Tuberculosis, Intestina Septicæmia Cancer	83 109 109	75 85 102	81 75 103	102 114 99	99 108 100		105 86 100	97	98 79 101	96 111 98	108 98 102	And the second second
56 57(2)	Rheumatic Fever Rheumatoid and Osteo- arthritis.	97 107	87 102	84 84	106 92	97 94	115 91	96 97		92 104	106	95 95	94 118
59 83	Diabetes General Paralysis of Insane.	121 98	108 98	101 78	89 88	97 98	98 97	99 96	92 93	106 104	104 109	104 117	108 103
85	Epilepsy	98	104	84	93	92	96	100	102	105	98	107	105
92(1) 92(2) 93b1 93b2, 3 93c	HEART DISEASES Aortic Valve Disease Mitral ", " Fatty heart" Other Myocardial di- Sease.	144 110 114 96 169	117 97 90 80 136	96 84 82 75 105	84 87 88 90 77	85 99 95 89 80	91 100 95 93 88	96 98 98 94 97	94 98 94 96 91	109 105 104 103 111	108 102 103 110 109	109 105 105 107 109	117 105 116 116 120
97 82,97(1)	Arterio sclerosis Cerebral hæmorrhage with or without ar-	111 111	99 107	84 90	90 91	102 92	90 96	101 97	95 97	97 105	113 105	104 108	107 108
$     \begin{array}{r}       106(a) \\       106(b) \\       107 \\       108 \\       109 \\       112 \\       117 \\       117 \\     \end{array} $	teriosclerosis. Acute Bronchitis Chronic Bronchitis Broncho-pneumonia Lobar pneumonia Pneumonia undefined Asthma Gastric and duodenal ulcer.	$177 \\ 143 \\ 155 \\ 116 \\ 115 \\ 154 \\ 103$	92 88 87 83 73 80 89	44 55 54 60 55 46 88	66 78 72 82 76 67 97	57 66 64 86 70 66 98	78 87 75 92 84 80 104	89 87 87 100 98 87 96	81 84 78 86 84 84 96	112 113 106 107 110 110 102	132 128 137 110 119 136 100	158 134 137 116 139 135 107	140 135 142 118 133 133 96
$ \begin{array}{c} 121\\ 118(1)\\ 130\\ 131\\ 135(a)\\ 140, 145\\ 144\\ 146\\ 150\\ \end{array} $	Appendicitis	114 68 83 101 74 78 104 66	106 77 81 85 95 77 112 79	105 73 96 88 62 78 76 62	99 101 98 91 89 95 106 104	99 101 101 98 92 100 104 107	100 90 102 102 93 109 103 95	104 101 100 99 104 95 93 99	98 99 98 100 104 97 95 113	101 100 97 104 94 108 78 82	100 93 102 101 109 91 108 103	99 114 102 98 113 111 107 97	99 103 101 105 102 93 109 99
159 161( <i>a</i> ) 162 .63–171	Premature birth Atelectasis Old Age Suicide	113 130 113 113	92 75 101 113	84 104 72 116	93 93 85 105	92 102 80 103	95 107 93 98	101 99 95 103	98 104 95 97	102 99 108 97	102 95 117 106	108 97 117 92	110 104 116 98
	Mean Air Temperature (England and Wales)	37.5	40.1	45.4	44.3	42.8	40.5	43.2	41.1	39.1	42.5	39.8	<b>37</b> ·3

A simple measure of the amount of increase in the mortality attributed to various causes during influenza epidemics, based upon comparison of months of the same average temperature, is obtained by calculating the vertical distance between the uppermost and lowest graphs at 41.5° F., the mid-point on the temperature scale of the overlapping portion of these graphs, and expressing it as a percentage of the height of the lower graph at that temperature. This indicates the percentage increase in mortality which accompanied a known moderate degree of epidemic influenza when freed from the effects of temperature, and has been calculated for certain causes in Table XC. When multiplied by the deaths per month which occurred during the 8 coldest months of low influenza rate, comparative figures are obtained in the second column representing the monthly excess of deaths attributed to each group of causes which was associated with the monthly excess of influenza deaths at the head of the column, and in parentheses these have been expressed in terms of 100 influenza deaths.

 Table
 XC.—Increase in Monthly Mortality associated with

 Epidemic Influenza, comparing months of similar temperature in

 the March quarters of 1921–32.

	Increase per cent. (from graphs at 41.5° F.).	Estimated excess of deaths per month.
Influenza	656	5,360 (100)
Whooping-cough          Tuberculosis, respiratory          Diseases of Respiratory System         Heart diseases          Old age          Other causes	136 13 74 22 34 —	$\begin{array}{cccc} 431 & (8) \\ 361 & (7) \\ 5,408 & (101) \\ 1,558 & (29) \\ 701 & (13) \\ 1,070 & (20) \end{array}$
All causes except Influenza	22	9,529 (178)

Table LXXXIX also gives the death-rates in January, 1933, from the various causes, expressed as percentages of the mean rate in the previous 5 Januaries, and similarly for February and March. Compared with the previous 12 years, January, 1933 was remarkable in having the highest influenza death-rate of any January and the lowest mean air temperature save in January, 1929. February had the highest influenza rate of any February except 1927 and 1929, its mean air temperature being average, whilst March had a low influenza rate and the highest mean air temperature of any March in the period.

Whooping-cough.-Mortality attributed to this cause in the first quarter of the year was more profoundly associated with the

presence of influenza than that attributed to any of the causes in Diagram 7 except perhaps acute bronchitis and broncho-pneumonia. Temperature seems to have no consistent relation with mortality in months of low or moderate influenza level. After allowing for the possible effects of coldness (Table XC), whoopingcough mortality was more than doubled, the average excess amounting to over 400 deaths per month, or about 8 to each 100 additional influenza deaths. It is, therefore, a matter of some importance to ascertain the reason for this.

In the absence of national notification statistics of whoopingcough it remains uncertain whether it is the prevalence or the fatality of whooping-cough which tends to move in sympathy with influenza mortality. In the former event it would be necessary to postulate some common factor, but in the latter event the explanation might lie in superimposed catarrhal infections transmitted from persons with influenza or its secondary infections to children with whooping-cough.

Deaths attributed to whooping-cough stated jointly with influenza are assigned to the former, but during the epidemic of January and February, 1933, influenza was mentioned on only 22 out of 801 certificates of deaths classed to whooping-cough. Only a small fraction of the whooping-cough deaths in excess of expectation during influenza epidemics have any mention of influenza as a complication, and if the explanation lies in a superimposed infection which is specially fatal, it is evident that the double infection is not usually recognised as such.

Respiratory diseases.—Deaths attributed to respiratory disease with mention of influenza are of course assigned to the latter, and the respiratory deaths in Table LXXXIX and Diagram 7 are those without mention of influenza as an associated cause. When months of low or moderate influenza mortality are compared, it is evident from the graphs that a low mean air temperature tends to be accompanied by a rise in mortality, but that this is not so important as the association with influenza in months of similar temperature. The temperature effect is more pronounced for bronchitis and broncho-pneumonia than for lobar pneumonia, and the graphs suggest an optimum mean temperature for the bronchial affections in the March quarter round about 42° F., high or low average monthly temperatures having been alike more conducive to mortality in the period under review.

The association with influenza is greatest for acute bronchitis, deaths so attributed being more than doubled during influenza epidemics in winter months of average temperature. For bronchopneumonia and chronic bronchitis the association is almost as great, but for lobar pneumonia the enhancement of mortality during epidemics has been only of the order of 20 per cent. Asthma shows a degree of association both with temperature and influenza similar to that of broncho-pneumonia. After allowing for the effect of low temperatures in enhancing mortality from both influenza and respiratory disease, Table XC shows that the latter increased by 74 per cent. during epidemics, the excess of deaths attributed to respiratory diseases without mention of influenza being approximately equal to the excess of deaths attributed to influenza (with of without respiratory complications).

Heart Disease .- Mortality manifests a slight increase with falling temperature in the influenza-free months, this being most apparent for aortic disease and for myocardial disease other than fatty. The bulk of the mortality from other myocardial disease is, of course, that of old people. After allowing for coldness as a common factor in enhancing mortality, it appears (Table XC) that influenza epidemics have been accompanied by an increase of about 22 per cent. in mortality attributed to heart diseases, and that this is equivalent to an excess of more than 1,500 deaths per month. The separation between the graphs in Diagram 7 at 41.5° indicates that deaths from aortic disease were increased by about 5 per cent., mitral disease by about 10 per cent., fatty heart by about 18 per cent. and other myocardial disease by about 22 per cent. during the months with high influenza mortality. It must be remembered that deaths attributed to bronchitis with associated myocardial disease, a description now very frequently used on death certificates, are assigned by the operation of rules of precedence to the heart disease, and it would probably be found that most of the increase in myocardial disease recorded during influenza epidemics consists of such deaths.

Deaths assigned to "old age" without mention of influenza were increased by 34 per cent., corresponding to an excess of 700 deaths per month during epidemics, and this and the high rates of increase for "myocardial disease" and for "rheumatoid and osteo-arthritis" suggest that a great deal of extra mortality results amongst old people during epidemics of influenza for which the latter is not recognised as a causative factor, or at least not mentioned on the death certificate as such.

Arterio-sclerosis shows no consistent relation with temperature, but cerebral hæmorrhage deaths increased slightly with coldness. Mortality from each of these causes was enhanced during severe influenza epidemics.

Death-rates from *phthisis* increase slightly with greater coldness, but are more sensitive to the presence of influenza, an average excess of 361 deaths per month occurring during epidemics (Table XC), or about 7 to each 100 influenza deaths. Examination of the mortality in months subsequent to epidemics shows, however, a compensatory fall, and the excess represents in the main an acceleration of the fatal issue in tuberculous patients, with resulting concentration of the year's deaths into the first quarter, rather than an addition to the year's mortality from this cause. Of other causes, cancer, rheumatic fever and acute nephritis show a conspicuous absence of any effect, either of influenza or of air temperature (Diagram 7), upon the mortality assigned to them, and no consistent relation with either factor is shown by puerperal sepsis, hæmorrhage or albuminuria. Deaths from premature birth are only slightly influenced by temperature, but are considerably increased in numbers during influenza epidemics, whereas atelectasis deaths increase with coldness but are less frequent during influenza epidemics. Suicides were more frequent when the winter months were warm than when they were unusually cold, and no relation with influenza is apparent.

Table XC shows that, after allowance for the association with temperature, mortality from all causes other than influenza increased by 22 per cent. during influenza epidemics, the excess amounting to 178 deaths to every 100 additional influenza deaths.

### Validity of Certification.

Table XCI shows, for every division of the International List of causes having 5 or more deaths, and for some of its subdivisions (each with 5 or more deaths), the extent to which the diagnosis had been confirmed by an autopsy, by a pathological or bacteriological examination after death without autopsy, or by other means such as an operation recorded on the death certificate. This table for 1933 may be compared with Table LXIX in the Review for 1928, bearing in mind the changes caused by revision of the International List in 1931. The tables do not include deaths certified after an inquest unaccompanied by an autopsy (such deaths being of course mainly from violent causes).

The form of medical certificate in use since 1927 requires statement for each death as to whether a *post mortem* examination has been made or not, and it also includes a blank form of notice by the

TABLE XCI.—Deaths from Causes confirmed by a pathological or bacteriological Post Mortem Examination or by operation mentioned on the Death Certificate per 1,000 Deaths ascribed to each Cause.—1933.

Inter- ational .ist No.	Causes of Death.	Males.	Fe- males.	Per- sons.	Inter- national List No.		Males	Fe- . males.	Per- sons
	ALL CAUSES	134	100	117	10	Diptheria	45	63	54
1-44	I.—Infectious and Para- sitic Diseases.	84	63	74	13		37 518	34 472	38 500
1 & 2	Typhoid and paratyphoid fevers.	226	255	239		(b) Bacillary	400	333	333
1	Typhoid fever	181	295	-230	SALEN CO	(c) Other or unspecified	455	600	524
2 5	Paratyphoid fevers	474	100	282	15	Ervsipelas	99	49	76
	Undulant fever Measles				16	Acute poliomyelitis .	185	253	21:
8	Coorlet france	31	14	23	17	Encephalitis lethargica .	. 100	83	9
9	Whooping cough	74 34	69 25	71 29	18	Cerebro-spinal fever .	206	240	22
		34	25	29	22	Tetanus	. 263	214	25

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Table XCI—continued.

Inter- national List No.		Males.	Fe- males.		Inter- nationa List No.		Males.	Fe- males.	Per- sons.
23-32	Tuberculosis (all forms)	93	73	. 84	66	Diseases of the thyroid and parathyroid glands.	206	154	161
23	Respiratory system	74 148	48 156	63 152	Acress	(a) Simple goitre	355	216	237
24 25	Central nervous system Intestines and peritoneum.	227	205	215	erron?	(b) Exophthalmic goitre (c) Myxœdema, Cre-	214 27	158 56	165 51
26	Vertebral column	122	76	104	and the	tinism.	930	887	915
27	Other bones and joints	127	84	110	67	Diseases of the thymus Diseases of the adrenals	330	234	271
28	Skin and subcutaneous tissues.	154	-	43	68 69	Other general diseases		235	267
29	Lymphatic system (ab- dominal and bronchial glands excepted).	268	250	262	70-74	IV.—Diseases of the Blood and Blood-forming	172	129	148
30	Genito-urinary system	244	284	258		Organs.			-
31	Other organs	591	600	594	70	Hæmorrhagic conditions	233	214	223
	(1) Adrenals	833	500 750	722 429	Service 1	(a) Purpura	248 206	220 196	232 202
	(2) Other sites in- cluded under 31.	300	750	443	71	(b) Hæmophilia Anæmia, Chlorosis		80	86
32	Disseminated tuberculo- sis.	269	291	279	11	(a) Pernicious anæmia (b) Other anæmias and	80	67 188	72 205
34	Syphilis	286	226	266		chlorosis.			
	(a) Congenital syphilis	191	157	176	72	Leukæmia, Aleukæmia	248	213	233
	(b & c) Acquired or un- specified.	308	256	292 155	9 305	(a) Leukæmia (b) Aleukæmia	297 189	249 141	274 172
35	Other venereal diseases	136 366	214 289	336	=0	(Lymphadenoma). Diseases of the spleen	304	317	310
36	Purulent infection, septi- cæmia.	000	200	000	73 74	Other diseases of the blood		353	375
	(a) Septicæmia	370	263	329	a the sea	and blood - forming			
Contraction De	(b) Pyæmia	348	516	416 227	1 . J	organs.			
38	Malaria Hydatid cysts	222 467	250 625	522	A.F. all			A AM AN	
41 42	Hydatid cysts Other diseases due to helminths.	-	-		75-77 75	V.—Chronic Poisoning Alcoholism (acute or		<b>351</b> 300	327 247
43	Mycoses	302	150	243		chronic).	000		107
44	Other infectious or para- sitic diseases.	250	182	222	76	Chronic poisoning by other organic substances.	1.10	1,000	167 529
45_55	II.—Cancer and Other	170	152	160	77	Chronic poisoning by mineral substances.	407	1,000	020
	Tumours. Cancer, Malignant disease	164	138	150	78-79	VI.—Diseases of the Ner- vous System and Sense	108	74	90
45	Buccal cavity and	94	73	90	an Barrow	Organs.*		100	516
46	pharynx. Digestive organs and	156	117	138	78 79	Encephalitis Meningitis	538 226	488 200	216
	peritoneum.	004	150	010	80	Tabes dorsalis (Locomotor		78	56
47	Respiratory organs Uterus	234	173 106	219	A Second	ataxy).		C4	65
48 49	Other female genital	<u></u>	165		81	Other diseases of the spinal cord.		64	
50	organs.	182	183	183	PENELSES.	(1) Progressive muscular	49	53	51
50 51	Breast Male genito-urinary			-	riore	(2) Subacute combined	47	89	71
52	organs. Skin	91	72*	82	00	sclerosis. Cerebral hæmorrhage,	46	34	39
53	Other or unspecified	266	215	236	82	Cerebral hæmorrhage, Apoplexy, etc.	. 10	01	
Less an	organs.	502	570	574	- esternisten	(a) Cerebral hæmorrhage	53	37	44
54	Non-malignant tumours (a) Female genital organs	583	557		1111233	(b) Cerebral embolism	ı 32	28	30
	(b) Other sites	583	596	589	in the second	and thrombosis. (1) Cerebral embolism	34	10	20
55	Tumours of undetermined	154	137	146	arrest 1	(2) Cerebral thrombosis		21	23
	nature.		45		a salition of	(3) Cerebral softening	162	179	172
	(a) Female genital organs.			140	- Constantin	(c) Hemiplegia and other paralyses of unstated	r 4	5	4
	(b) Other sites $\dots \dots$	154	140	148	· Pill	origin.	0	5	4
56_69	IIIRheumatism, Dis-	91	72	79	and the second	<ul><li>(1) Hemiplegia</li><li>(2) Other paralyses of</li></ul>	. 2 t 23	5	1(
00-00	eases of Nutrition and of Endocrine glands and				83	unstated origin. General paralysis of the	e 463	510	47-
	other General Diseases.		1.19.19			insane. Other forms of insanity	. 276	291	28
56	Rheumatic fever	112	110	111	84 85	Epilepsy	215		18
57	Chronic rheumatism, Osteo-arthritis.		11	13	86	Infantile convulsions (un		82	51
58	Gout	20	22	20	07	der 5 years of age). Other diseases of the ner	- 44	37	4
59	Diabetes	59 167	46 200	51 188	87	vous system.	TT		-
60 62	Scurvy Pellagra	167	200	143	1 States	(d) Disseminated	28	31	2
62 63	Pellagra Rickets	123	143	132		sclerosis.	1 407	400	44
64	Osteomalacia			109	88	Diseases of the eye and	1 467	426	44
	Diseases of the pituitary	280	42	163	. State	Diseases of the ear and	1 453	359	41

Fe- Per-Males. males. sons. Inter-Causes of Death. national List No. 
 90-103
 VII. — Diseases of the Cir-culatory System.
 103
 63

 90-95
 Heart diseases
 ...
 107
 62

 90
 Pericarditis
 ...
 556
 522
 83 111 Cong hag ··· 107 ··· 556 62 522 198 65 83 543 224 83 112 113 114 Pulm Other Pericarditis ... 556 Acute endocarditis ... 251 Chronic endocarditis, Valpira (a) ( cmonte endocarditis, val-1076583vular disease.(1) Aortic valve disease208172195(2) Mitral valve disease725762(3) Aortic and mitral145130138valve disease.(4) Endocarditis, not re-702644 44 **115–129 IX. Dige** 115 Disea cavi turned as acute or chronic. (5) Other or unspecified 85 51 valve disease. 93 Diseases of the myocar- 67 116 117 Disea Ulcer duo 48 57 dium. (a) Acute myocarditis... 22 (b) Myocardial degenera-79 56 57 39 67 (a) (b) (1) Fatty heart ... (2) Cardiovascular 515 334 73 69 414 71 118 Other ston degeneration. (3) Other diseases in-119 & 120 121 122 51 33 41 (c) Other discuss in cluded under 93 (b).
(c) Myocarditis, not distinguished as acute or Appe Hern (a) (1) (2) 23 13 18 chronic. 94 Diseases of the coronary 298 223 274 arteries, Angina pectoris. Other diseases of the heart 48 23 24 34 20 (a) Disordered action of heart. (b) I Other 18 heart. (b) Other diseases in- 59 28 42 cluded under 95. (1) Dilatation of heart 173 92 135 (cause unspecified). (2) Heart disease (un- 52 25 37 defined) 123 inte (1) (2) (3) (2) Heart disease (un- 52 25 defined).
Aneurysm ... ... 488 626 Arterio-sclerosis ... ... 53 43
(1) With cerebral 55 45 530 124 Cirrh 43 45 48 50 (a) (b) ]

125

126

127

128 129

of Syste 130–132 Nephr 130 Acut 131 Chro

130 131 132

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134

86

246 353 152

155

223 350 142

260 354 161

Other

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Other

Disea Perito

Neph be ac Other

ney a (a) P Calculi

passa (a) C

(a) C (b) C bl

(b) C 135 Diseas

ur

cau

(1)(2)

(1) (2)

hæmorrhage. (2) With record of other 32 21 27

59

53

56

vascular

lesion. Gangrene... ... ... 38 47 42 Other diseases of the 266 230 247 arteries. Diseases of the veins 142 125 130 (Varix, hæmorrhoids, phlebitis, etc.). Diseases of the lymphatic 289 224 253 system (lymphangitis,

pressure. 103 Other diseases of the cir-333 571 500

piratory System. 104 Diseases of the nasal fossæ 500 471 487

102 Abnormalities of blood 156 78 120 130-139 X.---N

(3) Without record of cerebral vascular

system (lymphangitis, etc.).

104-114 VIII.—Diseases of the Res- 98 71

Broncho-pneumonia ... 109 Lobar pneumonia ... 153 Pneumonia (not otherwise 110

culatory system.

105Diseases of the larynx168106Bronchitis...31107-109Pneumonia (all forms)...124107Broncho-pneumonia...109

Pleurisy......(1) Empyema...(2) Other pleurisy...

and annexa.

defined).

## Table XCI—continued.

Inter-

national List No.

90 91

92

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96

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cerebral lesion.

cerebral lesion.

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Causes of Death.	Males.	Fe- males.	Per- sons.
the advertise of the	Call Sun Call		
estion and hæmorr- ic infarct of lung, etc.	147	81	109
ma onary emphysema	14 255	23 167	18 237
r diseases of the res-	454	264	415
tory system. Chronic interstitial	472	189	423
neumonia, including ccupational diseases f the lung.			
Diseases of the	326	292	310
estive System. uses of the buccal	240	171	203
ity, pharynx, etc. uses of the œsophagus	519	467	500
of the stomach or denum.	458	355	500 433
Ulcer of the stomach Ulcer of the duo- enum.	434 500	338 430	407 490
r diseases of the nach.	126	63	93
hœa and enteritis	118	139	128
ndicitis ia, Intestinal obstruc-	445 421	469 358	456 391
Hernia	458	385	421
Strangulated hernia Hernia not returned strangulated.	440 503	392 361	414 438
ntestinal obstruction diseases of the stines.	395 384	335 281	367 334
Constipation, Intes- nal stasis.	195	109	143
Diverticulitis Other diseases in- uded under 123.	476 275	350 263	416 269
osis of the liver	148	248	182
Returned as alcoholic Not returned as alco- olic.	183 142	351 225	250 170
diseases of the liver	391	298	338
Acute yellow atrophy Other diseases in- uded under 125.	409 385	426 183	421 288
y calculi With cholecystitis	455 389	454 393	454
Without mention of nolecystitis.	485	488	392 488
diseases of the gall der and ducts.			282
ses of the pancreas onitis, without stated se.	440 453	457 399	449 416
c.			
on-venereal Diseases the Genito-urinary em and annexa.	173	144	162
ritis	108	108	108
te nephritis onic nephritis	140 112	100 118	120 115
hritis not stated to cute or chronic.	52	39	45
diseases of the kid- and annexa.	364		323
yelitis i of the urinary	276 366	250 382	261 372
ages. alculi of kidney and eter.			353
alculi of the bladder es of the bladder	430	545	444
ystitis	101		150 125
ther diseases of the adder.	417	409	414

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Table XCI—continued.

Inter- nationa List No	al Causes of Death.	Males.	Fe- males.	Per- sons.	Inter- national List No.	Causes of Death.	Males.	Fe- males.	Per- sons.
136	Diseases of the urethra,	195		193	162	XVI.—Old Age	13	14	13
100	urinary abscess, etc.					1200402			
137 138	Diseases of the prostate Diseases of the male	255 429	—		163–198	XVII.—Deaths from Violence.	285	276	282
139	genital organs. Diseases of the female		475		163-171	Suicide	237	302	257
Stelle 1	genital organs		100		163	By solid or liquid poisons	519	428	480
	(a) Diseases of the ovary, Fallopian tube and		463		105	and corrosive sub- stances.	e ne		
	parametrium. (b) Diseases of the uterus		495		164 165	By poisonous gas By hanging or strangula-	262 129	259 173	261 138
10 150	0 XI.—Diseases of Preg-	and and a state	265		100	tion.	200	231	211
10-10	nancy, Childbirth, and				166 167	By drowning By firearms	159	200	160
	the Puerperal State.				168	By cutting or piercing	130	144	132
	Puerperal sepsis	-	321		1 Section	instruments.	100	500	452
145 140	Post-abortive sepsis		525		169	By jumping from high places.	422	500	432
141	Abortion not returned as	-	306		170	By crushing	193	409	229
	septic.		167		171	By other means	182	671	605
142 143	Ectopic gestation Other accidents of preg-		467 182		172-175	Homicide	690	634	657
140	nancy.				172	Infanticide (under 1			
144	Puerperal hæmorrhage		141	ala <del>- 17</del> da j		year).†	833	417	556
	(a) Placenta prævia		139 144		173 174	By firearms By cutting or piercing	833 600	565	579
	(b) Other puerperal hæmorrhage.		111	A CALES	1/4	instruments.			
145	Puerperal sepsis not re-		256		175	By other means	697	682	688
140	turned as post-abortive.		180		176-194	Accidental deaths	287	241	272
146	Puerperal albuminuria and convulsions.		100		176	Attack by venomous	240	211	227
147	Other toxæmias of preg-		371			animals.	833	167	611
148	nancy. Puerperal phlegmasia alba		149	-	177 178	Food poisoning Accidental absorption of irrespirable or poison-	575	483	543
	dolens, embolism and sudden death.		054		179	ous gas. Other acute accidental	544	592	566
149	Other accidents of child- birth.		254		180	poisoning (not by gas). Conflagration	300	125	239
150	Other or unspecified con- ditions of the puerperal		158	-	180	Accidental burns (con-	112	102	106
	state.				182	flagration excepted). Accidental mechanical	661	597	638
		100	101	151		suffocation.		101	170
1-153	3 XII.—Diseases of the Skin and Cellular Tissue.	176	121	151	183	Accidental drowning	$\frac{174}{224}$	191	176 214
151	Carbuncle, Boil	157	165	160	184	Accidental injury by firearms.	224		
152	Cellulitis, Acute abscess	242	139	197	185	Accidental injury by	100	500	214
153	Other diseases of the skin and its annexa.	102	72.	85		cutting or piercing in- struments.			000
		001	040	004	186	Accidental injury by fall,	282	233	266
04-156	SXIII.—Diseases of the Bones and Organs of	281	240	264	187	crushing, etc.		and the state	
	Locomotion.				183	Cataclysm Injury by animals	351	500	366
154	Acute infective osteomye-	348	303	330		(poisoning by venomous			
155	litis and periostitis. Other diseases of the bones	174	132	157	189	animals excepted). Hunger or thirst	778	500	727
155 156	Diseases of the joints and	236	213	226	189	Excessive cold	200	143	189
100	other organs of locomo-				191	Excessive heat	204	189	199
	tion.				192	Lightning	154 333	429	133 343
		005	179	207	193	Electricity (lightning ex- cepted).	000		
157	XIV.—Congenital Malfor- mations.	235	173	207	194	Other and unstated forms of accidental	548	712	598
58-161	1 XV.—Diseases of Early In-	71	66	69	2	(1) Inattention at birth	885	936	909
101	fancy.				195	Violent deaths of un-	444	572	480
158	Congenital debility	68	66	67 36	100	stated nature (i.e.,			
159	Premature birth	38 186	34 226	36 201		accidental, suicidal,			
160 161	Injury at birth Other diseases peculiar to	178	169	174	196	etc.). Wounds of war	405	Saler E	
101	early infancy.				196	Execution	444	a and a star	
	(a) Atelectasis	187 119	$\begin{array}{c} 161 \\ 140 \end{array}$	177 127	A State				
	(b) Icterus neonatorum (c) Other diseases in-	203	200	202	100 000	XVIII	75	55	66
	cluded under 161.				189-200	XVIII.—Ill-defined Dis- eases.		Second St.	
	(1) Diseases of the	419	346	391	199	Sudden death	98	35	71
	(2) Pomphique neona-	ALL LAND			200	Cause of death unstated or	67	61	64
	(2) Pemphigus neona- torum.	The second second	1.641	R. C.	A State of the second	ill-defined.			

† Deaths from this cause are included under headings 173-175 (Homicide).

certifying practitioner that he may at a later date be in a position to afford information as to the cause of death additional to that in his certificate, thus providing for cases where the autopsy or other pathological examination was not complete at the time of framing the certificate. Diagnosis was thus stated or ascertained to have been confirmed after death or by operation in 11.7 per cent. of all deaths in 1933, 13.4 per cent. for males and 10.0 for females. The corresponding percentages in 1928 were 11.9 for persons, 13.2 for males and 10.6 for females.

The proportions vary greatly for different causes of death. Thus for the group of infectious and parasitic diseases the proportion per 1,000 deaths was 74, for cancer 150, aortic valve disease 195, coronary disease 274, fatty heart 414, peptic ulcer 433, appendicitis 456 and pericarditis 543. It must be remembered that no account is taken in these rates of confirmation of diagnosis during life by bacteriological, radiological or other means except by an operation so recent or important in its effects as to be mentioned on the death certificate. The more complete the confirmation during life becomes the smaller need there is for post mortem confirmation, and it follows that a decline of a rate in the table compared with 1928 may be the outcome of increasing resort to confirmatory methods of establishing the diagnosis before a fatal issue is reached. In other instances it may indicate a decreasing resort to operative measures.

Noteworthy decreases in the rates of Table XCI. compared with 1928 are evident for typhoid fever (314 to 230), diphtheria (88 to 54), cancer, diseases of the pancreas and spleen, appendicitis, intestinal obstruction and urinary calculi. The rate for all sites of cancer has declined from 170 to 150, for cancer of the breast from 269 to 183, cancer of the skin from 115 to 82 and cancer of the female genital organs from 153 to 124.

On the other hand considerable increases since 1928 in the proportions per 1,000 confirmed are evident for acute poliomyelitis, tuberculosis of the central nervous system and intestines, disseminated tuberculosis, syphilis (204 to 266), septicæmia, rheumatic fever, diseases of the mouth and pharynx, and of the respiratory system, cirrhosis and acute yellow atrophy of the liver and injury at birth.

### Inquests and Uncertified Deaths in 1933.

The changes which have occurred since 1881 in the proportions of deaths certified in various ways or remaining uncertified are outlined in Table XCII. The quinquennial figures represent averages of the rates for individual years. There has been a significant increase since 1928 in the proportion of deaths certified by coroners after *post-mortem* examination without inquest, from 1.41 to 1.92 per cent. (6,496 deaths in 1928, 9,528 in 1933). A corresponding fall has occurred in the proportion of deaths registered after inquest, though the actual number of such deaths was almost the same in 1933 (31,391) as in 1928 (31,220), an increase in the violent deaths being almost offset by a decrease in deaths from other causes. In London, deaths certified by coroners after *post* mortem have increased from 2,031\* to 2,909, in the county boroughs from 1,996\* to 2,811, in other urban districts from 1,663\* to 2,736 and in rural districts from 797\* to 1,072. London inquest deaths have fallen, however, from 4,208\* to 3,540, whereas those in other urban areas have increased.

Table XCIII analyses the inquest deaths according to sex, age and the class of area in which the death was registered, and Table XCV similarly analyses the deaths certified by coroners without an inquest, these being comparable with Tables LXXI and LXXIII in the Review for 1928 though the classification of causes is of necessity somewhat different.

In England and Wales as a whole, inquest deaths from violence numbered 22,158, an increase of 1,093 over the corresponding group† in 1928, whilst inquest deaths from causes other than violence totalled 9,233, a decrease of 922. Deaths from non-violent causes certified by coroners after *post mortem* examination numbered 9,490, an increase of 3,020 over the corresponding total in 1928. The transfer here indicated of non-violent deaths from the " inquest" to the " no inquest" group was evidently most pronounced for deaths due to circulatory disease, but was also shared by the respiratory and infantile groups as may be seen by comparing the details of Table XCV with the corresponding table for 1928. The increase or decrease in the numbers of deaths certified in each year by coroners (*a*) after inquest and (*b*) after *post mortem* without inquest, and the proportions in groups (*a*) and (*b*) per 1,000 total deaths from the causes specified, were as follows :—

an arrive 18234 In the	Increase o in No. of 1933 comp	deaths in		leaths f	n $(a)$ or rom the ified.	
	192	28.	195	28.	19	33.
and the requiring	(a)	(b)	(a)	(b)	(a)	(b)
All causes	+171	+3,032	68	14	63	1 19
Nervous diseases	-374	+ 20	28	14	21	16
Circulatory disease	-416	+1,703	34	32	24	38
Respiratory disease	-130	+ 417	18	15	16	24
Digestive disease	No change	+ 134	28	14	29	19
Puerperal state	+ 28	+ 31	70	24	88	39
Malformations; infan-	in a subscription		1345 3	ACLEY	ai b	milture
tile disease #	-107	+ 82	19	12	15	17
All causes except vio-		and the second second	Carrier and	and the state		and the second
lence‡	-922	+3,020	23	15	19	20
taon preside 200013	EM 2013.814		1 TO STORY	1001-00	110 81	0110703

\* Non-civilians are excluded from these totals for 1928.

† Including "lack of care," No. 163, with the violent deaths in 1928.

Lack of care (No. 163 in 1928) is classed with the violent deaths.

The increase in deaths assigned to circulatory diseases after *post mortem* without inquest (from 3,330 in 1928 to 5,033 in 1933) is partly accounted for by the transfer due to dispensing with an inquest and partly reflects the general increase, amounting to about 25 per cent. in the five years, in all deaths attributed to these causes.

Table XCVI shows in detail for which causes of death coroners more frequently dispensed with inquests in 1933, and for which causes the holding of an inquest was the general rule. Of deaths from violence, 98 per cent. were certified after inquest, and other causes with high inquest rates are tetanus, septicæmia, diseases of the thymus, chronic poisoning, chronic interstitial pneumonia, abortion and acute osteomyelitis. An inquest was dispensed with for more than half of the deaths referred to the coroner and assigned to diphtheria, syphilis, diseases of the thymus, meningitis, cerebral hæmorrhage, pericarditis, valvular heart disease, fatty heart, angina pectoris, aneurysm, arteriosclerosis, pneumonia and congestion of the lung, peptic ulcer, diseases of the pancreas, chronic nephritis, atelectasis and icterus neonatorum.

### Table XCII.—Certified and Uncertified Deaths and Inquest Cases, in 1881–1910 and in 1915, 1920, 1925, 1928 and 1933.

		Proportion per	r 100 Deaths.	
		Certified by :—		antenia Antenia - Antenia Antenia
	Registered Medical Practitioners.	Coroners after Inquest.	Coroners after P.M.	Uncertified Deaths.*
•••	90.86	5.38		3.76
	and the second		i drug s	$3 \cdot 11 \\ 2 \cdot 56$
all design and the				1.99
	91.56	6.73		1.71
	91.54	7.03		1.43
		6.96		1.37
			-	1.21
•••			—	1.01
••				$\begin{array}{c} 0.99 \\ 0.95 \end{array}$
	··· ··· ··· ···	Registered Medical Practitioners. 90.86 91.34 91.58 91.56 91.56 91.56 91.54 91.67 92.14 92.08 90.82 90.81	$\begin{tabular}{ c c c c c c c } \hline & & & & & & & & & & & & & & & & & & $	$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$

Table XCIV analyses the uncertified deaths, and may be compared with Table LXXII in the Review for 1928. Most of the differences

\* Deaths without certificate of registered medical practitioner in attendance (which since 1914 must be referred by Registrar to Coroner) where Coroner declined to hold inquest.

L.	able XCIII.—Inquest C		TOBIN					u by
Inter- national List Number.	Cause of Death.	Total.	Males.	Fe- males.	London.	County Bor- oughs.	Urban Dis- tricts.	Rural Dis- tricts.
Contra Participa	All Causes	31,391	20,792	10,599	3,540	11,012	10,889	5,950
$\begin{array}{c} 1-44\\ 45-55\\ 56-69\\ 70-74\\ 75-77\\ 78-89\\ 90-103\\ 104-114\\ 115-129\\ 130-139\\ \end{array}$	Infections and parasitic diseases Cancer and other tumours General diseases Diseases of blood, &c Chronic poisoning Diseases of nervous system ,, ,, circulatory ,, ,, ,, respiratory ,, ,, ,, digestive ,, Non - venereal genito-urinary diseases :	1,284 455 179 52 52 806 3,190 922 741	917 276 81 31 35 469 2,099 631 465	367 179 98 21 17 337 1,091 291 276	126 71 19 6 10 71 204 98 120	539 196 58 18 22 315 1,349 418 271	403 139 73 21 14 296 1,153 280 250	216 49 29 7 6 124 484 126 100
and leases	Males Females	196 166	196	166	30 15	92 73	53 59	21 19
140-150	Diseases of pregnancy, childbirth,	231		231	47 28	81 61	79 53	24 21
$151-153 \\ 154-156$	,, ,, skin, &c ,, bones and organs of locomotion	. 163 152	106 97	57 55	20	67	41	- 15
157 158–161 162 163–198 199–200	Iocomotion          Congenital malformations          Diseases of early infancy          Old age           Deaths from violence          Ill-defined diseases	69 224 111 22,158 240	41 119 50 15,041 138	28 105 61 7,117 102	3 11 3 2,640 9	32 98 61 7,145 116	27 72 33 7,780 63	7 43 14 4,593 52
	and had start asal.		A SPA	ni h			8.1, 121	
$ \begin{array}{c} 10\\ 11\\ 22\\ 36(a)\\ 45-53\\ 67\\ 79\\ 82\\ 86\\ 92\\ 93 \ b 1 \end{array} $	Diphtheria Influenza Tetanus Septicæmia Cancer Diseases of thymus Meningitis Cerebral hæmorrhage, &c Infantile convulsions Valvular disease of heart Fatty heart	$ \begin{array}{c c} 14\\ 171\\ 86\\ 420\\ 362\\ 44\\ 32\\ 383\\ 81\\ 528\\ 287\\ \end{array} $	8 95 67 286 238 33 16 216 45 355 171	6 76 19 134 124 11 16 167 36 173 116	$ \begin{array}{c c} 1 \\ 12 \\ 6 \\ 40 \\ 60 \\ 5 \\ 1 \\ 31 \\ 1 \\ 28 \\ 16 \\ \end{array} $	9 89 20 157 163 7 16 151 39 196 106	$\begin{array}{c} 4\\ 43\\ 32\\ 140\\ 100\\ 20\\ 8\\ 152\\ 23\\ 214\\ 117\end{array}$	27 28 83 39 12 7 49 18 90 48
$\begin{array}{c} 93(b) \ 2,3,(c) \\ 94 \\ 96 \\ 114 \ (a) \\ 140, \ 141 \\ 145 \ (a) \\ 152 \\ 152 \\ 154 \\ 160 \\ 161 \ (a) \end{array}$	Other myocardial disease (not acute)	966 788 122 105 126 35 27 120 112 83 28	539 619 92 99   80 74 40 21	427 169 30 6 126 35 27 40 38 43 7	37 59 15 1 29 4 7 16 25 5 5	461 345 52 47 41 11 10 52 49 33 14	$\begin{array}{c} 315\\ 281\\ 45\\ 35\\ 44\\ 14\\ 9\\ 34\\ 28\\ 32\\ 12\\ \end{array}$	$     \begin{array}{r}       153\\       103\\       10\\       22\\       12\\       6\\       1\\       18\\       10\\       13\\       2     \end{array} $

Table XCIII.—Inquest Cases registered in 1933 classified by

Sex, Age, Class of Area, and assigned Cause of Death.

0—	1—	5—	15—	25—	35—	45—	55—	65—	75 and upwards.	Inter- national List Number.
1,288	1,302	1,936	3,210	3,169	3,060	4,252	5,142	4,425	3,607	
42 25 3 	77 6 11 4  31 3 35 55	136 7 7 8  38 14 47 85	$     \begin{array}{r}       118 \\       16 \\       13 \\       5 \\       1 \\       53 \\       51 \\       32 \\       62 \\     \end{array} $	133 29 14 7 5 72 79 39 55	181 46 18 5 9 92 195 89 76	217 90 23 2 13 98 527 157 129	$228 \\ 132 \\ 31 \\ 7 \\ 12 \\ 144 \\ 832 \\ 164 \\ 131$	$     \begin{array}{r}       107 \\       93 \\       27 \\       10 \\       11 \\       129 \\       943 \\       129 \\       73 \\     \end{array} $	$ \begin{array}{r}     45 \\     34 \\     10 \\     1 \\     1 \\     67 \\     543 \\     99 \\     27 \\ \end{array} $	$\begin{array}{r} 1-44\\ 45-55\\ 56-69\\ 70-74\\ 75-77\\ 78-89\\ 90-103\\ 104-114\\ 115-129\end{array}$
5	4 1	3 4	5 3	$\begin{array}{c} 6\\20\end{array}$	13 17	30 28	48 32	56 34	26 27	}130-139
	-3	. 9	45 13	111 13	72 22	2 24	33	*	12	140–150 151–153
2 46 224 	24 13  1,033 2	71 3 — 1,502 1	22 4 	4 1 2,573 8	7 2 2,206 10	4  2,883 25	$ \begin{array}{c} 11 \\ - \\ 3,273 \\ 62 \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ -$	5 — 37 2,665 76	2 — 72 2,609 32	154-156157158-161162163-198199-200
	5 8 9 11 6 6 7 1	9 8 33 47 3 7 6 1 	$ \begin{array}{c} - \\ 10 \\ 10 \\ 31 \\ 6 \\ 5 \\ 2 \\ 5 \\ - \\ 25 \\ 5 \\ 3 \\ 1 \end{array} $	$ \begin{array}{c}\\ 19\\ 10\\ 51\\ 16\\ 2\\ 5\\ 12\\\\ 24\\ 7\\ 15\\ 10\\ \end{array} $	$ \begin{array}{c}\\ 28\\ 10\\ 54\\ 28\\ -\\ 2\\ 43\\ -\\ 47\\ 24\\ 34\\ 47\\ \end{array} $	$ \begin{array}{c} -24\\5\\74\\74\\-3\\58\\-\\87\\62\\113\\160\end{array} $	$ \begin{array}{c}$	$ \begin{array}{c}    $	$ \begin{array}{c} - \\ 14 \\ - \\ 21 \\ 32 \\ - \\ 53 \\ - \\ 61 \\ 25 \\ 263 \\ 88 \\ \end{array} $	$10 \\ 11 \\ 22 \\ 36(a) \\ 45-53 \\ 67 \\ 79 \\ 82 \\ 86 \\ 92 \\ 93 (b) 1 \\ 93(b) 2,3,(c) \\ 94$
1             	   	2   6 64 	3 1 21 7 9 6 17 —	$ \begin{array}{c}             9 \\             4 \\           $	$ \begin{array}{c} 12\\ 20\\ 44\\ 9\\ 8\\ 15\\ 1\\\\\\\\\\\\\\\\\\\\$	160 23 37  1 21 2  2 	234 29 31  25 1 	30 10  26  	13 2  9  	$\begin{array}{c} 93(b)\ 2,3,(c)\\ 94\\ 96\\ 114\ (a)\\ 140,\ 141\\ 145\ (a)\\ 149\\ 152\\ 154\\ 160\\ 161\ (a) \end{array}$

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LUNI	e AUIV	CUUL	rogin	, voi cu				
Inter- national List Number.	Cause of Death.	Total.	Males.	Fe- males.	London.	County Bor- oughs.	Urban Dis- tricts.	Rural Dis- tricts.
	All Causes	4,728	2,569	2,159	37	1,184	1,926	1,581
1-44 $45-55$ $56-69$ $70-74$ $75-77$ $78-89$ $90-103$ $104-114$ $115-129$ $130-139$ $140-150$ $151-153$ $154-156$ $157$ $158-161$ $162$ $163-198$ $199-200$	Infectious and parasitic diseases Cancer and other tumours General diseases Diseases of blood, &c Chronic poisoning Diseases of nervous system , , , circulatory,, , , , respiratory,, , , , respiratory,, , , , digestive ,, Non - venereal genito - urinary diseases : Males Females Diseases of pregnancy, childbirth, &c , , , skin, &c , , , skin, &c Congenital malformations Diseases of early infancy Old Age Ill defined diseases	$\begin{array}{c} 220\\ 69\\ 70\\ 11\\ 2\\ 497\\ 1,920\\ 313\\ 106\\ 26\\ 26\\ 26\\ 26\\ 8\\ 3\\ 4\\ 47\\ 325\\ 255\\ 255\\ 44\\ 782 \end{array}$	$ \begin{array}{c} 113\\32\\29\\5\\-\\287\\1,076\\151\\61\\26\\-\\-\\1\\3\\20\\205\\93\\21\\446\end{array} $	$ \begin{array}{c} 107 \\ 37 \\ 41 \\ 6 \\ 2 \\ 210 \\ 844 \\ 162 \\ 45 \\ \\ 26 \\ 8 \\ 2 \\ 1 \\ 27 \\ 120 \\ 162 \\ 23 \\ 336 \\ \end{array} $	$ \begin{array}{c} 1 \\ - \\ - \\ 1 \\ 18 \\ 1 \\ 1 \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ -$	$ \begin{array}{c} 69\\ 22\\ 13\\ 2\\ -1\\ 111\\ 511\\ 106\\ 34\\ -5\\ 7\\ 1\\ -\\ 2\\ 17\\ 100\\ 39\\ 5\\ 140\\ \end{array} $	$\begin{array}{c} 81\\ 21\\ 31\\ 6\\ 2\\ 204\\ 767\\ 110\\ 40\\ 8\\ 13\\ 3\\ 1\\ 2\\ 9\\ 126\\ 114\\ 25\\ 363\\ \end{array}$	69 26 26 3 
$\begin{array}{c} 10\\11\\82\\85\\92\\93\ (b)\ 1\\93\ (b)\ 2,3,(c)\\94\\95\\97\ (1)\ (2)\\97\ (3)\\106\\107-9\\112\\117\\118\ (1)\\119-20\\158\\159\\160\\161\ (a)\\\end{array}$	Diphtheria	$\begin{array}{c} 10\\ 122\\ 288\\ 61\\ 116\\ 280\\ 107\\ 728\\ 365\\ 305\\ 43\\ 55\\ 192\\ 66\\ 31\\ 17\\ 15\\ 35\\ 47\\ 222\\ 18\\ 22\end{array}$	$\begin{array}{c} 6\\ 57\\ 157\\ 38\\ 70\\ 141\\ 39\\ 390\\ 268\\ 164\\ 20\\ 35\\ 84\\ 38\\ 15\\ 12\\ 7\\ 7\\ 22\\ 32\\ 140\\ 13\\ 11\\ \end{array}$	$\begin{array}{c} 4\\ 65\\ 131\\ 23\\ 46\\ 139\\ 68\\ 338\\ 97\\ 141\\ 23\\ 20\\ 108\\ 28\\ 16\\ 5\\ 8\\ 13\\ 15\\ 82\\ 5\\ 11\\ 1\end{array}$		$5 \\ 37 \\ 53 \\ 13 \\ 35 \\ 60 \\ 33 \\ 238 \\ 111 \\ 38 \\ 8 \\ 14 \\ 71 \\ 26 \\ 4 \\ 5 \\ 6 \\ 14 \\ 11 \\ 74 \\ 4 \\ 6 \\ 14 \\ 11 \\ 74 \\ 4 \\ 6 \\ 16 \\ 16 \\ 16 \\ 16 \\ 16 \\ 16 $	$\begin{array}{c} 5\\ 47\\ 125\\ 26\\ 45\\ 113\\ 43\\ 270\\ 145\\ 141\\ 15\\ 22\\ 62\\ 23\\ 14\\ 8\\ 4\\ 16\\ 20\\ 90\\ 5\\ 6\end{array}$	$\begin{array}{c} - \\ 38 \\ 110 \\ 21 \\ 36 \\ 101 \\ 31 \\ 218 \\ 103 \\ 122 \\ 20 \\ 19 \\ 59 \\ 17 \\ 13 \\ 4 \\ 5 \\ 5 \\ 16 \\ 55 \\ 9 \\ 9 \\ 9 \end{array}$

Table XCIV.—Uncertified Deaths registered in 1933 classified by

Sex, Age, Class of Area, and assigned Cause of Death.

0—	1	5—	15—	25—	35—	45—	55—	65—	75 and upwards.	Inter- national List Number.
571	72	78	59	73	135	405	841	1,328	1,166	
$ \begin{array}{c} 11 \\ 3 \\ 1 \\ 108 \\ 46 \\ 23 \\ - \\ 1 \\ - \\ 38 \\ 325 \\ - \\ 5 \\ 10 \\ \end{array} $	$ \begin{array}{c} 19\\1\\-\\-\\15\\-16\\12\\-\\1\\-\\-\\3\\-\\3\\1\\\end{array} $	$ \begin{array}{c}     14 \\     1 \\     3 \\     \\     14 \\     4 \\     19 \\     10 \\     1 \\     \\     1 \\     \\     1 \\     1 \\     \\     3 \\     7 \\   \end{array} $	$ \begin{array}{c} 19 \\ -2 \\ -1 \\ 17 \\ 10 \\ 1 \\ - \\ 1 \\ - \\ 1 \\ 3 \\ - \\ - \\ 1 \\ 3 \\ - \\ - \\ 1 \\ 3 \\ - \\ - \\ 1 \\ 3 \\ - \\ - \\ 1 \\ 3 \\ - \\ - \\ 1 \\ 3 \\ - \\ - \\ 1 \\ 3 \\ - \\ - \\ 1 \\ 3 \\ - \\ - \\ 1 \\ 3 \\ - \\ - \\ 1 \\ 3 \\ - \\ - \\ - \\ 1 \\ 3 \\ - \\ - \\ - \\ 1 \\ 3 \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ -$	$ \begin{array}{c} 25 \\ -1 \\ \\ \\ 8 \\ 14 \\ 4 \\ 2 \\ \\ 1 \\ 3 \\ \\ 2 \\ \\ \\ 13 \\ \end{array} $	$\begin{array}{c} 26\\ 2\\ 2\\ -\\ 1\\ 14\\ 51\\ 11\\ 11\\ 2\\ 1\\ -3\\ -\\ -\\ -\\ -\\ 11\\ \end{array}$	$ \begin{array}{c} 34\\5\\6\\3\\1\\40\\175\\24\\11\\1\\9\\1\\1\\-\\-\\-\\4\\90\end{array} $	$\begin{array}{c} 24\\ 17\\ 16\\ 2\\ -\\ 89\\ 462\\ 30\\ 14\\ 3\\ 5\\ -\\ 1\\ 1\\ -\\ 2\\ 2\\ 173\\ \end{array}$	$\begin{array}{c} 32\\ 25\\ 25\\ 4\\ -\\ 124\\ 677\\ 74\\ 14\\ 8\\ 7\\ -\\ -\\ -\\ 1\\ -\\ 43\\ 4\\ 290\\ -\\ -\\ -\\ -\\ -\\ -\\ -\\ -\\ -\\ -\\ -\\ -\\ -\\$	$ \begin{array}{c} 16\\18\\11\\1\\-\\68\\527\\88\\8\\11\\2\\-\\-\\-\\22\\184\\.\\\end{array} $	$\begin{array}{c} 1-44\\ 45-55\\ 56-69\\ 70-74\\ 75-77\\ 78-89\\ 90-103\\ 104-114\\ 115-129\\ \end{array}\} 130-139\\ 140-150\\ 151-153\\ 154-156\\ 157\\ 158-161\\ 162\\ 163-198\\ 199-200\\ \end{array}$
$ \begin{array}{c} - & 6 \\ - & 2 \\ 104 \\ - & - \\ - & - \\ - & - \\ 20 \\ 25 \\ - & - \\ 225 \\ - & - \\ 17 \\ 47 \\ 222 \\ 18 \\ 22 \end{array} $	$ \begin{array}{c} 7 \\ 5 \\ -1 \\ 12 \\ -2 \\ -2 \\ -2 \\ -2 \\ -2 \\ -2 \\ -2 \\ -$	$ \begin{array}{c} 1 \\ 9 \\ 1 \\ 3 \\ - \\ 1 \\ - \\ 2 \\ - \\ - \\ 1 \\ 15 \\ 1 \\ - \\ 4 \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ -$	$ \begin{array}{c} 1 \\ 8 \\ 2 \\ 13 \\ -6 \\ -2 \\ -2 \\ -2 \\ -1 \\ -1 \\ -1 \\ -1 \\ -1 \\ -1 \\ -1 \\ -1$	$ \begin{array}{c} - \\ 4 \\ 2 \\ 6 \\ - \\ 11 \\ - \\ 3 \\ - \\ 1 \\ 1 \\ 2 \\ - \\ 1 \\ - \\ - \\ 1 \\ - \\ - \\ 1 \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ -$	$ \begin{array}{c} 1\\ 1\\ 2\\ 3\\ 11\\ -\\ -\\ 9\\ 12\\ 10\\ 1\\ -\\ 3\\ 3\\ 2\\ 1\\ -\\ -\\ -\\ -\\ -\\ -\\ -\\ -\\ -\\ -\\ -\\ -\\ -\\$	$ \begin{array}{c}             19 \\             27 \\             11 \\             32 \\             18 \\             36 \\             49 \\             31 \\             1 \\           $	$ \begin{array}{c}    $	$\begin{array}{c} - \\ 28 \\ 114 \\ 4 \\ - \\ 93 \\ 36 \\ 260 \\ 122 \\ 114 \\ 18 \\ 255 \\ 57 \\ 1 \\ 9 \\ 1 \\ 5 \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ -$	$ \begin{array}{c}\\ 16\\ 63\\ 4\\ -\\ 52\\ 10\\ 295\\ 56\\ 67\\ 16\\ 24\\ 78\\ 3\\ 5\\ 1\\ -\\ -\\ -\\ -\\ -\\ -\\ -\\ -\\ -\\ -\\ -\\ -\\ -\\$	$\begin{array}{c} 10\\ 11\\ 82\\ 85\\ 86\\ 92\\ 93 (b) 1\\ 93(b) 2,3,(a)\\ 94\\ 95\\ 97 (1) (2)\\ 97 (3)\\ 106\\ 107-9\\ 112\\ 117\\ 118 (1)\\ 119-20\\ 158\\ 159\\ 160\\ 161 (a)\\ \end{array}$

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1	5	0	
1	0	4	

Table XCV.—Deaths certified by Coroner after Post Mortem registered Cause of

		2	NUMBER	TO STAN		And Sold	Sec. 2	and the second
Inter- national List Number.	Cause of Death.	Total.	Males.	Fe- males.	London.	County Bor- oughs.	Urban Dis- tricts.	Rural Dis- tricts.
	All Causes	9,528	5,688	3,840	2,909	2,811	2,736	1,072
$\begin{array}{c} 1-44\\ 45-55\\ 56-69\\ 70-74\\ 75-77\\ 78-89\\ 90-103\\ 104-114\\ 115-129\\ 130-139\\ \end{array}$	Infectious and parasitic diseases Cancer and other tumours General diseases Diseases of blood, &c. Chronic poisoning , , circulatory, , , , respiratory, , , , , digestive , , , Non - venereal diseases :	565 344 174 37 4 607 5,033 1,332 497	355 170 89 18 3 327 3,188 792 289	$210 \\ 174 \\ 85 \\ 19 \\ 1 \\ 280 \\ 1,845 \\ 540 \\ 208$	228 145 36 8 	157 84 59 11 164 1,466 463 121	132 85 54 11 3 216 1,483 332 146	48 30 25 7 
140-150	Males Females Diseases of pregnancy, childbirth	207 196	207	 196	64 71	60 68	58 42	25 15
151–153 154–156	&c	101 18		101 5	24 10	31 5	33 3	13 —
157 158–161 162 163–198 199–200	locomotion Congenital malformations Diseases of early infancy Old age Deaths from violence Ill defined diseases	8 124 205 10 38 28	4 72 110 2 27 22	4 52 95 8 11 6	4 42 40 4 3 1	2 20 79 4 9 7	1 43 64 1 16 13	1 19 22 1 10 7
$10 \\ 11 \\ 23 \\ 34 \\ 45-53 \\ 67 \\ 79 \\ 82 \\ 86 \\ 89 \\ 90 \\ 92 \\ 93 (b) 1 \\ 93(b) 2,3,(c)$	Diphtheria	20 133 232 66 268 84 38 404 40 42 63 953 631	12 71 159 43 145 55 27 201 18 28 37 558 356	8 62 73 23 123 29 11 203 22 14 26 395 275	$9\\62\\96\\32\\129\\5\\10\\99\\1\\19\\12\\253\\85$	7 33 64 21 60 36 12 105 19 6 25 299 187	2 24 58 9 58 28 12 147 16 12 18 283 239	2 14 14 14 21 15 4 53 4 53 4 5 8 118 120
94 96 97 (1) (2)	acute) Angina pectoris Aneurysm Arterio-sclerosis with cerebral-vas-	850 1,685 336	502 1,243 201	348 442 135	236 642 118	248 447 105	269 434 89	97 162 24
97 (3)	Arterio-sclerosis without cerebral	182	96	86	79	52	42	9
107-9 111 114 (a)	vascular lesion Pneumonia Congestion and infarct of lung Chronic interstitial pneumonia	154 1,018 85 6	98 606 54 6	56 412 31	38 309 7	42 383 24	51 241 38	23 85 16
$ \begin{array}{c} 117\\ 122\\ 128\\ 131\\ 158\\ 159\\ 160\\ 161\\ (a)\\ 161\\ (b) \end{array} $	Ulcer of stomach or duodenum Hernia Diseases of pancreas Chronic nephritis Congenital debility Premature birth Injury at birth Atelectasis Icterus neonatorum	$     \begin{array}{r}         08 \\         108 \\         105 \\         34 \\         313 \\         28 \\         60 \\         40 \\         53 \\         8 \\         8     \end{array} $	72 64 20 157 13 34 22 29 4	36 41 14 156 15 26 18 24 4	$ \begin{array}{r}$	26 19 5 103 7 25 12 26 3	$ \begin{array}{c} 3\\20\\30\\12\\79\\11\\14\\20\\12\\2\end{array} $	$     \begin{array}{r}       3 \\       17 \\       13 \\       4 \\       35 \\       6 \\       7 \\       2 \\       5 \\       1 \\       \end{array} $

in 1933, classified by Sex, Age, Class of Area, and assigned Death.

0	1—	5—	15—	25—	35—	45—	55—	65—	75 and upwards.	Inter- national List Number.
825	229	240	250	368	651	1,392	2,137	2,239	1,197	
$32 \\ 1 \\ 66 \\ 4 \\ \\ 51 \\ 1 \\ 283 \\ 65 \\ $	42 5 16 5  20 1 93 29	$ \begin{array}{r} 41\\ 6\\ 14\\ -1\\ -21\\ 22\\ 84\\ 32\\ \end{array} $	33 10 12 7 	61 14 8 3 1 43 96 38 26	72 38 14 6 	93 76 12 2 111 788 154 73	97 75 15 6 1 134 1,391 208 99	54 79 15 3  98 1,575 208 83	$ \begin{array}{c} 40 \\ 40 \\ 2 \\ \\ \\ 39 \\ 829 \\ 135 \\ 37 \\ \end{array} $	$\begin{array}{c} 1-44\\ 45-55\\ 56-69\\ 70-74\\ 75-77\\ 78-89\\ 90-103\\ 104-114\\ 115-129\end{array}$
2 1	3 2	$\frac{2}{2}$	9 5	6 16	13 12	34 31	51 48	63 48	24 31	}130-13
-	-1	-2	15 1	49 2	36 2	1 3	-3	-3	1	140-150 151-153
		2 8 	2 4  2 1		  	2 — — 6 4	1 	  1 1 8		154–15 157 158-16 162 163–19 199–20
1 7 3 5 1 57 6 1 34 8 — —	$ \begin{array}{c} 10 \\ 7 \\ 5 \\ 1 \\ 11 \\ 5 \\ 6 \\ 5 \\ 1 \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ -$	9 5 5 2 10 6 4 - 7 3 10 -	$ \begin{array}{c}     5 \\     13 \\     5 \\     1 \\     4 \\     5 \\     5 \\     5 \\     21 \\     3 \\ \end{array} $	9 37 3 6 2 3 15 5 3 35 11	$ \begin{array}{c}     18 \\     32 \\     13 \\     22 \\     -1 \\     45 \\     -4 \\     3 \\     71 \\     35 \\ \end{array} $	$ \begin{array}{r} -25 \\ 45 \\ 14 \\ 56 \\ -5 \\ 92 \\ -1 \\ 163 \\ 115 \\ \end{array} $	$ \begin{array}{c} -23 \\ 54 \\ 11 \\ 66 \\ -3 \\ 112 \\ -6 \\ 18 \\ 258 \\ 169 \\ \end{array} $	$ \begin{array}{c}\\ 19\\ 23\\ 7\\ 76\\ -\\ -\\ 3\\ 93\\ -\\ -\\ 14\\ 260\\ 209\\ \end{array} $	$ \begin{array}{c}             15 \\             15 \\           $	10 11 23 34 45-53 67 79 82 86 89 90 92 93 (b) 1
_	1 · 	6	9  8	16 6 10	40 66 26	110 248 59	204 493 94	275 600 79	195 272 54	93(b) 2,3, 94 96
	-	an dermolytes	2	2	11	39	67	42	- 19	97 (1) (2
$ \begin{array}{c} \\ 247 \\ 11 \\ \\ 12 \\ 1 \\ \\ 28 \\ 60 \\ 40 \\ 53 \\ 8 \end{array} $	82 1 6 - 1		1 36 6 -2 1 1 9 	1 26 4 2 1 11 	5 57 8 3 15 4 3 14 	16 114 10 2 20 15 11 56 	44 133 23 28 20 5 82 	47 148 14 1 22 27 8 92 — — — —	40 97 7  14 12 3 46   	97 (3) 107-109 111 114 (a 117 122 128 131 158 159 160 161 (a) 161 (b)

Material and Milling all and an and an and	registereu nom the same	Lause.—	-1999.	nan an	
Inter- national		By Registered		oroners.	Un-
List Number.	Cause of Death.	Medical Practi- tioners.	After Inquest.	After P.M. without Inquest.	certified.
	and the second second		a and a state	62/2	The states
	All causes	908	63	19	10
1-44	Infectious and parasitic diseases	971	18	8	3
45-55 56-69	Cancer and other tumours	987	7	5	1
70-74	General diseases	969 979	13	13 8	$\frac{5}{2}$
75-77	Chronic poisoning	487	460	35	18
78-89 90-103	Diseases of nervous system	950	. 21	16	13
104-114	Diseases of circulatory system	924 954	$\begin{array}{c} 24\\ 16 \end{array}$	$\begin{array}{c c} 38\\24 \end{array}$	14 6
115-129	Diseases of digestive system	948	29	19	- 4
130-139	Non-venereal genito-urinary diseases :	000		-	
	Males </td <td>969 958</td> <td>14 18</td> <td>15 21</td> <td><math>\frac{2}{3}</math></td>	969 958	14 18	15 21	$\frac{2}{3}$
140-150	Diseases of pregnancy, childbirth, &c.	870	88	39	3
151-153 154-156	Diseases of skin, &c.	907	82	9	2
157	Diseases of bones and organs of locomotion Congenital malformations	817 938	170 18	9 32	4
158-161	Diseases of early infancy	952	14	13	21
162 163–198	Old age	978	6	1	15
199-200	Ill-defined diseases	19 201	977 183	$\begin{array}{c} 2\\21\end{array}$	2 595
10	Diphtheria	082	F	0	
11	Influenza	983 982	5 7	86	4 5
22 23	Tetanus	173	827	0	0
23 34	Tuberculosis of respiratory system	979	11	8	2
36 (a)	Septicæmia.	918 355	$\begin{array}{c} 30 \\ 629 \end{array}$	50 15	$\frac{2}{1}$
45-53	Cancer	989	6	4	i
67 79	Diseases of the thymus	163	288	549	0
82	Cerebral hæmorrhage, apoplexy, &c.	924 958	32 15	38 16	6 11
85 86	Epilepsy	872	78	22	28
89	Infantile convulsions Diseases of the ear, &c	812 939	64 33	32 27	92
90	Pericarditis.	690	109	201	$1 \\ 0$
92 93 (b 1)	Valvular disease of heart.	930	21	38	11
93(b) 2,3,(c)	Fatty heart	599 958	112 16	247 14	42
94	Angina pectoris	692	85	183	12 40
95 96	Other disease of the heart	925	20	15	40
97 (1, 2)	Arterio sclerosis with cerebral-vascular	650	91	250	9
	lesion	973	10	14	3
97 (3)	Arterio sclerosis without cerebral-vascular		10		
106	Bronchitis	964 976	13 8	17 7	6 9 .
107-9	Pneumonia (all forms)	947	17	34	9 · 2
111	Congestion and hæmorrhagic infarct of		0.7		
112	lung	904 969	27 12	$\begin{bmatrix} 62\\ 2 \end{bmatrix}$	7 17
114 (a)	Chronic interstitial pneumonia	629	344	20	7
117 118 (1)	Ulcer of stomach or duodenum	946	24	26	4
119-120	Infiammation of the stomach Diarrhœa and enteritis	954 966	20 16	8 12	18 6
122	Hernia	945	31	$\frac{12}{22}$ .	2
128 131	Diseases of the pancreas	896	32	68	4
140, 141	Chronic nephritis	954 559	18 333	25 103	35
145 (a)	Puerperal sepsis	936	44	20	_
149 152	Other accidents of childbirth	897	87	16	10
154	Cellulitis, acute abscess	831 740	159 247	9 11	$\frac{1}{2}$
158	Congenital debility	941	18	-15	26
159 160	Premature birth	968	6	6	20
161 (a)	Injury at birth	893 905	63 26	30 49	14     20
161 (b)	Icterus neonatorum	933	3	27	37
			1911 AND	and the second of	

## Table XCVI.—Method of Certification. Cases per Thousand Deaths registered from the Same Cause.-1933.

Table XCVII.—Inquest Cases per Thousand Deaths registered from the same Cause.-1933.

					and the second second		1	Alat
Inter- national List Number.	Cause of Death.	Total.	Males.	Fe- males.	London.	County Bor- oughs,	Urban Dis- tricts.	Rural Dis- tricts.
1-4445-5556-6970-7475-7778-8990-103104-114115-129	All Causes	$ \begin{array}{r} 63\\ 18\\ 7\\ 13\\ 11\\ 460\\ 21\\ 24\\ 16\\ 29\end{array} $	83 25 9 17 15 461 25 33 21 33	43 11 5 11 8 459 17 16 11. 23	66 16 10 15 17 833 23 13 16 37	$\begin{array}{c} 63\\ 20\\ 9\\ 13\\ 12\\ 512\\ 24\\ 29\\ 19\\ 30\\ \end{array}$	62 17 6 14 12 350 20 25 15 28	$ \begin{array}{r} 63\\19\\4\\10\\8\\333\\16\\19\\14\\22\end{array} $
130-139 $140-150$ $151-153$ $154-156$ $157$ $158-161$ $162$ $163-198$ $199-200$	Non-venereal genito-urinary diseases Males	14 18 88 82 170 18 14 6 977 183	$ \begin{array}{c} 14 \\ \\ 98 \\ 182 \\ 19 \\ 13 \\ 7 \\ 983 \\ 189 \\ \end{array} $		19 15 226 103 250 9 9 3 992 391	20 23 92 88 209 24 17 12 985 339	11 18 80 81 134 19 13 5 973 116	7 11 44 59 100 9 14 3 963 127
$\begin{array}{c} 10\\ 11\\ 22\\ 36 (a)\\ 45-53\\ 67\\ 79\\ 82\\ 86\\ 92\\ 93 (b) 1\\ 93(b) 2,3,(c)\\ 94\\ 96\\ 114 (a)\\ 140, 141\\ 145 (a)\\ 140, 141\\ 145 (a)\\ 149\\ 152\\ 154\\ 160\\ 161 (a) \end{array}$	Diphtheria          Influenza          Tetanus          Septicæmia          Cancer          Disease of thymus          Disease of thymus          Meningitis          Cerebral hæmorrhage, &c.          Infantile convulsions          Valvular disease of heart          Fatty heart          Other myocardial disease (not acute)         Angina pectoris          Aneurysm          Chronic interstitial pneumonia         Abortion          Puerperal septicæmia          "Other accidents" of childbirth          Cellulitis, &c.          Acute osteomyelitis          Injury at birth	$\begin{array}{c} 5\\7\\827\\629\\6\\288\\32\\15\\64\\21\\112\\16\\85\\91\\344\\333\\44\\87\\159\\247\\63\\26\end{array}$	$\begin{array}{c} & & & \\ & & 9 \\ & & 882 \\ & & 8 \\ & & 330 \\ & & 26 \\ & & 19 \\ & & 60 \\ & & 33 \\ & & 152 \\ & & 19 \\ & & 98 \\ & & 99 \\ & & 393 \\ & & - \\ & & - \\ & & 188 \\ & 265 \\ & & 49 \\ & & 32 \end{array}$	$\begin{array}{c} & 4 \\ & 6 \\ & 679 \\ & 525 \\ & 4 \\ & 208 \\ & 41 \\ & 12 \\ & 70 \\ & 12 \\ & 81 \\ & 13 \\ & 58 \\ & 72 \\ & 113 \\ & 333 \\ & 44 \\ & 87 \\ & 121 \\ & 217 \\ & 85 \\ & 17 \end{array}$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} & 8 \\ 11 \\ 870 \\ 692 \\ 8 \\ 125 \\ 42 \\ 18 \\ 87 \\ 24 \\ 129 \\ 21 \\ 117 \\ 106 \\ 416 \\ 281 \\ 40 \\ 92 \\ 193 \\ 303 \\ 71 \\ 34 \end{array}$	$\begin{array}{c} 5\\ 5\\ 842\\ 598\\ 5\\ 377\\ 21\\ 15\\ 46\\ 24\\ 120\\ 15\\ 85\\ 105\\ 294\\ 358\\ 46\\ 74\\ 134\\ 192\\ 66\\ 33\\ \end{array}$	$\begin{array}{c} & & & & \\ & & & & 6 \\ 757 \\ 553 \\ & & & 3 \\ 387 \\ 41 \\ & 9 \\ 63 \\ 17 \\ 87 \\ 14 \\ 66 \\ 67 \\ 373 \\ 190 \\ 36 \\ 190 \\ 36 \\ 19 \\ 132 \\ 128 \\ 52 \\ 10 \end{array}$

noticeable in such a comparison merely reflect changes of classification such as the transfer from " old age " to the ill-defined group of heart failure or syncope at ages over 70.

Table XCVIII indicates that of all deaths assigned to ill-defined causes, 595 per 1,000 were uncertified (675 in rural districts, 130 in London). Infantile convulsions followed next in order of the causes specified with 92 (none in London), then fatty heart with 42 and angina pectoris with 40 per 1,000.

Tables XCIII-XCV and XCVII-C are inserted in order, as on previous occasions, to place on record at quinquennial intervals for those specially interested the fullest available details regarding the deaths not certified on the ordinary certificate of death.

	from the san	ne Ca	use.—	-1933	•			
Inter- national List Number.	Cause of Death.	Total.	Males.	Fe- males.	London.	County Bor- oughs.	Urban Dis- tricts.	Rural Dis- tricts.
	All Causes	10	10	9	1	7	11	17
$\begin{array}{c} 1-44\\ 45-55\\ 56-69\\ 70-74\\ 75-77\\ 78-89\\ 90-103\\ 104-114\\ 115-129\\ 130-139\\ 130-139\\ 140-150\\ 151-153\\ 154-156\\ 157\\ 158-161\\ 162\\ 163-198\\ \end{array}$	Infectious and parasitic diseases Cancer and other tumours General diseases Diseases of the blood, &c Chronic poisoning Diseases of nervous system , , , circulatory ,, , , , respiratory ,, , , , , respiratory ,, Non-venereal genito-urinary dis- eases— Males Diseases of pregnancy, childbirth, &c. , , , skin, &c Diseases of pregnancy, childbirth, &c. , , , bones, &c Diseases of early infancy Diseases of early infancy Diseases of early infancy Diseases from violence	$ \begin{array}{c} 3\\1\\5\\2\\18\\13\\14\\6\\4\\\end{array} \\ \begin{array}{c}2\\3\\3\\2\\4\\12\\21\\15\\2\end{array} $	$ \begin{array}{c} 3\\1\\6\\2\\-\\15\\17\\5\\4\\\\-\\-\\1\\6\\9\\23\\14\\1\end{array} $	$ \begin{array}{c} 3\\1\\5\\2\\54\\10\\12\\6\\4\\$	0   0 1 0 0            	$ \begin{array}{c} 3\\1\\3\\1\\-\\8\\11\\5\\4\\1\\2\\1\\-\\6\\13\\17\\8\\1\end{array} $	$\begin{array}{c} 3\\ 1\\ 6\\ 3\\ 50\\ 14\\ 17\\ 6\\ 4\\ 17\\ 6\\ 4\\ 2\\ 7\\ 6\\ 23\\ 17\\ 3\end{array}$	6 2 9 3 23 24 11 7 5 3 7 6 27 31 22 3
$\begin{array}{c} 199-200\\ 10\\ 11\\ 82\\ 85\\ 86\\ 92\\ 93\ (b)\ 1\\ 93(b)\ 2,3,(c)\\ 94\\ 95\\ 97\ (1)\ (2)\\ 97\ (3)\\ 106\\ 107-9\\ 112\\ 117\\ 118\ (1)\\ 119-120\\ 158\\ 159\\ 160\\ 161\ (a)\\ \end{array}$	Ill defined diseases          Diphtheria          Influenza          Cerebral hæmorrhage, &c.          Epilepsy          Infantile convulsions          Infantile convulsions          Infantile convulsions          Infantile convulsions          Infantile convulsions          Infantile convulsions          Yalvular disease of heart          Other myocardial disease (not acute)       Angina pectoris         Angina pectoris          Other disease of heart          Arterio sclerosis with cerebral-vascular lesion          vascular lesion          Bronchitis          Bronchitis          Ucer of stomach or duodenum          Ulcer of stomach or duodenum          Diarrhœa and enteritis          Congenital debility          Premature birth          Injury at birth	$\begin{array}{r} 595\\ \hline 4\\ 5\\ 11\\ 28\\ 92\\ 11\\ 42\\ 12\\ 40\\ 40\\ \hline 3\\ 6\\ 9\\ 2\\ 17\\ 4\\ 18\\ 6\\ 26\\ 20\\ 14\\ 20\\ \end{array}$	$\begin{array}{r} 610 \\ \hline 5 \\ 5 \\ 14 \\ 34 \\ 93 \\ 13 \\ 35 \\ 13 \\ 42 \\ 50 \\ \hline 3 \\ 7 \\ 8 \\ 2 \\ 15 \\ 4 \\ 18 \\ 7 \\ 30 \\ 23 \\ 16 \\ 17 \\ \end{array}$	$\begin{array}{c} 575 \\ \hline 3 \\ 5 \\ 9 \\ 22 \\ 89 \\ 10 \\ 48 \\ 10 \\ 33 \\ 33 \\ 3 \\ 3 \\ 3 \\ 3 \\ 5 \\ 10 \\ 2 \\ 20 \\ 5 \\ 17 \\ 5 \\ 21 \\ 17 \\ 10 \\ 26 \\ \end{array}$	$ \begin{array}{c}     130 \\     - \\     $	409 4 5 6 18 78 7 40 11 37 17 2 4 9 2 7 4 20 6 17 18 9 15	$\begin{array}{c} 671 \\ \hline 6 \\ 6 \\ 12 \\ 34 \\ 90 \\ 13 \\ 44 \\ 13 \\ 44 \\ 49 \\ 3 \\ 7 \\ 8 \\ 2 \\ 21 \\ 6 \\ 13 \\ 10 \\ 29 \\ 24 \\ 10 \\ 16 \\ \end{array}$	$\begin{array}{c} 675\\ \hline \\ 8\\ 20\\ 43\\ 126\\ 20\\ 66\\ 20\\ 66\\ 62\\ 8\\ 10\\ 15\\ 4\\ 39\\ 6\\ 62\\ 7\\ 6\\ 43\\ 26\\ 36\\ 44\\ 44\end{array}$

# Table XCVIII.—Uncertified Deaths per Thousand Deaths registered from the same Cause.—1933.

## Table XCIX.—Deaths certified by Coroner after Post Mortem per Thousand Deaths registered from the same Cause—1933.

Inter- national List Number.	Cause of Death.	Total.	Males.	Fe- males.	London.	County Bor- oughs,	Urban Dis tricts.	Rural Dis- tricts.
1- 10 AS 1. 14	All Causes	19	23	16	54	16	16	. 11
1-4445-5556-6970-7475-7778-8990-103104-114115-129130-139	Infectious and parasitic diseases Cancer and other tumours General diseases Diseases of the blood, &c Chronic poisoning Diseases of nervous system , , , circulatory ,, , , , respiratory ,, , , , digestive ,, Non-venereal genito-urinary dis- eases Males	8 5 13 8 35 16 38 24 19 15	10 6 19 9 39 18 49 26 21	6 5 10 8 27 14 27 21 17	29 20 28 23 0 47 96 66 54	6 4 13 7 23 13 32 21 13	$ \begin{array}{c} 6 \\ 4 \\ 11 \\ 6 \\ 75 \\ 14 \\ 32 \\ 18 \\ 16 \\ 12 \\ \end{array} $	4 9 8 
	Females	$\begin{vmatrix} 15\\21 \end{vmatrix}$	15	21	$   \frac{41}{69}$	13 21	12	999

# Table XCIX (continued).

A CONTRACT OF THE OWNER		A state of the second	Lenne Berne and	A STATE OF A STATE	12 Children La	and the second of the		able was a ferre
Inter- national List Number.	Cause of Death.	Total.	Males.	Fe- males.	London	County Bor- oughs.	Urban Dis- tricts.	Rural Dis- tricts.
140-150	Diseases of pregnancy, childbirth, &c.	39	1	1 39	1 115	35	34	24
151-153		9	12	6	37	7	5	44
154-156	honor fra	9	7	11	34	6	3	7
157	C	32	33	30	131	15	30	24
158-161	Discourse of seal i fe	13	12			13		
162	Old age	AND A CONTRACT OF		14	32		12 0	7
163-198	Dootha from miclones	$\frac{1}{2}$		1	4	1.		
199-200	T11 1.C 1 1.	21	30	1	1	1	2	2
199-200	Ill defined diseases	21	30	10	43	20	24	17
		No West	R. State	100 30	T CREAKE		CITAL OF	AND THE
10	Diphtheria	8	9	6	25	6	3	6
11	Influenza	6	6	5	28	4	3	3
23	Respiratory tuberculosis	8	10	6	27	6	6	4
34	Syphilis	50	49	51	144	36	24	29
45-53	Cancer	4	5	4	18	3	3	2
67	Diseases of the thymus	.549	550	547	385	643	528	484
79	Meningitis	38	44	28	128	32	32	24
82	Cerebral hæmorrhage, &c.	16	18	14	56	13	14	10
86	Infantile convulsions	32	24	43	32	42	32	14
89	Diseases of ear, mastoid	27	32	21	83	10	26	23
90	Pericarditis	201	187	226	316	217	164	160
92	Valvular disease of heart	38	51	28	107	36	32	22
93 (b) 1	Fatty heart	247.	316	192	399	228	246	217
93(b) 2,3,(c)		14	17	11	28	11	13	9
94	Angina pectoris	183	197	152	462	151	131	104
96	Aneurysm	250	216	326	428	214	207	161
97 (1) (2)	Arterio sclerosis with cerebral-vas-			States and				
State Conversion	cular lesion	14	15	13	64	12	9	3
97 (3)	Arterio sclerosis without cerebral-				A MARSHA	and and the		
A COLORIDA	vascular lesion	17	20	14	47	13	16	12
107-9	Pneumonia (all forms)	34	36	31	86	31	25	20
111	Congestion and infarct of lung	62	92	39	25	55	89	67
114(a)	Chronic interstitial pneumonia	20	24	0		-	25	51
117	Ulcer of stomach or duodenum	26	23	36	69	18	14	25
122	Hernia	22	26	18	76	12	18	14
128	Diseases of the pancreas	68	85	53	236	33	63	40
131	Chronic nephritis	25	25	24	63	23	18	14
158	Congenital debility	15	12	21	35	11	16	16
159	Premature birth	6	6	5	16	6	4	3
160	Injury at birth	30	27	35	49	26	41	8
161 (a)	Atelectasis	49	44	57	98	64	33	24
161 (b)	Icterus neonatorum	27	21	37	77	30	19	15
	and the same that is the same of the same				1 States and			Mar Internet

Table C.—Deaths certified by Coroner after Inquest or after Post Mortem without Inquest and Uncertified Causes of Death—Cases per cent. of Total Deaths from all causes registered at the same age—1933.

				Certified by Coroners.					
			A	fter Inques	After	Un- certified			
			Total.	Deaths from Disease.	Deaths from Violence.	P.M. without Inquest.	Cases.		
All ages	82.00 •••	1.4.11	6.3	1.8	4.5	1.9	1.0		
0 1 5 15 25 35 45 55 65 75 and up	··· ·· ·· ·· ··	··· ··· ··· ··· ··· ···	$   \begin{array}{r}     3 \cdot 5 \\     8 \cdot 4 \\     16 \cdot 4 \\     17 \cdot 5 \\     14 \cdot 2 \\     10 \cdot 7 \\     8 \cdot 7 \\     6 \cdot 5 \\     4 \cdot 0 \\     2 \cdot 9   \end{array} $	$     \begin{array}{r}       1 \cdot 7 \\       1 \cdot 7 \\       3 \cdot 7 \\       2 \cdot 4 \\       2 \cdot 7 \\       3 \cdot 0 \\       2 \cdot 8 \\       2 \cdot 4 \\       1 \cdot 6 \\       0 \cdot 8 \\     \end{array} $	$     \begin{array}{r}       1 \cdot 8 \\       6 \cdot 7 \\       12 \cdot 7 \\       15 \cdot 1 \\       11 \cdot 5 \\       7 \cdot 7 \\       5 \cdot 9 \\       4 \cdot 1 \\       2 \cdot 4 \\       2 \cdot 1     \end{array} $	$ \begin{array}{r} 2 \cdot 2 \\ 1 \cdot 5 \\ 2 \cdot 0 \\ 1 \cdot 4 \\ 1 \cdot 6 \\ 2 \cdot 3 \\ 2 \cdot 8 \\ 2 \cdot 7 \\ 2 \cdot 0 \\ 1 \cdot 0 \\ \end{array} $	$ \begin{array}{c} 1 \cdot 5 \\ 0 \cdot 5 \\ 0 \cdot 7 \\ 0 \cdot 3 \\ 0 \cdot 3 \\ 0 \cdot 5 \\ 0 \cdot 8 \\ 1 \cdot 1 \\ 1 \cdot 2 \\ 0 \cdot 9 \end{array} $		

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Under the title of "Medical Certification" a section has been included in each year's Statistical Review since 1928 inclusive, dealing with the extent to which the certification of a death by a medical practitioner is conditioned by the fact of his having seen the body of the deceased person either after death or within a reasonable period before the date of death. The circumstances under which it was arranged to include statistics on this subject were set out in the 1928 report, and figures for that year were given with a special degree of elaboration intended to serve as a datum line for comparison with any future occasion on which similarly full examination might be made. Since then, abridged summaries have appeared in each Statistical Review from 1929 to 1932, and on this, the sixth occasion the analysis has been extended to cover the fuller circumstances dealt with in the original reference of 1928.

It will be borne in mind throughout that the Regulations require a death to be reported to the Coroner if the medical attendant certifying the cause of death had seen the deceased neither after death nor within 14 days before death.

Table CI provides a comparative statement in regard to the immediate question upon which the figures are more specifically intended to bear, viz., the extent to which death registration and burial take place on the strength of the certificate of a medical attendant who has seen the body of the deceased after death. In any statistical analysis it is necessary for all practical purposes to group with such cases those where the death was the subject of a Coroner's inquest or post mortem examination, or came under review by a Coroner prior to registration and burial. These cases are, therefore, included under the head of "seen."

### Table CI.—Summary of Certification of Deaths Registered, 1928 and 1933.

	Registered Medical		Inquest or Coroner's P.M. without		Other Cases reviewed by		Total Deaths registered.				
	Practi	Practitioner.		Inquest.		Coroner.*		Number.		Percentage.	
	1928.	1933.	1928.	1933	1928.	1933.	1928.	1933.	1928.	1933.	
Seen after Death Not seen after Death No statement	183,062 223,519 2,108	211,062 228,839 929	37,716	40,919	13,984	14,716	234,762 223,519 2,108	266,697 228,839 929	51.0 48.5 0.5	53·7 46·1 0·2	
Total	408,689	440,830	37,716	40,919	13,984	14,716	460,389	496,465	100.0	100.0	

\* Includes all deaths of inmates of Mental Hospitals not subject to Inquest or Coroner's P.M. (9,406 in 1928 and 9,988 in 1933), and also all deaths without certificate of registered medical practitioner in attendance 4,578 in 1928 and 4,728 in 1933) where coroner decided to hold no inquest or P.M.

It will be observed that in 1933 the proportion of "seen" cases was 53.7 per cent. of the total deaths registered as compared with 51.0 per cent. five years ago. The figures have been subject to slight irregularity over the intervening period, the percentages for 1929 to 1932 being 49.7, 52.0, 51.8 and 52.7 respectively, but on the whole the advance, if slow, has been in a favourable direction.

The improvement in the proportion of "seen" cases is, of course, complemented by a decline in the "not seens," which stood in 1933 at  $46 \cdot 1$  per cent. of the total. But, as was explained in 1928, this apparently high percentage requires important qualification in view of the varying circumstances it embraces. In the following table the "not seen" cases are analysed according to the interval between death and the time last seen alive by the certifying medical practitioner.

### Table CII.--- "Not Seen " after Death-Interval between Death and Date when last seen alive-1928 and 1933.

no arrended hun utilie. ertificate required would		e of Deaths Seen.''		ge of total aths.	
he decarsed alter deatur	1928.	1933.	1928.	1933.	
Same day 1 day before 2 days before 3–6 days before 7 or more days before	$\begin{array}{c} 44 \cdot 1 \\ 39 \cdot 6 \\ 8 \cdot 0 \\ 6 \cdot 3 \\ 2 \cdot 0 \end{array}$	$ \begin{array}{r} 45 \cdot 4 \\ 40 \cdot 0 \\ 7 \cdot 6 \\ 5 \cdot 6 \\ 1 \cdot 4 \end{array} $	$21 \cdot 4 \\ 19 \cdot 2 \\ 3 \cdot 9 \\ 3 \cdot 1 \\ 0 \cdot 9$	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	
Total seen after death or seen death Total seen after death or seen death Total seen after death or seen death	alive withi	n 1 day of	$72 \cdot 4$ 91 \cdot 6 95 \cdot 5	74·7 93·1 96·6	

The distribution of the "not seens" according to the interval categories used in the table is very similar in the two years compared. but such change as is disclosed may be said to be favourable rather than otherwise, since the proportions at the shorter durations have increased, and those at the longer intervals declined. In 45.4 per cent. of the "not seen" cases of 1933 the deceased was actually seen on the very day of death, and in another 40.0 per cent. on the day before. Many of those seen on the day before death must, of course, have been seen within a few hours only of death since the day runs from midnight to midnight. It thus becomes clear that of the 228,839 deaths returned in Table CI as "not seen," in 85.4 per cent., or 195,410 cases, the deceased was seen alive by the medical

attendant on the day of death or the day before, and if these cases, representing  $39 \cdot 4$  per cent. of the total deaths, are added to those seen after death, as conforming to a standard which satisfies reasonable requirements, the proportion of such cases is increased to  $93 \cdot 1$ per cent. as compared with  $91 \cdot 6$  per cent. in 1928. Further, if those seen alive within two days of death are added, the total is increased to  $96 \cdot 6$  per cent. ( $95 \cdot 5$  in 1928).

A further circumstance which is of importance in the consideration of the 228,839 cases returned as "not seen" after death lies in the fact that a substantial portion, viz., 75,815, were in respect of deaths which occurred in hospitals and other residential institutions. Such grounds of dissatisfaction as may be felt in regard to the less satisfactory types of certification can hardly apply to the case of deaths under the care and organised attention which is afforded in the institutions in question. The statutory certificate of cause of death must be given by the practitioner in attendance upon the deceased during his last illness, and where in the course of institutional routine the deceased is seen after death by some other practitioner than the practitioner who attended him in life, the latter, who should normally give the certificate required, would be unable to certify that he had seen the deceased after death.

The following table compares the incidence of the "not seens" in institutions and in private practice :—

Table	CIII.—Proportion	of "Not Seens"	'' (Coroners'	Cases and "No
	State	ment " cases excl	luded).	

	Public Assistance Institutions.	Voluntary Hospitals.	Public Assistance Institutions and Voluntary Hospitals combined.	Private Practice.
1928 1929 1930	Per cent. $63 \cdot 6$ $65 \cdot 8$ $65 \cdot 2$	Per cent. $30 \cdot 2$ $30 \cdot 2$ $29 \cdot 7$	$ \begin{array}{ c c c } Per cent. \\                                    $	$\begin{array}{c} \text{Per cent.} \\ 57 \cdot 3 \\ 58 \cdot 0 \\ 56 \cdot 0 \end{array}$
1931           1932           1933	$     \begin{array}{r}       65 \cdot 4 \\       65 \cdot 2 \\       67 \cdot 3     \end{array}   $	$29 \cdot 6$ $29 \cdot 8$ $39 \cdot 2$	$50 \cdot 4$ $50 \cdot 4$ $49 \cdot 4$	$55 \cdot 7$ $54 \cdot 6$ $53 \cdot 4$

Beyond the fact that the proportions shown for Public Assistance Institutions have been about double those for Voluntary Hospitals over the whole period, and that the excess has tended to increase rather than diminish, the 1933 record cannot properly be compared with those of preceding years owing to the fact that many infirmaries and other former Public Assistance Institutions which have been appropriated to Public Health Act or Maternity and Child Welfare purposes have now been transferred to the Voluntary Hospitals group. When the two categories are combined so as to eliminate the effect of transfers between them the institution proportion of "not seens," viz.,  $49 \cdot 4$  per cent. in 1933, is shown to be practically the same as it was in 1928, whereas the corresponding percentage assigned to private practice shows a fall from 57.3 to 53.4 during the same period.

When, however, the interval between death and the date last seen alive is taken into account, the differences suggested by the preceding table are considerably modified, as is shown by the following analysis :—

Table CIV.—Comparative Analysis of Proportions for Institutions and Private Practice of Cases ''Seen '' after Death and ''Not Seen '' after Death, but seen alive within Two Days of Date of Death (Coroners' Cases excluded), 1928 and 1933.

	Public Assistance Institutions.			Voluntary Hospitals.		Public Assistance Institutions and Voluntary Hospitals combined.		Private Practice.	
	1928.	1933.	1928.	1933.	1928.	1933.	1928.	1933.	
Seen after Death Seen alive on day of	36.4	32.7	69.8	60.8	50.7	50.6	42.7	46.6	
Death	33.6	$34 \cdot 0$	17.6	22.9	26.8	26.9	23.1	21.9	
Death	26.5	$28 \cdot 0$	11 · 1	14.9	19.9	19.7	$22 \cdot 6$	21.4	
Total	96.5	94.7	98.5	98.6	97.4	97.2	88.4	89.9	
Seen alive two days before Death Total seen after Death or seen alive within two	2.3	3.7	0.9	0.8	1.7	1.9	5.5	5.1	
days of date of Death (though not seen after Death)	98.8	98.4	99.4	99.4	99.1	99.1	93.9	95.0	

In respect of regional or district comparisons, the institution element is so frequently influenced by the practice of individual large institutions that local figures are of little relative value. The

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records from private practice are free from this disability, and it is interesting to observe that the proportions of "seen" cases are highest in London, where they reach  $69 \cdot 5$  per cent., and in neighbouring South Eastern Counties with percentages usually in excess of 60, whereas at the other extreme in the Northern Counties of Wales the figure falls below 30 per cent. With minor exceptions the local variations are much the same now as they were in 1928, though usually at an improved level, as is partially illustrated in the following table giving the proportions for certain Registration "Counties" (or aggregates of such "Counties") in which the percentage of "seen" in private practice is below 40. The figures are obtainable only by reference to existing registration units of area, and cannot, it is regretted, be given under present conditions for administrative areas.

### Table CV.—Registration Sub-divisions in which the percentage of "Seen" Cases in Private Practice in 1933 was under 40.

Registration Sub-Division	Counties comprised in the Registration Sub-division.	Percentage of "Seen" cases.		
Regis Sub-J	The second s	1933.	1928.	
XI b	Cardiganshire, Brecknockshire, Radnorshire, Montgomery-			
	shire, Flintshire, Denbighshire, Merionethshire, Caer-	27.3	25.2	
	narvonshire and Anglesey	29.7	28.2	
VI b	Staffordshire	34.3	32.7	
VII a XI a	Monmouthshire, Glamorganshire, Carmarthenshire and	CALIFORNIA CONTRACTOR	icursie .	
AI a	Pembrokeshire	35.0	34.7	
VII b	Nottinghamshire and Derbyshire	35.4	33.5	
VIC	Worcestershire	35.5	32.1	
VIII c	Lancashire (part of), viz. : Unions of Wigan, Warrington,			
	Leigh, Bolton, Bury and Barton-upon-Irwell	36.1	35.0	
Xa	Durham	37.2	34.2	
IX c	Yorkshire (part of), viz.: Unions of Wakefield, Pontefract, Hemsworth, Barnsley, Penistone, Wortley, Shefield, Tod	dn my svilu	863 109%	
	Rotherham, Doncaster, Thorne, Goole, Selby and Tad-	37.7	33.3	
TTLL	caster	38.7	34.5	
IV b III b	Norfolk	1		
111 0	Cambridgeshire	39.1	34.0	

It will be observed from Table CI that the "No Statement" cases have diminished from 2,108 in 1928 to 929 in 1933, and now represent 2 per 1,000 of the total deaths registered. The decline in this unsatisfactory class has been progressive over practically the whole period, but its disappearance has not been quite so rapid or complete as had been originally anticipated. Nearly 60 per cent. of the current cases relate to institution deaths where their continued existence is of less significance in so far as they arise from the special circumstances attending institution certification which have already

been referred to, and it is more gratifying to note that the fall has been relatively greater amongst private practice certifications where the current 395 omissions are now but little more than 1 per 1,000 of the total deaths certified.

### Table CVI.—Number of "Not Stated" Cases in Institutions and in Private Practice, 1928-1933.

Year.	Institutions.	Private Practice.	Total.	
1928            1929            1930            1931            1932            1933	1,091 670 692 721 390 534	1,017 1,041 645 488 218 395	$2,108 \\ 1,711 \\ 1,337 \\ 1,209 \\ 608 \\ 929$	

### POPULATION.

The total population of England and Wales as at the 30th June, 1933, has been estimated at 40,350,000 persons, 19,357,000 being males and 20,993,000 females.

The current year's total is 149,000 in excess of the corresponding mid-1932 estimate and represents an estimated rate of growth of 0.37 per cent. per annum during the past year, a figure which may be compared with the 10-year increases of 5.53 per cent. and 4.93 per cent. recorded in respect of the decennia 1921–31 and 1911–21 respectively. (See General Tables Volume Census, 1931, Table I.)

The method adopted in arriving at the current estimates is that which has been used with apparent success in past periods and consists of taking the 1931 Census as a starting point, adding the births and immigrants and deducting deaths and emigrants between the date of the Census and the 30th June, 1933. Of the elements entering into the computation, the records of births and deaths are believed to be precise and complete, so that such estimation error as may be inherent in the final result may be regarded as attaching almost wholly to the allowances included in respect of migration. For the latter, recourse is had to the statistics of migration periodically compiled by the Board of Trade and to departmental records of the movements of the Defence Forces; these are incomplete however, in that they afford no guide to the passenger traffic between the several countries of the United Kingdom nor to the possible effect on the home population of changes in the personnel of the mercantile marine, the allowance for which is a matter of judgment based upon past experience qualified as may seem to be required by current conditions. The error to which the population estimates are subject is one which may be expected to grow in degree as the preceding census becomes more remote.

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The mid-1933 population estimate of 40,350,000 is some 398,000 in excess of the 1931 census figure, of which excess about 264,000 may be assigned to natural increase, leaving 134,000 to be ascribed to the miscellaneous movements summed up in the term migration. It is of interest to observe (from Part II of the Statistical Review Table S) that the net balance of migration which for several decades has, on the whole, been consistently outward in character, appears since about 1930, to have shown a definite inward tendency, thus affording some numerical compensation for the continued decline in the numbers of births.

Age Distribution.—The estimated sex-age distribution of the national population, shown in Table 1 of Part I of the Tables section of this volume, has been obtained from a revised 1932 distribution based on graduated census figures by the survivorship method customarily adopted for the purpose; this briefly consists of (1) obtaining the year's deaths arising from the population at each age in 1932, and treating the survivors as the population at the next higher age in 1933, (2) completing the table by the addition of the population aged 0–1, represented by the survivors at the middle of 1933 of the births occurring between the middle of 1932 and the middle of 1933, and (3) adjusting the results of these two operations in respect of the balance of population movement in accordance with such age statistics as are available in respect thereof.

The average ages of the mid-1933 population according to the estimated age distribution are  $32 \cdot 2$  and  $33 \cdot 9$  for males and females respectively, figures which compare with averages of  $31 \cdot 8$  and  $33 \cdot 5$  in 1931 or 29.9 and  $31 \cdot 2$  in 1921.

**Local Populations.**—The 1933 estimates of the populations of all Boroughs, Urban Districts and Rural Districts in England and Wales are shown in Table 17 of Part I and Table E of Part II of the Tables section of the current Annual Review.

As for the country as a whole, so for each of the component areas within the country the present mid-year estimate has been obtained by estimating the local movement which has taken place since the date of the 1931 census and modifying the 1931 position in respect of such movement. It may be mentioned that the local estimates purport to represent the resident populations of the several areas and are, in this respect, different from census populations as generally understood in this country, which consist simply of the persons enumerated in the several areas on census night, whether resident in the area of enumeration or not.

The principles and procedure governing the identification of the basic 1931 resident population and the estimation of the changes in that population which have taken place since 1931 are similar in all general respects to those adopted for the purpose of the 1932 estimates and for their fuller discussion reference may be made to the population section of the text portion of the Annual Review for 1932.

Non-Civilian Populations.—The merging of non-civilian and civilian deaths in the local mortality records from 1932 onwards has rendered unnecessary the identification of civilian apart from total populations, and the former, shown prior to 1932 in footnotes to Tables 17 and E, are accordingly now omitted.

Institutions.—In the Census classification of population according to residence, the populations of institutions, e.g., Public Assistance Institutions, Infirmaries, Hospitals, Mental Institutions, etc., were dispersed to their home areas where it was anticipated that they would be discharged within a period of six months; otherwise they were retained in the Institution area. This convention is reflected in the current population estimates but is not precisely identical with the procedure in the areal classification of deaths where it is customary to transfer all institution deaths to former area of residence (if known) irrespectively of the time spent in the Institution.

Local Age Distributions.—Sex and age distributions for large geographical regions of the country, which formerly appeared in the text portion of the Review, are now shown in Table 2 of Part I. The populations at ages under five were obtained by the survivorship method (see page 164), and for later ages the predetermined total populations, obtained as described in the preceding section, were distributed in accordance with the recent census age and sex distribution of the unit, the resulting figures being thereafter modified to allow for the slight change between the date of the Census and the middle of the year (1933) in the age distribution of the total population of the country.

**United Kingdom and Irish Free State.**—The populations of each of the countries of the United Kingdom and of the Irish Free State as estimated by their respective Registrars-General, are shown for each year from 1894 in Table A.

### MARRIAGES

The marriages registered in England and Wales during the year 1933 numbered 318,191, corresponding to a rate of  $15 \cdot 8$  persons married per 1,000 of the population of all ages and conditions. The number so registered is 11,007, or  $3 \cdot 58$  per cent. more than the number registered in 1932, and apart from the year 1915 and the years immediately following the war, 1919–1921, is the largest number in any year since the commencement of civil registration in 1837. (See Tables B and C.)

The preference for the third quarter, noticeable in the records since the beginning of the present century, was maintained in 1933, the marriages in this period being  $32 \cdot 4$  per cent. of the total, while the fourth, formerly the outstanding favourite, now ranks third out of the four. The rate for the first quarter,  $8 \cdot 9$  persons

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married per 1,000 population, was lower than in any first quarter since 1837, and the actual number of marriages, 44,298, lower than in any first quarter since 1901. The proportion of marriages contracted in the first quarter was only 13.9 per cent. of the total.

In the following table (CVII) the marriages of a series of years are compared with the unmarried population at all ages over 15. By eliminating the progressively falling proportion of children under 15 from the population at risk, the rates of recent years are scaled down slightly in relation to those of earlier periods, but the principal interest of the table is in showing the difference in the course of the rates as between the two sexes. The actual difference between the male and female ratios is of course due to the inequality of the numbers of unmarried men and women in the population, and since the former have always been in a minority—which has been unduly exaggerated as a result of the

### Table CVII.—Annual Number of Marriages of Men and Women per 1,000 Unmarried Population of each Sex aged 15 and over, 1871–1933.

NOTE.—For the census years 1871 to 1931 the annual numbers of marriages have been taken as the average of the three years about each census. From 1920 the rates for individual years are shown.

Year.	Bachelors, Widowers, Spinsters and Widows.	Bachelors and Widowers.	Spinsters and Widows.		
1871	57.2	62.3	52.9		
1881	51.5	56.0	47.6		
1891	49.8	54.6	45.7		
1901	48.7	53.5	44.7		
1911	46.3	50.8	42.5		
1921	$54 \cdot 1$	62.7	47.6		
1931	46.7	53.3	41.5		
1000	01.7	ni Leggigen a	The mannage		
1920	61.7	$71 \cdot 5$ $60 \cdot 4$	$54 \cdot 7$ $45 \cdot 8$		
1921	$52 \cdot 1$ $48 \cdot 2$	55.8	43.8		
1922	48.2 46.6	53.9	42.5		
1923 1924	46.6	53.6	41.1		
1005	46.2	53.3	40.9		
10.00	43.4	50.0	38.3		
1007	47.5	54.8	41.9		
1000	46.4	53.7	40.9		
1928	47.7	55.2	41.9		
1020	47.8	55.6	42.0		
1930	46.8	53.4	41.6		
1932	46.1	52.6	41.1		
1933	48.1	54.9	42.8		
PROFILE B. B. C. P. P.	up had sui tui	form, The much	sub to ine built		

war—it is their numbers which primarily determine the marriageability of the population, so that, from one point of view, the male ratios may be regarded as providing the better indexes to the variations which have occurred from time to time in the incidence of marriage. In Table C (Part II), the series is taken back to 1893.

Fluctuations of the general Marriage-rate in different Sections of the Country.—In Table CVIII comparison is made of the year's marriages and marriage-rates in large geographical sections of the country, and an analysis of the rates in regions and counties is shown in Table F.

The determination of marriage-rates for localities is not wholly satisfactory. In a large proportion of cases the district of registration is the district of residence of only one of the parties and in some cases of neither. This difficulty, however, is probably of less moment in comparisons between large sections of the country than between smaller areas.

Among males, the highest frequencies occur in North III and Midland II, which retain the position they held in 1932, but in reverse order. Among females the highest places are occupied by Wales I and North I. The lowest frequency, for both males and females, is recorded in Wales II.

From the analysis in Table F it will be seen that, among the counties there compared, the 1933 marriage-rate was highest in

	Ratio of un- married males	Rate per 1,000 Unmarried Population aged 15 and over.				Ratio of local rate to England and Wales rate (taken as 1,000).			
Area.	per 1,000 un- married females	1932.		19	33.	19	932.	1933.	
2005 million anna Mittant Angalain 1980 - Albania	aged 15 and over (Census 1931).	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
England and Wales. South-East North I North II North III Midland I Midland I Midland I I East South-West Wales I Wales II	778 711 796 959 866 794 736 807 797 826 878 743 986 1,060 833	52.6 $53.7$ $52.8$ $50.5$ $47.1$ $55.9$ $53.2$ $54.2$ $54.2$ $53.3$ $56.0$ $48.0$ $50.7$ $46.5$ $48.4$	$\begin{array}{c} 41 \cdot 1 \\ 38 \cdot 3 \\ 42 \cdot 2 \\ 48 \cdot 7 \\ 40 \cdot 9 \\ 44 \cdot 6 \\ 39 \cdot 3 \\ 43 \cdot 9 \\ 42 \cdot 7 \\ 46 \cdot 4 \\ 42 \cdot 3 \\ 37 \cdot 8 \\ 46 \cdot 0 \\ 51 \cdot 6 \\ 51 \cdot 6 \\ 34 \cdot 6 \end{array}$	$54 \cdot 9$ $56 \cdot 3$ $55 \cdot 1$ $54 \cdot 1$ $48 \cdot 1$ $57 \cdot 9$ $55 \cdot 5$ $56 \cdot 3$ $57 \cdot 1$ $50 \cdot 6$ $51 \cdot 5$ $49 \cdot 0$ $51 \cdot 5$ $42 \cdot 3$	$\begin{array}{c} 42 \cdot 8 \\ 40 \cdot 2 \\ 44 \cdot 0 \\ 52 \cdot 1 \\ 41 \cdot 9 \\ 46 \cdot 2 \\ 41 \cdot 0 \\ 45 \cdot 6 \\ 44 \cdot 7 \\ 47 \cdot 3 \\ 44 \cdot 6 \\ 38 \cdot 4 \\ 48 \cdot 5 \\ 54 \cdot 9 \\ 35 \cdot 4 \end{array}$	1,000 1,021 1,004 960 895 1,063 1,011 1,030 1,015 913 964 884 920 787	1,000 932 1,027 1,185 995 1,085 1,085 1,068 1,068 1,068 1,029 920 1,129 1,029 920 1,119 1,256 842	1,000 1,026 1,004 985 876 1,055 1,011 1,026 1,018 1,040 922 938 893 938 893 970	1,000 939 1,028 1,217 979 1,079 958 1,065 1,042 1,105 1,042 897 1,133 1,283 827

Table CVIII.—Marriage-rate per 1,000 Unmarried Population aged 15 and over in Geographical Sections of the Country.\*—1932 and 1933.

\* For the constitution of the several sections, see page 6.

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London, where it exceeded the mean for the country by 20.3 per cent. followed in order by Bedfordshire, Glamorganshire, Warwickshire and the West Riding of Yorkshire, with excesses ranging from 2.5 to 4.4 per cent. The lowest rates occur in Wales where the counties of Anglesey, Cardigan, Merioneth, Montgomery and Radnor all return lower rates than any among the English counties.

The City of London returns a rate nearly four-and-a-half times as high as the average, and of the Metropolitan Boroughs several have high rates, notably Holborn and Westminster, where rates more than twice the average are found. Such rates give support to the belief that many persons who usually live in the provinces or abroad come to London to be married. At the census of 1931 these three areas returned higher proportions of population living in hotels, boarding-houses, etc., than any of the other Metropolitan Boroughs. Only three of the Metropolitan Boroughs— Bethnal Green, Lewisham and Stoke Newington—have rates which are lower than the average for England and Wales. Among the county boroughs distinguished, the highest rates occur in Leicester, Reading and Brighton, and the lowest in Barrow-in-Furness and Canterbury.

Marriage rates by ages, which provide a more exact statement of the incidence and intensity of marriage than the aggregate rates just considered, are shown in Table CIX. The rates for 1871 to 1931, being based on enumerated populations, are liable to rather smaller errors than those for 1932 and 1933 which are based on post-censal estimates of population.

It will be observed from the last column of Table CIX, which compares the actual marriages of each year with a standard number, viz., those expected according to the age rates of 1921, and which makes allowance, therefore, for the changing age constitution of the unmarried population, that of the four sections distinguished, bachelors, widowers, spinsters and widows, the 1933 frequencies are all lower than those of 1921, the percentages to the 1921 frequencies being, in order, spinsters 99.6, widowers 84.8, bachelors 82.9, and widows 70.5. On this basis of comparison the marriage frequency among bachelors is higher than in 1901 but lower than in previous years; that for widowers lies between the ratios of 1901 and 1911; that for spinsters lies between the ratios of 1881 and 1891; while that for widows differs only slightly from the ratio of 1932, and is much lower than any previously recorded for this class in the table.

From the age analysis shown in the earlier columns of Table CIX, it will be seen that the 1933 rates for all four sections have decreased as compared with those for 1921 in all age-groups from 20 to 55 (except for spinsters, aged 25–35), and that the decrease among bachelors, widowers and widows is continued into the final group, age 55 and over. The only noteworthy increase occurs among spinsters under 20 years of age. The maintenance of

the marriage-rate of young spinsters at a point well in excess of the corresponding rates of pre-war years has been a feature of the returns of recent years. With both bachelors and spinsters, the

### Table CIX. — Annual Marriage-rate per 1,000 Bachelors, Widowers, Spinsters and Widows respectively at each of several Age Periods, 1871–1933.

Note.—Prior to 1921 the annual numbers of marriages have been taken as the average of the three years about each Census.

Y	ear.	nrisse murisse nghon, decre	Annual	marriage-i age	rate per 1 group.	h	Marriage rate per 1,000 popula- tion over	Ratio to corre- sponding rate	Marriage rate which would have resulted had the 1921	of actual marriage rate (Col. 8) to	
	104 103 104	15—	20—	25—	35—	45	55 and over.	15 in each class.	for 1921.	age rates been in opera- tion.	rate in previous column (10).
(	1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
		9136	ILISO -	01 2 24	B	ACHELO	RS.	Ine or		100	and B
1871 1881 1891 1901 1911 1921 1931		$ \begin{array}{c} 6 \cdot 0 \\ 4 \cdot 6 \\ 3 \cdot 1 \\ 2 \cdot 5 \\ 2 \cdot 2 \\ 3 \cdot 4 \\ 3 \cdot 3 \end{array} $	$\begin{array}{c} 122 \cdot 4 \\ 106 \cdot 8 \\ 94 \cdot 7 \\ 85 \cdot 9 \\ 74 \cdot 8 \\ 94 \cdot 4 \\ 72 \cdot 3 \end{array}$	$\begin{array}{c c} 119 \cdot 3 \\ 112 \cdot 4 \\ 122 \cdot 4 \\ 123 \cdot 7 \\ 120 \cdot 6 \\ 161 \cdot 1 \\ 140 \cdot 3 \end{array}$	$\begin{array}{r} 43 \cdot 3 \\ 40 \cdot 5 \\ 43 \cdot 4 \\ 44 \cdot 2 \\ 44 \cdot 4 \\ 61 \cdot 6 \\ 52 \cdot 7 \end{array}$	$\begin{array}{c cccc} 15 \cdot 3 \\ 14 \cdot 3 \\ 15 \cdot 2 \\ 14 \cdot 6 \\ 14 \cdot 9 \\ 19 \cdot 7 \\ 18 \cdot 1 \end{array}$	$ \begin{array}{c c} 3 \cdot 2 \\ 3 \cdot 0 \\ 3 \cdot 5 \\ 3 \cdot 3 \\ 3 \cdot 9 \\ 5 \cdot 5 \\ 5 \cdot 7 \end{array} $	$\begin{array}{c} 61 \cdot 7 \\ 55 \cdot 7 \\ 54 \cdot 8 \\ 54 \cdot 7 \\ 52 \cdot 6 \\ 62 \cdot 5 \\ 56 \cdot 2 \end{array}$	987 891 877 875 842 1,000 899	62·3 62·4 63·8 66·6 69·2 62·5 67·7	990 893 859 821 760 1,000 830
1932 1933		3·4 3·4	69·7 70·4	136·9 142·2	$51 \cdot 1$ $51 \cdot 3$	16·9 18·3	5·2 5·4	55·5 58·2	888 931	68·7 70·2	808 829
		1979 IN	b ada	501, 907	W	IDOWERS	softe h	areas.	001	10 2	029
1871 1881 1891 1901 1911 1921 1931		$ \begin{array}{c} 11 \cdot 5 \\ 30 \cdot 6 \\ 14 \cdot 1 \\ - \\ 14 \cdot 3 \\ 62 \cdot 5 \end{array} $	$\begin{array}{c} 229 \cdot 0 \\ 192 \cdot 9 \\ 153 \cdot 4 \\ 132 \cdot 6 \\ 121 \cdot 6 \\ 163 \cdot 7 \\ 98 \cdot 1 \end{array}$	$\begin{array}{c} 288\cdot 5\\ 246\cdot 5\\ 231\cdot 7\\ 201\cdot 7\\ 171\cdot 2\\ 229\cdot 3\\ 179\cdot 8\end{array}$	$181 \cdot 5 \\ 157 \cdot 8 \\ 151 \cdot 1 \\ 134 \cdot 1 \\ 117 \cdot 9 \\ 155 \cdot 2 \\ 122 \cdot 3 \\ \end{cases}$	$\begin{array}{c c} 88 \cdot 3 \\ 76 \cdot 9 \\ 74 \cdot 7 \\ 65 \cdot 3 \\ 59 \cdot 4 \\ 73 \cdot 5 \\ 65 \cdot 4 \end{array}$	15.9 16.0 15.5 13.5 12.7 15.8 14.8	$ \begin{array}{r} 65 \cdot 8 \\ 58 \cdot 2 \\ 53 \cdot 4 \\ 44 \cdot 4 \\ 36 \cdot 9 \\ 44 \cdot 6 \\ 33 \cdot 1 \end{array} $	1,475 1,305 1,197 996 827 1,000 742	56.056.053.751.047.444.638.5	1,175 1,039 994 871 778 1,000 860
1932 1933	::	s=/1	$   \begin{array}{c}     103 \cdot 9 \\     95 \cdot 3   \end{array} $	177.6 177.2	124·3 125·6	62·7 64·9	14·0 14·2	31·8 31·9	713	38·1 37·6	835 848
		and the second	V SHOL	1970	SI	PINSTER	Constant Property in the	er and			040
1871 1881 1891 1901 1911 1921 1931	•••••••••••••••••••••••••••••••••••••••	$ \begin{array}{c} 26 \cdot 8 \\ 21 \cdot 5 \\ 16 \cdot 2 \\ 12 \cdot 9 \\ 11 \cdot 2 \\ 14 \cdot 8 \\ 17 \cdot 1 \end{array} $	133.7121.9112.4104.997.7114.4106.9	$\begin{array}{c} 85 \cdot 9 \\ 80 \cdot 6 \\ 85 \cdot 7 \\ 88 \cdot 6 \\ 91 \cdot 1 \\ 100 \cdot 0 \\ 97 \cdot 2 \end{array}$	$   \begin{array}{r}     30 \cdot 4 \\     26 \cdot 3 \\     26 \cdot 4 \\     25 \cdot 3 \\     24 \cdot 4 \\     25 \cdot 6 \\     22 \cdot 3   \end{array} $	$ \begin{array}{c} 11 \cdot 9 \\ 10 \cdot 4 \\ 10 \cdot 3 \\ 9 \cdot 1 \\ 8 \cdot 5 \\ 8 \cdot 9 \\ 8 \cdot 3 \end{array} $	$     \begin{array}{r}       1 \cdot 7 \\       1 \cdot 6 \\       1 \cdot 7 \\       1 \cdot 5 \\       1 \cdot 8 \\       2 \cdot 0 \\       2 \cdot 2     \end{array} $	$\begin{array}{c} 63 \cdot 1 \\ 56 \cdot 9 \\ 54 \cdot 4 \\ 53 \cdot 0 \\ 50 \cdot 6 \\ 54 \cdot 2 \\ 51 \cdot 9 \end{array}$	1,164 1,050 1,004 978 934 1,000 958	55-8 55-8 57-1 58-6 58-0 54-2 53-9	1,131 1,020 953 904 872 1,000 963
1932 1933		17·7 18·7	$   \begin{array}{c c}     105 \cdot 1 \\     109 \cdot 2   \end{array} $	96·4 101·2	$22 \cdot 1$ $22 \cdot 5$	7·8 8·1	$\begin{array}{c c} 2 \cdot 1 \\ 2 \cdot 3 \end{array}$	51.6 54.3	952 1,002	54·1 54·5	954 996
		oq sil	10 1	SS DI	v	VIDOWS.	721 0	The se	24 44	in air	
1881 1891 1901 1911 1921	··· ··· ···	$55 \cdot 4  56 \cdot 6  49 \cdot 3  54 \cdot 9  30 \cdot 0  36 \cdot 1  57 \cdot 1$	$     \begin{array}{r}       170 \cdot 5 \\       155 \cdot 3 \\       150 \cdot 4 \\       140 \cdot 7 \\       151 \cdot 2 \\       191 \cdot 4 \\       140 \cdot 8 \\     \end{array} $	$125 \cdot 5 \\114 \cdot 5 \\114 \cdot 3 \\115 \cdot 9 \\114 \cdot 1 \\120 \cdot 3 \\93 \cdot 0$	$55 \cdot 7  50 \cdot 2  50 \cdot 3  48 \cdot 9  48 \cdot 9  50 \cdot 6  33 \cdot 2$	$\begin{array}{c c} 20 \cdot 8 \\ 18 \cdot 6 \\ 17 \cdot 8 \\ 15 \cdot 6 \\ 15 \cdot 6 \\ 17 \cdot 6 \\ 17 \cdot 6 \\ 13 \cdot 6 \end{array}$	$2 \cdot 6  2 \cdot 6  2 \cdot 4  2 \cdot 1  2 \cdot 1  2 \cdot 5  2 \cdot 2$	$21 \cdot 1 \\ 18 \cdot 2 \\ 16 \cdot 3 \\ 14 \cdot 4 \\ 12 \cdot 5 \\ 18 \cdot 0 \\ 8 \cdot 7$	1,172 1,011 906 800 694 1,000 483	19.6 18.5 16.8 15.6 13.6 18.0 11.7	1,077 984 970 923 919 1,000 744
		14·3 45·5	153·2 137·7	84·8 87·0	31 · 9 32 · 2	$\begin{array}{c}12\cdot 3\\12\cdot 2\end{array}$	$\begin{array}{c c} 2 \cdot 1 \\ 2 \cdot 1 \end{array}$	8·0 7·9	444 439	11·4 11·2	702 705

rates for the age period 25-35, at which practically one-half and one-third respectively of the marriages of these classes take place. are higher than those of any pre-war year shown in the table, while for bachelors the excess extends to all higher ages. For both classes the rates show an increase over those of 1932 at all ages except for bachelors under 20 at which  $3 \cdot 4$  is shown for both years.

Widowers' and widows' rates as compared with 1921 show a consistent fall in all the age divisions identified except widows at 15-20 where the numbers are insignificant. Widowers' rates are largely in excess of the corresponding bachelors' rates, except under 20 years of age, so that it may be said that re-marriages in the case of males are relatively more frequent than first marriages. As compared with 1932, most of the rates are slightly higher, the chief exception being at ages 20-25 where rather substantial decreases occur, but having regard to the small numbers of marriages among those classes at 20-25, the decreases are probably of little significance.

Comparison of the rates for spinsters and widows shows that the latter have the advantage in all age groups except at 25-35 and 55 and over. The age analysis serves to call attention to the misleading nature of the comparison suggested by the aggregate marriages per 1,000 population shown in column 8 of Table CIX; owing to the concentration of the single population at the younger ages where marriages are numerous, and the widowed population at the later ages where they are few, the aggregate rate for the single of each sex appears to be vastly in excess of that of the widowed, whereas, if allowance be made for the difference in their age constitutions, the relative positions are modified and, for all age-groups among males and nearly all age-groups among females, are in favour of the widowed.

Table CX shows how the proportions of first marriages and re-marriages have varied from 1918 to 1933. In 1933 there was a higher proportion of first marriages, and consequently, a lower proportion of re-marriages, than in any of the previous years. This trend is observable for both sexes, and especially for women, since 1919.

Tables L and K, which now appear in Part II of this Review, continue the series shown in previous issues of the Text Volume (Tables LXXXVI and LXXXVII in the volume for 1930). They classify by age the marriages of a number of years, the former giving the mean ages of the persons married in each of the possible combinations and the latter extending the analysis into a number of age-groups. Table K shows that, during the last 45 years or so, the modal age of marriage has tended to increase steadily. In each of the four sections the proportion marrying under 21 years of age has decreased. For bachelors, the most popular age has passed from 21-25 to 25-30, and for widowers, from 35-40 to 50-55; while for spinsters and widows, although the modal group has not changed

-being throughout 21-25 for the former and 35-40 for the latter -the position of the mode has risen within the group. The distribution for 1933 as shown in Table K, and the average ages shown in Table L fluctuate in no significant way from the data of the previous few years.

Table	CX.—Proportions	of	First	Marriages	and	<b>Re-marriages</b>	in
	1,00	O M	arriag	es. 1918-19	33.		

Year,		Me	en.	Women. Bachelors w married.			Widowers who married,		
		Bachelors.	Widowers.	Spinsters.	Widows.	Spinsters.	Widows.	Spinsters.	Widows.
1918 1919 1920	8.8 	901 897 907	99 103 93	894 875 894	106 125 106	837 816 839	64 81 68	57 59 55	42 44 38
1921 1922 1923 1924 1925	*****	911 913 915 916 916	89 87 85 84 84	909 920 929 932 937	91 80 71 68 63	855 866 875 880 884	56 47 40 36 32	54 54 54 53 53	35 33 31 31 31
1926 1927 1928 1929 1930		917 918 921 920 923	83 82 79 80 77	940 942 943 946 949	60 58 57 54 51	887 890 893 894 897	30 28 28 26 25	53 52 50 51 51	30 30 29 29 27
1931 1932 1933	01. 	924 925 926	76 75 74	950 953 954	50 47 46	900 903 904	24 22 22	50 50 50	26 25 24

Table G (Part II, p. 61) shows that more men married at age 25 and more women at age 23 than at any other age. Table ] (Part II, p. 63) shows the ages of husbands and wives in combination. Among those under 25, for whom the data are given by single vears of age, there is a tendency for brides to be about a year younger than bridegrooms.

Marriages of Minors .--- Of the males married during the year, 12,981, or 4.08 per cent., were under the age of 21, and of the females 50,227, or 15.79 per cent., as compared with 4.36 per cent., and 16.04 per cent. last year respectively (see Tables M and CXI). The male rate is lower than any recorded since 1925. Females, who have always greatly outnumbered the males in this class-in the present year the ratio is nearly 4 to 1 -naturally show the highest rates and the greatest changes in the rate; they formed 18.8 per 1,000 of the unmarried and widowed

Year.	Husbands.	Wives.	Year.	Husbands.	Wives.
187680	77.8	217.0	1920	46.8	142.9
1881-85	73.0	215.0	1921	48.2	$149 \cdot 2$
1886–90	63.2	$200 \cdot 2$	1922	44.4	144.4
1891–95	56.2	182.6	1923	42.5	142.9
1896-1900	51.2	168.0	1924	40.4	140.3
1901–05	46.3	153.1	1925	40.6	142.3
1906–10	40.3	139.4	1926	43.3	147.5
1911–15	39.2	136.6	1927	41.4	146.1
1916-20	42.6	133.3	1928	43.5	151.5
1921-25	43.3	143.9	1929	41.8	151.7
1926-30	42.5	150.5	1930	42.6	155.3
1917	41.7	134 · 2	1931	43.5	158.5
1918	42.6	129.0	1932	43.6	160.4
1919	43.7	129.4	1933	40.8	157.9

Table CXI.—Minors Married per 1,000 Marriages at all Ages, 1876–1933.

females aged 15-21 in 1911, were  $26 \cdot 6$  in 1920, and are now  $27 \cdot 1$ , while the corresponding rates for males were  $5 \cdot 5$ ,  $8 \cdot 8$  and  $6 \cdot 8$  per 1,000 respectively (see Table CXII).

Comparative figures are shown in Table CXII for certain years back to 1901, before which the age-group 15–21 was not identified in the population returns; an indication of the trend of youthful marriage-rates in earlier periods may be gained from Table CXI.

### Table CXII.—Annual Marriage-rate per 1,000 Unmarried and Widowed Persons in the age-group 15–21 in 1901, 1911, 1921, 1931 and 1927–33.

Year.		ni enom	Males.	Females.		
		5,12	Rate. Ratio to 1921. Per Cent.		Rate.	Ratio to 1921. Per Cent.
1901	155	6.75	6.7	87	21.6	92
1911			5.5	71	18.8	80
1921	99 N		7.7	100	23.4	100
1931		••	6.7	87	24.8	106
1927			6.0	78	21.6	92
1928	"polito	1	$6 \cdot 2$	81	$22 \cdot 1$	94
1929			6.2	81	23.0	98
1930			6.4	83	$24 \cdot 0$	103
1931	2013.4		6.7	87	24.8	106
1932	F AGO	100.1	6.8	88	25.4	109
1933	800.006		6.8	88	27.1	116

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The proportions of males and females marrying under age are summarised for regions in Table CXIII, and the numbers are stated in Table M. Much of the variation there shown is but a reflex of the incidence of the general marriage-rate (Table CVIII), and regard must necessarily be had to the latter in considering how far the former provides evidence of local custom regarding early marriage. In 1933 the three areas in which the proportion of male minors marrying was highest were, in order, North III, Wales I and Midland II. For females, the corresponding areas were Wales I, North I, and North II.

### Table CXIII.—Marriage-rate of Minors per 1,000 Unmarried Population aged 15–21 in Geographical Sections of the Country, 1932 and 1933.

		19	32.	or classification and	1933.				
Area,	Rate per 1,000 Unmarried Population 15–21.		Ratio of local rate to England and Wales rate taken as 1,000.		Rate per 1,000 Unmarried Population 15–21.		Ratio of local rate to England and Wales rate taken as 1,000.		
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	
England and Wales.	6.8	25.4	1,000	1,000	6.8	27 · 1	1,000	1,000	
South-East	5.9	22.4	868	882	5.7	23.9	838	882	
North I North I North II North IH North IV	7.77.87.58.07.5	$   \begin{array}{r}     27 \cdot 3 \\     34 \cdot 5 \\     29 \cdot 7 \\     28 \cdot 7 \\     23 \cdot 5   \end{array} $	1,132 1,147 1,103 1,176 1,103	1,075 1,358 1,169 1,130 925	7.8 7.1 7.8 8.4 7.8	$28 \cdot 8 \\ 36 \cdot 7 \\ 31 \cdot 7 \\ 29 \cdot 8 \\ 25 \cdot 1$	$1,147 \\1,044 \\1,147 \\1,235 \\1,147$	1,063 1,354 1,170 1,100 926	
Midland Midland I Midland II	$7 \cdot 0$ $6 \cdot 4$ $8 \cdot 0$	$25 \cdot 2 \\ 23 \cdot 5 \\ 28 \cdot 3$	1,029 941 1,176	992 925 1,114	$7 \cdot 4 \\ 7 \cdot 1 \\ 7 \cdot 9$	$27 \cdot 0$ $25 \cdot 8$ $29 \cdot 3$	1,088 1,044 1,162	996 952 1,081	
East	6.8	28.6	1,000	1,126	6.8	31.4	1,000	1,159	
South-West	6.0	25.7	882	1,012	5.6	25.9	824	956	
Wales Wales I Wales II	6.5 7.6 3.3	$31 \cdot 3 \\ 34 \cdot 7 \\ 21 \cdot 8$	956 1,118 485	1,232 1,366 858	$7 \cdot 1 \\ 8 \cdot 0 \\ 4 \cdot 3$	$34 \cdot 4 \\ 38 \cdot 6 \\ 22 \cdot 5$	1,044 1,176 632	1,269 1,424 830	

**Divorces and Remarriages of Divorced Persons.**—The annual numbers of marriages dissolved or annulled are shown in Table O and again in Table CXIV in terms of the persons involved, for each of the past thirteen years and for each quinquennium back to 1876–80.

During the year 1933, 3,934 divorces and 108 annulments were obtained, the number of persons involved being twice these figures, or a total of 4,042 of each sex.

The number of divorces is higher than that recorded in any previous year—though only slightly greater than the earlier record of 1928—and is more than four times as great as in 1916.

From Table CXIV it will be seen that the number of persons who on remarriage described themselves as divorced shows an increase and is greater than the corresponding figure recorded for any earlier year. The regularity and continuity of the analysis generally confirms the incidence of remarriage tendencies in this class, but it should be borne in mind that the numbers may understate the facts owing to misdescription of status in the registers.

The reduction in the number of divorced men and women intermarrying, after a long series of almost continuous increases, is a noteworthy feature.

## Table CXIV.-Annual Number of Persons Divorced, and of Divorced Persons who Remarried, 1876-1933.

		suc		Annua	al Number	r of Divor	ced Person	ns who ren	narried.	
Per	iod.	Number of Persons Divorced.	Total.	Men.	Women.	Divorced men marrying spinsters.	Divorced men marrying widows.	Divorced men and women inter- marrying.	Divorced women marrying bachelors.	Divorced women marrying widowers.
1876-80 1881-85 1886-90 1891-95 1896-1900 1901-05 1906-10 1911-15 1916-20 1921-25 1926-30		554 671 707 744 980 1,126 1,247 1,312 3,115 5,467 6,716	104 128 169 214 345 509 693 820 1,264 3,050 3,917 2,878	56 68 80 110 172 262 356 411 683 1,708 2,128 1,592	48 60 89 104 173 247 337 409 581 1,342 1,789 1,286	42 53 65 89 138 205 276 330 525 1,316 1,662 1,182	12 12 11 15 24 38 53 50 127 295 270 330	4 6 8 12 20 38 54 62 62 194 392 160	31 42 65 75 126 181 253 309 439 976 1,225 939	15 15 20 23 37 47 57 69 111 269 368 267
1921 1922 1923 1924 1925		7,044 5,176 5,334 4,572 5,210	3,374 3,008 2,903 3,088	1,913 1,679 1,627 1,729	1,461 1,329 1,276 1,359	1,457 1,307 1,267 1,367	360 279 275 229	192 186 170 266	1,062 1,002 931 944	303 234 260 282
1926 1927 1928 1929 1930		5,244 6,380 8,036 6,792 7,126	3,124 3,576 4,125 4,427 4,331	$1,710 \\ 1,924 \\ 2,268 \\ 2,408 \\ 2,330$	1,414 1,652 1,857 2,019 2,001	$1,325 \\ 1,509 \\ 1,764 \\ 1,886 \\ 1,826$	231 244 302 307 267	308 342 404 430 474	995 1,133 1,299 1,357 1,342	265 348 356 447 422
1931 1932 1933		7,528 7,788 8,084	4,668 4,824 5,068	2,517 2,537 2,747	2,151 2,287 2,321	1,963 2,011 2,135	299 259 318	510 534 294	1,456 1,539 1,571	440 481 456

In Table P are given certain particulars concerning the marriages in respect of which suits for dissolution or annulment were commenced during the year. 3,723 petitions were filed at the Principal Registry in London and 1,072 at 38 District Registries. In respect of the petitions filed at the Principal Registry in London it will be seen that the most frequent duration of marriage at the date of the commencement of the proceedings is from 5-10 years with an average of 223 for each of those years of duration, but the maximum is not of particular significance, for this period only accounts for 30 per cent. of the cases, there being 17 per cent. of shorter duration, while in 53 per cent. the marriages have subsisted

for 10 years or more. Forty-one per cent. of the marriages in question were childless, and in a further 31 per cent. there was one child only. These figures are substantially similar to those recorded in 1931 and 1932.

Buildings in which Marriages may be Solemnized.-At the end of the year 1933 the numbers of churches or chapels of the Established Church and of the Church in Wales and of registered buildings in which marriages could be legally solemnized, were as follows :---

	Increase per cent. since 1921.
Established Church and Church in	mint de trans
Wales 16,472	2.0
All other religious denominations 20,706	14.4
Total 37,178	8.5

The increase upon the numbers at the end of the previous year was :---Established Church and Church in Wales 27, other religious

Tabl	0	CX	V	
Lau	G	UZ		

Denomination.	Buildings certified to the Registrar- General as meeting- places for Religious Worship.	Buildings registered for the Solemnization of Marriages.*	Increase or decrease () per cent. since 1921 in the number of buildings certified for Religious Worship.
Roman Catholics	1,929	1,788	23.7
Methodist Church <sup>‡</sup>	14,165	8,609	1.4
Congregationalists	3,499	3,226	4.0
Baptists	3,384	3,051	6.1
Calvinistic Methodists	1,384	1,097	6.5
Presbyterians :	469	461	4.7
Unitarians	185	198	0.5
New Church	60	63	9.1
Catholic Apostolic Church	62	50	-11.4
Countess of Huntingdon's Connexion	45	40	4.3
Salvation Army	1,434	338	$26 \cdot 2$
Society of Friends	421	HILL TO + EDIX	-2.3
Jews	307	10 80 942 30	18.5
Other Denominations	5,039	1,785	51.1
All Denominations	32,383	20,706	10.4

\* Of these buildings nearly 1,000 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. † It is not necessary for buildings to be registered for the solemnization of Quaker or Jewish marriages. Under section 31 of the Births, Deaths, and Marriages 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. ‡ Includes Wesleyan Methodist, Primitive Methodist and United Methodist Churches.

denominations 220. The number of these buildings belonging to the various denominations is shown for the several geographical regions in Table N.

By the Acts 15 and 16 Vict. c. 36, and 18 and 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 congregations desired, be certified as such to the Registrar-General, certification for public religious 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 the 31st December, 1933, and the number of buildings registered for the solemnization of marriages are shown in Table CXV.

The Marriage Act, 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 provision, and at the end of the year 1933, the number of such buildings which had been brought under the operation of the Act, and so remained, was 6,593 out of the total of 20,706. The numbers of these buildings, and the denominations to which they belonged, were as follows :—

- 4,333 Methodist Church.
- 948 Congregationalists.

683 Baptists.

- 160 Calvinistic Methodists.
- 469 Other Denominations and Unsectarian.

6,593 All Denominations.

### LIVE BIRTHS.

The live births registered during 1933 numbered 580,413, corresponding to a birth-rate of  $14 \cdot 4$  per 1,000 of the population living. (Tables B and C.)

The number of births is 33,559 less than those of 1932, a decrease of 5.47 per cent.

The current rate of  $14 \cdot 4$  per 1,000 is the lowest so far attained in the records of this country. The recent fall in the rate had been showing signs of diminution in immediately preceding years, and it might have been inferred from the rates for 1929 and 1930 —16·3 in both—that the particular phase of movement associated with post-war adjustments was drawing to a close. The 1931 returns, however, showed a further decline to 15·8, and this was followed by 15·3 in 1932 and 14·4 in 1933. As explained on page 189, the present rate of recruitment is well below that which is necessary if a diminution of the total population is to be avoided in the future. The birth-rate in this country attained its highest values since the commencement of civil registration during the period 1865-1880, when it exceeded 35 per 1,000 population, and from that time it diminished by gradual and practically continuous stages to  $23 \cdot 8$  in 1914; the present rate of  $14 \cdot 4$  per 1,000 is considerably less than half the maximum figure of  $36 \cdot 3$  recorded in 1876.

The recent history of the birth-rate in this country may be compared with those of other countries of which particulars are at hand by reference to Table Q. The record extends over the period from 1911 to 1933 (for earlier years, see the Registrar-General's Annual Report for 1910) and covers therefore not only the years of the war period itself when the movements were quite abnormal, but a number of earlier and later years. Of the countries for which 1933 returns are available, only one-the Irish Free Staterecords increase in its birth-rate as compared with 1932, while the remaining 23 show decreases. Two only of these countries, Austria (14.3 per 1,000 population) and Sweden (13.7) have lower rates than that of England and Wales  $(14 \cdot 4)$ . In view of the experience recorded in this table, it is clear that tendencies cannot be discerned from the past year's movements that might herald any change of direction in the falling trends noted for most countries in the past decade.

In all the countries listed except France, Spain, Portugal, and Japan the recent rates show a large fall in comparison with pre-war experience, a fall which in respect of England and Wales is the more serious since the position of this country in relation to that of others was already a low one before the war. The case of France is somewhat exceptional in that the current rate is not much lower than it was before the war, so that instead of being outstandingly the lowest in the series as formerly, it now ranks above England and Wales, Austria, Germany, Norway and Sweden, and is equal to that of Belgium.

The crude birth-rate, or ratio of births to population of all ages, is a convenient form of statement when the object in view is to record the aggregate effect of all the various factors governing reproduction. It sums up the effects of all the influences governing the rate at which the community is reproducing itself and is, therefore, in conjunction with the corresponding form of mortality statement, the crude death-rate, the appropriate means of measuring natural increase. The number of births in the country, however, depends mainly upon the number of maried women at the reproductive ages, and as they form less than one-eighth of the total population the variation of their numbers and ages over a period of time may be different from that of the whole population, in which case the crude birth-rates form but an imperfect measure of the changes in fertility, *i.e.*, of the rate of reproduction in proportion to the opportunity of reproduction. In the absence of any knowledge of the constitution of the general population the crude rate is often used as an index of fertility, but always on the implied assumption of a fixed proportion of potential mothers, an assumption which may reasonably be made only in respect of short periods of adjacent years.

In order to exclude the effect of changing age-constitution of the population, and so obtain a better statement of variations of fertility, a method of standardization was introduced in the Statistical Review (Text) for 1922, and has been in use since then. A description of the method, together with a series of fertility rates calculated for England and Wales in 1921 and 1931 were given in the Registrar-General's Statistical Review for 1932 (Text, pp. 135, 136).

Summarized comparisons based on these fertility rates are given in the last column of Table CXVI for groups of three years about each census from 1871 to 1931, and for the individual years 1931 to 1933. The results are contrasted in that table with the more familiar comparisons given by the crude birth-rates whether calculated per 1,000 total population or per 1,000 married women between ages 15 and 45. Thus, in 1870-72, 2,148 legitimate births were recorded for every 1,000 that would have occurred under the standard fertility rates, the 1931 experience being in the aggregate less than half of that of 60 years before. From 1871 the rates diminished steadily and progressively to 1,592 in 1910-12. Since 1920-22 the even more rapid drop, commented upon in dealing with the crude rates, is shown by the further reductions in the index, from 1,460 to 1,000 in 1931. It will be observed that over the earlier years shown in the table the decrease in fertility was overstated by the crude rates, and that since 1920-22 the tendency has been in the other direction.

**Illegitimate Births.**—The live births registered during 1933 include 25,408 of illegitimate children, a decrease of 1,603 on the number in 1932, coincident with the decrease of 33,559 in total births. Illegitimate births have thus decreased by 5.9 per cent., and legitimate births by 5.4 per cent. As a result of these changes, the proportion of illegitimate to total births has fallen from 4.40 per cent. last year to 4.38 per cent., figures which compare with the minimum of 3.95 per cent. recorded for the period 1901–1905 and the maximum of 6.26 per cent. attained in 1918.

In addition to the crude rate comparison, an attempt has been made in Table CXVI to allow for the age distribution of the potential mothers in respect of illegitimate as well as legitimate births in the manner described above. In using the rates for illegitimate fertility, it must be remembered that they are of much less authority than the rates for legitimate fertility.

**Seasonal Distribution of Births.**—The number of births registered in each quarter of the year and their frequency per 1,000 population are shown in Table D. Since 1923 the highest rate has occurred in 179

every case in the second quarter. This contrasts with the experience of 1841 to 1890 when the highest rates usually occurred in the first quarter. The lowest rate is recorded consistently in the fourth quarter.

Table CXVI.—Birth-rates	and Fertility.	1871-1933.
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stand and Wale	Births per 1,000 Total Population.	Ratio to 1931.	Births per 1,000 Married Women, 15–45.	Ratio to 1931.	Ratio of Actual Births to those which would have occurred had the Standard age rates been operating.
Legitimate Live Births. 1870-72	$\begin{array}{c} 33 \cdot 3 \\ 32 \cdot 3 \\ 29 \cdot 4 \\ 27 \cdot 5 \\ 23 \cdot 4 \\ 21 \cdot 7 \\ 15 \cdot 1 \end{array}$	2,205 2,139 1,947 1,821 1,550 1,437 1,000	292.5 286.0 263.8 235.5 197.4 178.9 122.4	2,380 2,327 2,146 1,916 1,606 1,456 996	2 148 2,117 1,983 1,797 1,592 1,460 999
1931            1932            1933	$     15 \cdot 1 \\     14 \cdot 6 \\     13 \cdot 8   $	1,000 967 914	$122.7 \\ 118.0 \\ 110.4$	1,000 962 900	1,000 964 905
ratio of the trud presponding ratio of 1931	Births per 1,000 Total Population.	Ratio to 1931.	Births per 1,000 Unmarried Women, 15–45.	Ratio to 1931.	Ratio of Actual Births to those which would have occurred had the Standard age rates been operating.
Illegitimate         Live         Births.           1870-72	$1.96 \\ 1.65 \\ 1.31 \\ 1.12 \\ 1.03 \\ 1.04 \\ 0.71$	2,800 2,357 1,871 1,600 1,471 1,486 1,014	17•0 14•1 10•5 8•5 7•9 8•1 5•8	2,982 2,474 1,842 1,491 1,386 1,421 1,018	2,886 2,375 1,755 1,419 1,363 1,430 1,430
1931 1932 1933	.0·70 0·67 0·63	1,000 957 900	5.7 5.6 5.4	1,000 982 947	1,000 974 936
he trude rates and in also the varying i, the "population are eliminated"	Births per 1,000 Total Population.	Ratio to 1931,	Births per 1,000 total Women, 15–45.	Ratio to 1931.	Ratio of Actual Births to those which would have occurred had the Standard age rates been operating.
All Live Births. 1870–72 · · · · · · 1880–82 · · · · · 1890–92 · · · · · 1910–12 · · · · · 1920–22 · · · · · 1930–32 · · · · ·	$\begin{array}{c} 35 \cdot 3 \\ 34 \cdot 0 \\ 30 \cdot 7 \\ 28 \cdot 6 \\ 24 \cdot 5 \\ 22 \cdot 8 \\ 15 \cdot 8 \end{array}$	2,234 2,152 1,943 1,810 1,551 1,443 1,000	153.7 147.7 129.7 114.8 98.3 91.1 64.3	2,387 2,293 2,014 1,783 1,526 1,415 998	2,179 2,128 1,972 1,779 1,581 1,459 1,000
1931 1932 1933	$15 \cdot 8$ $15 \cdot 3$ $14 \cdot 4$	1,000 968 911	64·4 62·6 59·4	1,000 972 922	1,000 964 906

The seasonal distribution of births is thus consistent with the seasonal distribution of marriages, the frequency of which, as has already been noted (p. 165) is a maximum in the third and a minimum in the first quarter.

The degree of association between the frequency of marriages and that of births some nine to twelve months afterwards tends to increase with the progressive reduction in the size of families, and the consequent increase in the proportion of first-born children in the total.

**Birth-rates of Different Parts of the Country.**—The birth-rates, total and illegitimate, of individual administrative areas tabulated in Table E are summarized in Table CXVII for the geographical regions, and their sub-divisions.

The method for comparing the fertility of England and Wales in different years by the use of standard fertility rates applies equally well to the comparison of fertility in different sections of the population of which the sex, age and marital condition constitution is known, and the crude rate comparisons are supplemented in this table by the addition of a series of figures in which variations in birth-rates due solely to differences in the age and marital condition proportions of the several populations, as far as possible, have been eliminated.

Table CXVII shows for each of the specified divisions of the country the crude birth-rates of 1932 and 1933, the ratio of the crude rate to that of the country as a whole, and the corresponding ratio obtained by the use of the standard fertility rates of 1931.

The birth changes which have occurred between 1932 and 1933 in the geographical regions and types of area shown in the table are in general consonance with the movement in the country as a whole. Comparison of the 1933 crude rates for the several areas shows that the highest for all births are found in North I and II, and the lowest in the South-West and in Greater London. Crude rates for illegitimate births are highest in Wales II and North II, and lowest in Midland I.

The ratios shown in column (2) are based upon the crude rates and reflect therefore not only differences of fertility but also the varying incidence of sex, age and marital condition in the populations from which they arise. When the latter factors are eliminated as in column (4) of Table CXVII, the process may result in altering materially the relative position of an area; for instance, the ratio for Wales II rises from 993 (crude) to 1,210 (standardized) while Midland II falls from 1,007 to 954. If the areas be examined from the point of view of urbanization the change from the crude to the standardized comparison is also notable. By the crude rates the position of rural areas is distinctly understated, since from the point of view of fertility alone they are shown to be the most productive of all areas, and as compared with 1932 show an increase in relation to urban areas.

The extent of illegitimacy in different classes of area and parts of the country may be gathered from the right half of Table CXVII. Except for a wider range of variation generally the Table CXVII.—Birth-rates by Geographical Regions, 1932 and 1933.

(For the	e constit	lution c	of the seve	eral reg	ions, se	e page	6).	6113
egregate rate is	Istali	A11 1	Births.	1.0. 00	1 2.803		ate Births.	al ad
is is 25-20 per	) Total	England as 1,000	Births per nich would had the ates been	h that s, taken	Total	England as 1,000	Births e which had the ss been	h that s, taken
Region.	1,000	en	wh	bared with and Wales,	1,000	for ten	thos thos urred rate	pared with and Wales,
Acesion.	Birth-rate per Population.	Ratio to Rate and Wales, tak (Crude Rates).	Ratio of Actual 1,000 of those v have occurred Standard age operating.	Ratio compared for England and V as 1,000.	Birth-rate per Population.	Ratio to Rate and Wales, tak (Crude Rates).	Ratio of A per 1,000 of would have occ Standard - age operating.	Ratio compared for England and V as 1,000.
le memorinam of	N. HERRICA	CC CI				The second se		
nings addanting	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
England and Wales	15.3	1,000	964	1,000	0.67	1,000	974	1,000
Regional Summary-	0014	2,000		1,000		1,000	511	1,000
South-East Greater London Remainder of South- East.	$     \begin{array}{r}       14 \cdot 5 \\       14 \cdot 6 \\       14 \cdot 3     \end{array} $	948 954 935	910 890 945	944 923 980	$0.67 \\ 0.65 \\ 0.69$	1,000 970 1,030	914 830 1,074	938 852 1,103
North             North I             North III             North III             North III             North III	$     \begin{array}{r}       15 \cdot 9 \\       18 \cdot 5 \\       17 \cdot 0 \\       15 \cdot 1 \\       15 \cdot 2     \end{array} $	1,039 1,209 1,111 987 993	998 1,130 1,119 914 972	1,035 1,172 1,161 948 1,008	0.70 0.76 0.96 0.67 0.64	1,045 1,134 1,433 1,000 955	1,018 1,230 1,487 996 876	1,045 1,263 1,527 1,023 899
Midland Midland I Midland II	15·8 16·0 15·6	1,033 1,046 1,020	975 1,002 927	1,011 1,039 962	0.60 0.58 0.65	896 866 970	881 836 969	905 858 995
East	15.3	1,000	1,023	1,061	0.86	1,284	1,416	1,454
South-West	13.9	908	943	978	0.61	910	972	998
Wales Wales I Wales II	15·8 16·2 14·9	1,033 1,059 974	1,026 991 1,146	1,064 1,028 1,189	0.67 0.59 0.86	1,000 881 1,284	1,078 987 1,303	1,107 1,013 1,338
Density Summary of all Areas outside Greater					and the second		a subsection of the	
London— County Boroughs Other Urban Districts Rural Districts	$16 \cdot 0 \\ 15 \cdot 0 \\ 15 \cdot 4$	1,046 980 1,007	991 945 1,035	1,028 980 1,074	0·71 0·61 0·72	1,060 910 1,075	994 927 1,220	1,021 952 1,253
	Chill .		1933.		1		Standy	1 10000
England and Wales	14.4	1,000	906	1,000	0.63	1,000	936	1,000
Regional Summary— South-East Greater London Remainder of South- East.	13·5 13·5 13·7	938 938 951	851 822 900	939 907 993	$0.62 \\ 0.60 \\ 0.64$	984 952 1,016	869 789 1,020	928 843 1,090
North             North I             North III             North III             North III             North IV	$ \begin{array}{r} 15.0 \\ 17.2 \\ 16.0 \\ 14.4 \\ 14.4 \end{array} $	$1,042 \\ 1,194 \\ 1,111 \\ 1,000 \\ 1,000$	941 1,052 1,049 868 918	$1,039 \\ 1,161 \\ 1,158 \\ 958 \\ 1,013$	$ \begin{array}{c} 0.65 \\ 0.69 \\ 0.89 \\ 0.61 \\ 0.59 \end{array} $	1,032 1,095 1,413 968 937	963 1,158 1,420 930 835	1,029 1,237 1,517 994 892
Midland Midland I Midland II,	$\begin{array}{c c} 14 \cdot 7 \\ 14 \cdot 8 \\ 14 \cdot 5 \end{array}$	1,021 1,028 1,007	905 928 864	999 1,024 954	0.57 0.56 0.58	905 889 921	855 833 900	913 890 962
East	14.4	1,000	963	1,063	0.81	1,286	1,366	1,459
South-West	13.4	931	904	998	0.60	952	987	1,054
Wales Wales I Wales II	$   \begin{array}{r}     15 \cdot 4 \\     15 \cdot 7 \\     14 \cdot 3   \end{array} $	1,069 1,090 993	993 963 1,096	1,096 1,063 1,210	0.67 0.58 0.91	1,063 921 1,444	1,101 977 1,409	1,176 1,044 1,505
Density Summary of all Areas outside Greater London— County Boroughs	15.0	1,042	931	1.028	0.67	1,063	962	1,028
County Boroughs Other Urban Districts Rural Districts	13·0 14·1 14·7	979 1,021	891 985	1,028 983 1,087	0·57 0·67	905 1,063	891 1,172	952 1,252

distribution is not significantly different from that of all births. The highest rates occur as a rule in the rural districts. It will be seen that whereas for all births the rural aggregate rate is 8.7 per cent. above the mean, for illegitimate only it is 25.2 per cent. above.

Sex Proportions at Birth.—Births of males in England and Wales in 1933 numbered 296,729 and those of females 283,684 ; the proportion of male to female births was 1,047, 1,021, and 1,046 to 1,000 for legitimate, illegitimate, and total births respectively. The corresponding proportions for total births in each year from 1893 onwards and in groups of years since the commencement of registration are shown in Table C (Part II). The extreme range during the last 50 years was from 1,032 per 1,000 in 1898 to 1,060 in 1919. During this period the highest ratio recorded prior to the war was 1,041 (in 1884, 1906 and 1909), which has also been the lowest point touched since 1919 (in 1926).

The extent to which different classes of area or portions of the country contribute to the preponderance of male births is shown in Table CXVIII. In 1931 the highest ratio, 1,073, occurred in the

### Table CXVIII.—Male Births per 1,000 Female Births, 1931, 1932 and 1933.

				and the second		100	and the second of
					1931.	1932.	1933.
England and Wa	ales				1,049	1,050	1,046
Regional Summa	ry—						
South-East		• • • • • • • •	· • • • • •		1,047	1,046	1,044
Greater Lon	don	1.20.1.	1.005	104	1.048	1,052	1.047
Remainder of	of South	h-East		- Harrison	1,046	1.036	1.039
North	de la companya de la		(Kalifelia		1,045	1,050	1,048
North I		0.000.2	. prop		1,050	1,054	1,065
North II					1.072	1,036	1,055
North III		- CITY		1 Sugar	1,041	1.046	1,050
North IV	in the state		2595-	1.7988	1.040	1.054	1.039
Midland			100	1. 199	1,054	1.053	1,042
Midland I	17.99 - (A	0.0.0.4	128	6. 1 Mar	1,052	1,048	1.040
Midland II					1,058	1.064	1,047
East		ditte	Contraction of the	Ceres -	1,029	1.040	1.038
South-West	107 - 19 ( A	- <b>19</b> 1	No. CARREN	G.P.	1,073	1.057	1.046
Wales	and Strates in	1000 M	1. 309 m	1. 1930	1,056	1.057	1,059
Wales I		10201.5 10200.5	RLAN LAND		1,060	1,054	1.044
Wales II					1.043	1.066	1,103
and the second of the second		3.96	N. Konge	1 100		-,000	1,100
Density Summar	y of a	all Are	as out	side (	Freater		
London—							
County Boroug	rhs	E.M.T.		( Dein	1,043	1,047	1.044
Other Urban D		10.0202	20129.0	a stand	1,057	1,050	1,052
Rural Districts		R. A. A.			1,048	1,052	1.039
		Section 1	a altra		.,010	2,000	.,000
10 10 10 10 10 10 10 10 10 10 10 10 10 1	a then 1	apple at	27461	1 here	a J. anter	-	and reasonable

South-West, and the lowest, 1,029, in the East; in 1932, the highest' 1,066, in Wales II, and the lowest, 1,036, in the South-East (excluding Greater London) and in North II; while, in 1933, the highest, 1,103, was in Wales II and the lowest, 1,038, in the East. The inconsistency of some of these ratios is illustrated by Wales II which was the highest in 1932 and 1933 and one of the lowest in 1931 and by the South-West which fell from 1,073 in 1931 to 1,057 in 1932 and to 1,046 in 1933.

#### STILLBIRTHS.

Stillbirths registered in England and Wales as a whole are shown for each year in Part II of the Statistical Review, Table B, and for each quarter in Table D. The numbers occurring in metropolitan and county boroughs, and in the aggregates of urban and of rural districts in administrative counties are shown in Part I, Table 18, to which is prefixed a summary for the several larger regions into which the country is divided.

In England and Wales the stillbirths registered during 1933 numbered 25,084 in all, 13,576 being males and 11,508 females; the numbers representing 41, 44 and 39 per 1,000 total births or 43, 46 and 41 per 1,000 live births respectively. The total compares with the figure of 26,471 recorded last year.

Prior to 1st July, 1927, the date on which stillbirth registration became operative in this country under the Births and Deaths Registration Act, 1926, the only record of stillbirths in England and Wales was that obtained from notifications received by Medical Officers of Health. These were published in the successive reports, from 1919 onwards, of the Chief Medical Officer to the Ministry of Health and were summarised in the 1927 Statistical Review. (Text p. 128.)

The distribution of the total according to sex, legitimacy and geographical incidence in 1932 and 1933 is summarised in rate form in Table CXIX: in this Table columns have been included from which comparisons may be made between the incidence of stillbirths on the one hand and that of live births or of infant mortality on the other. Wherever the numbers are large enough to form a satisfactory basis of fact, the frequency of stillbirth amongst males is shown to be definitely greater than it is amongst females. The male excess for legitimate births is almost the same as that of last year, and it is maintained with considerable uniformity throughout the several sections distinguished. For illegitimate births, also. male excess is usually found, but exceptions are recorded in 1933 in North II, North IV, Midland II and in both sections of Wales. As between legitimate and illegitimate births, the latter exhibit the higher rates in all sections (the males of Wales II excepted), the amount of the excess being on a somewhat larger scale than that indicated in the comparison between the sexes.

# Table CXIX.—Stillbirths, 1932 and 1933.

Area.	site orticite orticite		Stillbirt 00 tota	hs l births.	Maria Reserved Reserv	birth 1,000 in re ing 1	births p as and L popula elation t rate for ales tak	tion exp to corre Englar	ths per pressed spond- nd and	births a per expre	Stillbirths per 1,000 total births and Infant Mortality per 1,000 live births expressed in relation to corresponding rate for England and Wales taken as 1,000.		
	- Server	Legitimate.		Illegitimate.		Stillbirths.		Live	Births.	1 of 1	Deaths	Deaths	
	Total.	Males.	Fe- males.	Males.	Fe- males	Legiti mate.		Legiti e mate.		Still- births.	under 4 weeks.	under 1 year.	
1932. England and Wales	41.3	44	38	56	49	1,000	1,000	1,000	1,000	1,000	1,000	1,000	
Regional Summary— South-East Greater London Remainder of South-	33·2 31·6 35·6	35 33 37	30 29 33	48 49 47	43 45 41	799 757 863	867 890 837	945 952 932	1,000 970 1,030	804 765 862	829 820 844	856 916 761	
East. North North I North II North III North IV	$\begin{array}{c} 46 \cdot 7 \\ 44 \cdot 1 \\ 41 \cdot 7 \\ 47 \cdot 1 \\ 48 \cdot 8 \end{array}$	50 47 45 50 52	43 40 38 43 45	59 60 56 59 59	52 53 45 51 54	1,135 1,069 1,007 1,145 1,189	1,049 1,070 958 1,045 1,072	1,041 1,212 1,103 986 1,000	1,045 1,134 1,433 1,000 955	1,131 1,068 1,010 1,140 1,182	1,130 1,184 1,145 1,124 1,105	1,171 1,225 1,079 1,133 1,190	
Midland Midland I Midland II	40·7 39·8 42·5	43 42 44	37 36 39	59 54 70	50 52 46	983 963 1,027	1,032 1,002 1,087	1,041 1,055 1,021	896 866 970	985 964 1,029	1,045 1,058 1,018	1,010 1,018 995	
East	39.6	42	36	44	55	956	930	993	1,284	959	915	821	
South-West	41.1	43	37	71	56	980	1,212	911	910	995	924	790	
Wales I Wales I Wales II	$55 \cdot 6$ $57 \cdot 1$ $51 \cdot 2$	58 59 54	52 54 47	74 83 59	56 53 60	1,353 1,387 1,243	1,244 1,303 1,133	1,041 1,068 959	1,000 881 1,284	1,346 1,383 1,240	1,149 1,179 1,060	1,064 1,096 969	
Density Summary of all Areas outside Greater London County Boroughs	43.5	46	40	60	51	1,054	1.055	1,041	1,060	1,053	1.074		
Other Urban Dis- tricts.	45.4	48	42	60	49	1,103	1,033	986	910	1,033	1,074 1,045	1,147 964	
Rural Districts	41.5	43	39	52	49	1,007	964	1,007	1,075	1,005	992	890	
1933. England and Wales	41.4	43	38	56	51	1,000	1,000	1,000	1,000	1,000	1,000	1,000	
Regional Summary— South-East	$33 \cdot 5 \\ 33 \cdot 0 \\ 34 \cdot 2$	35 35 35	30 29 32	54 54 54	43 43 43	802 790 819	910 910 910	935 935 942	984 952 1,016	809 797 826	829 815 850	807 851 741	
North            North I            North II            North III            North III            North IV	$\begin{array}{c} 46 \cdot 3 \\ 41 \cdot 5 \\ 45 \cdot 5 \\ 47 \cdot 5 \\ 47 \cdot 8 \end{array}$	48 42 49 50 50	43 39 41 44 45	59 58 55 62 58	57 53 58 53 60	1,120 1,000 1,098 1,152 1,156	1,082 1,043 1,054 1,075 1,112	1,043 1,196 1,094 1,000 1,000	1,032 1,095 1,413 968 937	1,118 1,002 1,099 1,147 1,155	1,123 1,189 1,055 1,088 1,130	1,191 1,246 1,105 1,128 1,223	
Midland Midland I Midland II	$\begin{array}{c} 41 \cdot 6 \\ 41 \cdot 4 \\ 42 \cdot 1 \end{array}$	43 43 43	39 39 40	56 61 48	49 44 60	1,007 1,002 1,017	991 979 1,007	1,029 1,036 1,014	905 889 921	1,005 1,000 1,017	1,039 1,056 1,007	1,024 1,032 1,008	
East	37 · 1	39	34	46	38	900	790	986	1,286	896	936	822	
South-West	42.1	43	40	56	56	1,012	1,049	928	952	1,017	923	777	
Wales I Wales I Wales II	55 · 9 55 · 4 57 · 2	58 57 61	53 53 52	61 65 55		1,357 1,345 1,396	1,191 1,245 1,097	1,065 1,101 971	1,063 921 1,444	1,350 1,338 1,382	1,186 1,220 1,084	1,166 1,223 992	
Density Summary of all Areas outside Greater London—	trail.		and the	in an	12011	igal ud+	i br	10 31	anur		101 101 997 196		
County Boroughs Other Urban Dis-	43·8 44·3	46 45	40 42	54 54		1,059 1,073	1,006 998	1,043 986	1,063 905	1,058 1,070	1,074 1,039	1,175 978	
tricts. Rural Districts	41.6	43	39	64	51	998	1,079	1,014	1,063	1,005	1,004	884	

As regards areal comparison, Wales returns legitimate stillbirth frequencies markedly higher than those of any English sections, which among themselves decrease generally from the North, where the rate is about 12 per cent. in excess of the general average, to the South-East where it is 20 per cent. below. The contrasts are not so consistent among the illegitimate frequencies.

The relative positions in the various portions of the country and the close association in this respect between stillbirths and infantile deaths are brought out in the columns of the table in which the stillbirth rate and infantile mortality rate of the year are expressed in relation to that of the country at large, the latter being taken as 1,000 in each case. The similarity of incidence is marked in comparisons made with the mortality of the full first year of life, but the parallelism is found in certain areas to be even closer when the comparison is restricted to the deaths occurring within the four weeks immediately following birth.

Some idea of the local variation of stillbirths may be obtained from Table CXX, which shows the boroughs and the county urban and rural aggregates exhibiting the highest and lowest rates per 1,000 total births in 1933. Areas in which fewer than 20 stillbirths were registered have been omitted.

Metropolitan Boroughs.		County Boroughs.				Rural Aggregates.		
Paddington St. Marylebone Deptford Hackney Lambeth Shoreditch Wandsworth	47 38 36 36 36 36 36 36	H Merthyr Tydfil Dewsbury Halifax Bolton St. Helens	ighest 70 62 60 59 59	Flintshire Denbigh Gloucestershire Glamorgan Monmouth Cornwall Carmarthen	61 60 58 58 58 58 56 56	Montgomery Merioneth Caernarvon Carmarthen Anglesey Denbigh	876666	
		La	owesi	TA OTTO ATA				
Battersea Woolwich Bethnal Green Poplar Finsbury	28 28 25 25 23	East Ham Southport Croydon Oxford	31 30 28 26	Cambs Hertfordshire Bucks Ely, I. of Norfolk	31 29 28 26 26	Surrey Sussex, East Bucks Oxford Suffolk, West		

# Table CXX.—Stillbirths, 1933. Range of local variation. Stillbirths per 1,000 total births.

As the registration of stillbirths has now been in operation for more than six years, a preliminary review of the figures may be attempted. A comparison of the more important ratios connected with live and still births in England and Wales, as a whole, is contained in Table CXXI, for the years 1928 to 1933. In common with live births, the proportion of stillbirths per 1,000 population has fallen (col. 2); the former from 16.7 to 14.4 and the latter from 0.70 to 0.62, decreases of 13.8 and 11.4 per cent., respectively. The proportion of stillbirths among total births (col. 3) seems to 186

show a tendency to rise; but it is not unlikely that some part of the observed increase may be due to gradual improvement in the record. The masculinity of stillbirths is consistently much higher than that of live births (cols. 4–7). A comparison of the masculinity of illegitimate and total stillbirths (cols. 6, 7), shows that the illegitimate excess of 1928 and 1929 has been changed into a deficiency in 1932 and 1933. The proportions of the illegitimate are throughout much higher among stillbirths than live births (cols. 8–11). Among illegitimate stillbirths, a male excess in 1928 (males  $64 \cdot 8$ , females  $60 \cdot 5$ ) has changed into a female excess in 1933 (males  $56 \cdot 1$ , females  $58 \cdot 2$ ).

Table CXXI.	Comparison	of	Live	<b>Births and</b>	Stillbirths,	1928-1933.
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ali auf		births ,000—	pe		births emale birtl	ıs.	Illegitimate births per 1,000—			
Year.	popula-			births.	Stillb	irths.	Live	births.	Stillbirths.	
aties per	tion of all ages.	(live and still).	Total.	Illeg.	Total.	Illeg.	<b>M</b> .	F.	М.	F.
Col. (1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1928 1929 1930 1931 1932 1933	$ \begin{array}{c} 0.70 \\ 0.68 \\ 0.69 \\ 0.67 \\ 0.66 \\ 0.62 \end{array} $	$ \begin{array}{r} 40 \cdot 1 \\ 40 \cdot 0 \\ 40 \cdot 8 \\ 40 \cdot 9 \\ 41 \cdot 3 \\ 41 \cdot 4 \end{array} $	1,0441,0431,0441,0491,0501,046	$1,041 \\1,021 \\1,049 \\1,059 \\1,042 \\1,021$	$\begin{array}{r} 1,210\\ 1,259\\ 1,235\\ 1,248\\ 1,216\\ 1,180\\ \end{array}$	1,297 1,311 1,233 1,250 1,197 1,137	$ \begin{array}{r}     44 \cdot 9 \\     45 \cdot 1 \\     45 \cdot 9 \\     44 \cdot 6 \\     43 \cdot 8 \\     43 \cdot 3 \end{array} $	$ \begin{array}{c c} 45 \cdot 1 \\ 46 \cdot 0 \\ 45 \cdot 6 \\ 44 \cdot 2 \\ 44 \cdot 2 \\ 44 \cdot 3 \end{array} $	$\begin{array}{c} 64 \cdot 8 \\ 62 \cdot 9 \\ 61 \cdot 0 \\ 61 \cdot 8 \\ 56 \cdot 5 \\ 56 \cdot 1 \end{array}$	60·5 60·4 61·1 61·7 57·3 58·2

In Table CXXII, the stillbirth registrations in the years 1929–33 have been aggregated for a large number of areas, and related to the population data of the 1931 census. The range of variation from the average is considerable even when the basis of fact is adequate, and is naturally greater still when the numbers recorded are small, as in the case of illegitimate births in many of the areas distinguished.

# NATURAL INCREASE.

In 1933 the excess of live births over deaths registered in England and Wales was 83,948, as compared with 129,843 in 1932, 140,451 in 1931, 193,384 in 1930, 111,181 in 1929, and 199,878 in 1928.

From the comparable series of rates per 1,000 living population given in Table R, it will be observed that, though there is rather greater irregularity in the successive rates of natural increase, they have, over the whole range of years there given, followed on the whole a similar course to those followed by both birth and deathrates, and have declined with advancing years. The present rate of natural increase is  $2 \cdot 1$  per 1,000 population. A lower rate was recorded in 1918 (0.4) but, with this exception, it is lower than any so far recorded, the next lowest being  $2 \cdot 9$  in 1929. It compares with 187

Table CXXII.-Stillbirths by Sex, Legitima

Table CXXII.—S	Stillbir	ths by	Sex, I	legit	imac	y and .	Area	-1929-	-1933
Area.	Total.		ll-births ret	1-	d. timate.	Still- births per 1,000 total	Still- births per 1,000 females	Male still- births per 1,000	Illegiti- mate still- births
and the alarment for the state of the state	actroit action a	Males.	Females.	Males.	Fe- males.	births (live and still).	15–45 1931 Census.	female still- births.	per 1,000 total still births.
England and Wales	132,912	68,875	56,094	4,377	3,566	41	2.7	1,228	60
Regional Summary : South-East Greater London, Remainder of South East.	34,175 20,611 13,564	17,672 10,753 6,919	14,215 8,496 5,719	1,306 776 530	982 586 396	33 33 34	$2 \cdot 0 \\ 1 \cdot 9 \\ 2 \cdot 2$	1,249 1,269 1,218	67 66 68
North North I North II North III North IV Midland Midland I Midland I Midland II East South-West Wales I Wales I	$50,757 \\ 9,317 \\ 4,873 \\ 12,831 \\ 23,736 \\ 23,719 \\ 15,668 \\ 8,051 \\ 5,717 \\ 6,205 \\ 12,339 \\ 9,458 \\ 2,881 \\ \end{array}$	$\begin{array}{c} 26,241\\ 4,816\\ 2,512\\ 6,618\\ 12,295\\ 12,282\\ 8,093\\ 4,189\\ 2,983\\ 3,207\\ 6,490\\ 4,965\\ 1,525\\ \end{array}$	$\begin{array}{c} 21,566\\ 4,010\\ 1,976\\ 5,474\\ 10,106\\ 10,183\\ 6,770\\ 3,413\\ 2,328\\ 2,597\\ 5,205\\ 4,061\\ 1,144 \end{array}$	1,616 260 208 398 750 685 435 250 213 213 344 229 115	1,334 231 177 341 585 569 370 199 193 188 300 203 97	45 42 46 47 41 40 41 39 41 55 56 52	$\begin{array}{c} 3\cdot 1\\ 3\cdot 6\\ 3\cdot 3\\ 3\cdot 0\\ 3\cdot 1\\ 2\cdot 8\\ 2\cdot 8\\ 2\cdot 8\\ 2\cdot 8\\ 2\cdot 8\\ 2\cdot 8\\ 2\cdot 6\\ 4\cdot 1\\ 4\cdot 3\\ 3\cdot 7\end{array}$	$\begin{array}{c} 1,216\\ 1,197\\ 1,263\\ 1,206\\ 1,220\\ 1,206\\ 1,194\\ 1,229\\ 1,268\\ 1,228\\ 1,228\\ 1,218\\ 1,218\\ 1,322\\ \end{array}$	58 53 79 58 56 53 51 56 71 65 52 46 74
Density Summary of all Areas outside Greater London: County Boroughs Other Urban Districts Rural Districts	46,512 39,696 26,093	24,096 20,630 13,396	19,642 16,948 11,008	1,496 1,176 929	1,278 942 760	43 44 41	$2 \cdot 9$ $2 \cdot 9$ $3 \cdot 0$	1,223 1,219 1,217	60 53 65
County Boroughs : Barnsley Barrow-in-Furnéss Bath Birkenhead Birkenhead Birkenhead Birkenhead Birkenhead Birkenhead Birkenhead Blackburn Blackpool Blackpool Blackpool Botton Botton Bootle Bootle Bootle Bootle Bootle Bootle Bootle Brighton Brighton Brighton Brighton Brighton Brighton Burnley Burnley Canterbury Canterbury Canterbury Coventry Coventry Doncaster Dudley East Ham East Ham East Ham Great Yarmouth Grimsby Halifax Halifax Kingston-upon-Hull Leeds Liverpool Manchester	$\begin{array}{r} 392\\ 256\\ 606\\ 3,340\\ 450\\ 304\\ 716\\ 304\\ 716\\ 381\\ 216\\ 995\\ 389\\ 1,262\\ 327\\ 150\\ 206\\ 60\\ 225\\ 160\\ 477\\ 545\\ 291\\ 411\\ 257\\ 218\\ 200\\ 562\\ 187\\ 168\\ 369\\ 200\\ 562\\ 187\\ 168\\ 369\\ 200\\ 562\\ 187\\ 168\\ 348\\ 317\\ 139\\ 341\\ 286\\ 1,224\\ 1,735\\ 744\\ 203\\ 3,755\\ 3,038\\ 678\\ 1,021\\ \end{array}$	$\begin{array}{c} 207\\ 135\\ 65\\ 311\\ 1,719\\ 233\\ 156\\ 371\\ 213\\ 94\\ 515\\ 182\\ 684\\ 167\\ 84\\ 112\\ 30\\ 115\\ 67\\ 250\\ 273\\ 148\\ 219\\ 124\\ 127\\ 129\\ 54\\ 201\\ 107\\ 306\\ 93\\ 87\\ 191\\ 156\\ 68\\ 180\\ 154\\ 676\\ 867\\ 377\\ 113\\ 1,955\\ 1,586\\ 332\\ 513\\ \end{array}$	$\begin{array}{c} 165\\ 105\\ 85\\ 264\\ 1,452\\ 179\\ 121\\ 311\\ 151\\ 103\\ 402\\ 172\\ 519\\ 140\\ 59\\ 77\\ 22\\ 89\\ 79\\ 204\\ 230\\ 132\\ 173\\ 112\\ 83\\ 119\\ 36\\ 160\\ 78\\ 234\\ 84\\ 74\\ 137\\ 129\\ 50\\ 140\\ 116\\ 471\\ 746\\ 318\\ 75\\ 1,584\\ 1,239\\ 306\\ 437\\ \end{array}$	$\begin{array}{c} 11\\ 4\\ 3\\ 16\\ 79\\ 18\\ 14\\ 19\\ 9\\ 29\\ 22\\ 30\\ 7\\ 5\\ 11\\ 3\\ 12\\ 8\\ 12\\ 24\\ 5\\ 11\\ 11\\ 7\\ 7\\ 6\\ 4\\ 9\\ 9\\ 9\\ 4\\ .\\ 5\\ 6\\ 16\\ 10\\ 8\\ 11\\ 38\\ 64\\ 10\\ 8\\ 11\\ 38\\ 64\\ 129\\ 7\\ 126\\ 126\\ 126\\ 126\\ 24\\ 36\end{array}$	$\begin{array}{c} 9\\ 9\\ 12\\ 3\\ 3\\ 15\\ 90\\ 20\\ 13\\ 15\\ 13\\ 10\\ 49\\ 13\\ 29\\ 13\\ 2\\ 6\\ 5\\ 9\\ 6\\ 11\\ 18\\ 6\\ 8\\ 10\\ 1\\ 3\\ 12\\ 4\\ 6\\ 13\\ 6\\ 2\\ 14\\ 16\\ 11\\ 13\\ 5\\ 39\\ 58\\ 20\\ 8\\ 90\\ 87\\ 16\\ 35\\ \end{array}$	$\begin{array}{c} 53\\ 48\\ 38\\ 43\\ 39\\ 55\\ 55\\ 56\\ 43\\ 36\\ 46\\ 39\\ 40\\ 49\\ 38\\ 53\\ 33\\ 45\\ 46\\ 37\\ 31\\ 49\\ 36\\ 61\\ 42\\ 43\\ 234\\ 40\\ 44\\ 43\\ 39\\ 40\\ 49\\ 36\\ 61\\ 42\\ 32\\ 34\\ 40\\ 44\\ 39\\ 40\\ 49\\ 36\\ 40\\ 39\\ 46\\ 39\\ 43\\ 39\\ 47\\ 439 \end{array}$	$\begin{array}{c} 4\cdot 6\\ 3\cdot 6\\ 3\cdot 6\\ 2\cdot 8\\ 2\cdot 3\\ 3\cdot 1\\ 4\cdot 6\\ 2\cdot 2\\ 2\cdot 6\\ 2\cdot 9\\ 2\cdot 0\\ 1\cdot 2\\ 2\cdot 6\\ 2\cdot 9\\ 2\cdot 0\\ 2\cdot 2\\ 2\cdot 6\\ 2\cdot 9\\ 2\cdot 0\\ 2\cdot 2\\ 2\cdot 6\\ 2\cdot 9\\ 2\cdot 2\\ 2\cdot 5\\ 8\cdot 3\\ 2\cdot 2\\ 2\cdot 2\\ 2\cdot 5\\ 8\cdot 3\\ 2\cdot 5\\ 8\cdot 3\\ 2\cdot 5\\ 8\cdot 5\\ 1\cdot 2\\ 2\cdot 5\\ 8\cdot 3\\ 2\cdot 5\\ 8\cdot 5\\ 1\cdot 2\\ 2\cdot 5\\ 1\cdot 2\\ 1\cdot 2\\ 2\cdot 5\\ 1\cdot 2\\ 2\cdot 5\\ 1\cdot 2\\ 1\cdot 2\\ 2\cdot 5\\ 1\cdot 2\\ 1\cdot 2\\ 2\cdot 5\\ 1\cdot 2\\ 1\cdot 2\\ 1\cdot 2\\ 2\cdot 5\\ 1\cdot 2\\ 2\cdot 5\\ 1\cdot 2\\ 1\cdot 2\\ 1\cdot 2\\ 1\cdot 2\\ 1\cdot 2\\ 1\cdot 2\\$	$\begin{array}{c} 1,253\\ 1,188\\ 773\\ 1,172\\ 1,166\\ 1,261\\ 1,269\\ 1,196\\ 1,323\\ 912\\ 1,206\\ 1,103\\ 1,303\\ 1,137\\ 1,459\\ 1,482\\ 1,222\\ 1,296\\ 882\\ 1,219\\ 1,198\\ 1,109\\ 1,271\\ 1,107\\ 1,595\\ 1,115\\ 1,250\\ 1,220\\ 1$	$\begin{array}{c} 51\\ 63\\ 38\\ 51\\ 84\\ 89\\ 47\\ 45\\ 88\\ 78\\ 90\\ 47\\ 61\\ 47\\ 83\\ 133\\ 98\\ 48\\ 77\\ 38\\ 48\\ 77\\ 39\\ 167\\ 22\\ 75\\ 39\\ 53\\ 42\\ 57\\ 101\\ 151\\ 62\\ 66\\ 70\\ 66\\ 74\\ 58\\ 70\\ 970 \end{array}$

Table CXXII—continued.

-12719 4000 - 1940		Stil	ll-births re	gistered		Still- births	Still- births per 1,000 females 15-45	Male still-	Illegiti- mate
Area.	Total.	Legit	cimate.	Illegit	timate.				still- births per 1,000
Anne Anne Anne Anne Anne Anne Anne Anne	auto sono	Males.	Females.	Males.	Fe- males.	(live and still).		still- births.	total still- births.
County Boroughs :cont. Northampton	206	103	91	5	7	33	1.8	1,102	58
Norwich	404	218	163	9	14	41	2.5	1,282	57
Nottingham	991	502	415	42	32	42	2.9	1,217	75
Oldham Oxford	549 190	279 99	221	33	16 5	56 33	3.0	1,316 1,375	89 84
Plymouth	711	364	294	26	27	41	2.9	1,215	75
Portsmouth	858	431	337	59	31	39	2.9	1,332	105
Preston Reading	522 282	264 133	229 130	20 11	98	53 38	$3 \cdot 4$ $2 \cdot 4$	1,193	56
Reading	297	133	128	13	8	48	2.4	1,043 1,184	67 71
Rotherham	279	142	120	8	9	42	3.4	1,163	61
St. Helens	543 946	286 466	236	14	7	48	4.4	1,235	39
Sheffield	1,778	943	437 756	24 45	19 34	49 45	$3\cdot 3$ $2\cdot 8$	1,075 1,251	45 44
Smethwick	257	142	110	5	1200	35	2.4	1,336	19
Southampton Southend-on-Sea	547 250	280 131	236 110	18	13 6	35 35	2·6 1·6	1,197	57
Southend-on-Sea	220	115	85	11	9	49	2.1	1,155 1,340	36 91
South Shields	472	262	191	10	9	40	3.5	1,360	40
Stockport Stoke-on-Trent	487 1,370	256 714	203 583	11 45	17 28	55 52	3·0 3·9	1,214 1,242	57 53
Sunderland	820	421	362	22	15	39	3.7	1,175	45
Tynemouth	280	137	124	11	8	44	3.5	1,121	68
Wakefield Wallasey	210 304	113 171	86	7	4 9	42 43	2·9 2·4	1,333	52 66
Wallasey Walsall	378	191	113	6	5	37	3.0	1,492 1,088	29
Warrington	361	178	167	8	. 8	47	3.7	1,063	44
West Bromwich West Ham	315 886	167 477	140 364	7 26	1 19	38 33	3·2 2·5	1,234	25 51
West Hartlepool	300	168	114	13	19	40	3.8	1,313 1,521	60
Wigan	445	236	187	15	7	55	4.1	1,294	49
Wolverhampton Worcester	454 153	245 78	187 67	84	14	38 38	$2 \cdot 8$ $2 \cdot 5$	1,259 1,155	48 52
York	265	135	112	8	10	37	2.5	1,133	68
Cardiff	961	495	413	23	30	50	3.4	1,169	55
Merthyr Tydfil	412	213	172	17	10	69	5.2	1,264	66
Newport, Mon Swansea	347 791	175 423	158 342	8 14	6 12	42 54	$3 \cdot 2 \\ 3 \cdot 9$	1,116 1,234	40 33
Administrative Counties	101	120	012	14	12	04	5.5	1,204	00
Bedfordshire	597	298	257	22	20	37	2.2	1,155	70
Berkshire	579	319	226	21	13	35	2.3	1.423	59
Buckinghamshire Cambridgeshire	637 331	345 173	254 145	19 7	19 6	31 36	$2 \cdot 0 \\ 2 \cdot 1$	1,333	60 39
Cheshire	2,287	1,156	1,014	67	50	46	2.1	1,192 1,149	51
Cornwall	1,064	555	441	35	33	46	2.9	1,245	64
Cumberland Derbyshire	741 2,423	373 1,273	307 1,015	34 67	27 68	40 45	$3 \cdot 2 \\ 3 \cdot 3$	1,219 1,237	82 56
Devonshire	1,231	630	503	49	49	40	2.3	1,230	80
Dorsetshire Durham	745	371	328	24	22	40	2.7	1,129	62
Ely, Isle of	4,147 269	2,131 138	1,810 114	111	95 14	43 37	$4 \cdot 0 \\ 3 \cdot 1$	1,177	50 63
Essex	3,281	1,736	1,398	80	67	34	2.2	1,240	45
Gloucestershire	1,050	553	419	49	29	42	2.7	1,344	74
Herefordshire	336 900	162 465	143 384	22 19	9 32	38 30	2·7 1·8	1,211 1,163	92 57
Huntingdonshire	151	75	68	4	4	32	2.5	1,097	53
Kent Lancashire	3,040	1,574	1,288	104	74	33	2.2	1,232	59
Lancashire	6,575 961	3,434 516	2,836 404	170 18	135 23	51 38	$2 \cdot 9 \\ 2 \cdot 6$	1,213 1,251	46 43
Lincs, Holland	375	208	145	12	10	41	3.7	1,419	59
" Kesteven	366	189	145	17	15	40	3.2	1,287	87
,, Lindsey London	887 10,909	458 5,648	360 4,393	41 503	28 365	39 33	$3 \cdot 0$ $1 \cdot 9$	1,286 1,293	78 80
Middlesex	4,279	2,242	1,805	132	100	33	1.9	1,255	54
Norfolk	999 514	486	412	58	43	39	2.9	1,196	101
Northamptonshire Northumberland	514 1,425	256 730	229 606	21 43	8 46	34 41	$2 \cdot 0$ $3 \cdot 0$	1,169 1,186	56 62
Nottinghamshire	1,671	879	714	50	28	41 43	3.0	1,100	47
Oxfordshire	293	144	123	13	13	30	2.1	1,154	89
Peterborough, Soke of Rutlandshire	130 33	64 21	54	7	5	33 25	$2 \cdot 1 \\ 1 \cdot 7$	1,203	92 30
	00	21	11	1202	-	20	1.7	1,750	30

ni superiori, laga		Cable (	CXXII	-cor
ention nay b	14	Stil	l-births re	gistered
Area.	Total.	Legiti	mate.	Illegit
vares I (Brack annouthshire)	reen 1 A bus	Males.	Females.	Males.
ministrative Counties	Patt.	pt. i	1 const	1.127
cont. Shropshire Somersetshire Southampton Staffordshire Suffolk, East ,, West Surrey Sussex, East ,, West Warwickshire Warwickshire Wight, Isle of Wiltshire Worcestershire Yorks, East Riding ,, West Riding ,, West Riding	$\begin{array}{c} 835\\ 1,226\\ 1,336\\ 2,834\\ 627\\ 269\\ 2,183\\ 602\\ 498\\ 1,034\\ 210\\ 202\\ 872\\ 978\\ 534\\ 1,261\\ 6,044 \end{array}$	$\begin{array}{r} 391\\ 666\\ 671\\ 1,488\\ 338\\ 134\\ 1,099\\ 319\\ 267\\ 516\\ 100\\ 92\\ 449\\ 487\\ 280\\ 636\\ 3,109\end{array}$	$\begin{array}{r} 375\\ 488\\ 585\\ 1,232\\ 250\\ 113\\ 950\\ 246\\ 185\\ 461\\ 85\\ 96\\ 380\\ 440\\ 206\\ 512\\ 2,623\\ \end{array}$	$\begin{array}{c} 35\\ 41\\ 48\\ 58\\ 20\\ 13\\ 84\\ 20\\ 25\\ 29\\ 11\\ 10\\ 26\\ 30\\ 25\\ 64\\ 184\\ \end{array}$
Anglesey Brecknockshire Caernarvonshire Cardiganshire Carmarthenshire Denbighshire Flintshire Glamorganshire Merionethshire	225 264 479 214 886 676 464 4,015 200 1,782	$120 \\ 140 \\ 254 \\ 114 \\ 490 \\ 364 \\ 250 \\ 2,094 \\ 85 \\ 935$	88 106 176 83 348 281 190 1,742 97 780	8 10 23 7 25 21 10 101 10 31

196 339 88 108 187 43

Montgomeryshire Pembrokeshire

Radnorshire

a figure of approximately 10 per 1,000 in the years immediately preceding the war and over 14 per 1,000 in the period 1876–1880 when the birth-rate was at about its maximum. Stated in these terms the curve of natural increase expresses no more than that the crude birth-rate has hitherto been greater than the crude death-rate, and that the decline in the former has advanced at a greater rate than the fall in the latter. From the general continuity of the series it may be inferred that the number of births will continue to exceed the deaths for some years, and that, apart from the results of migration, the population will continue to increase during such period though, naturally, at a slower pace.

12 17 7

74 122 33

What must not be inferred from mere excesses of births over deaths or from their alternative expressions as rates per 1,000 total population, is that the continuance of current conditions regarding fertility and mortality would be sufficient to ensure a continuous increase in the national population, both now and in the future. Attention has been drawn in previous Reports to the reduction in the population, which, apart from immigration, must inevitably take place in the near future if the current trend in the birth-rate persists. The data for 1933 indicates that the maximum population and the subsequent reduction are likely to come earlier than a few years ago was considered probable.

ntinued.

6.6.4	a martine	A R. Martin Y	A Stranger	ag the as a se
	Still- births per 1,000 total births (live and still).	Still- births per 1,000 females 15-45 1931 Census.	Male still- births per 1,000 female still- births.	Illegiti- mate still- births per 1,000 total still- births.
441122699900721884447213398	41 42 34 43 38 36 32 34 32 36 44 37 37 37 39 39 46 47	$\begin{array}{c} 3 \cdot 1 \\ 2 \cdot 6 \\ 2 \cdot 6 \\ 3 \cdot 4 \\ 2 \cdot 8 \\ 2 \cdot 4 \\ 1 \cdot 7 \\ 1 \cdot 8 \\ 1 \cdot 9 \\ 2 \cdot 3 \\ 2 \cdot 6 \\ 2 \cdot 6 \\ 2 \cdot 6 \\ 2 \cdot 6 \\ 2 \cdot 8 \\ 3 \cdot 4 \\ 3 \cdot 3 \end{array}$	1,042 1,362 1,165 1,200 1,331 1,205 1,183 1,289 1,418 1,115 1,121 1,020 1,196 1,121 1,332 1,248 1,197	$\begin{array}{c} 83\\ 59\\ 60\\ 40\\ 62\\ 82\\ 61\\ 61\\ 92\\ 55\\ 119\\ 69\\ 49\\ 52\\ 90\\ 90\\ 52\\ \end{array}$
9 8 26 10 23 10 14 78 8 6 2 13 5	57 56 54 58 62 53 49 58 60 55 49 47 50	$\begin{array}{c} 4 \cdot 2 \\ 4 \cdot 1 \\ 3 \cdot 4 \\ 3 \cdot 4 \\ 4 \cdot 2 \\ 3 \cdot 8 \\ 3 \cdot 5 \\ 4 \cdot 6 \\ 4 \cdot 2 \\ 4 \cdot 7 \\ 3 \cdot 8 \\ 3 \cdot 5 \\ 3 \cdot 7 \end{array}$	$\begin{array}{c} 1,320\\ 1,316\\ 1,371\\ 1,301\\ 1,388\\ 1,323\\ 1,275\\ 1,206\\ 905\\ 1,184\\ 1,579\\ 1,511\\ 1,316\\ \end{array}$	$\begin{array}{c} 76\\ 68\\ 102\\ 79\\ 54\\ 46\\ 52\\ 45\\ 90\\ 38\\ 71\\ 88\\ 136 \end{array}$

Table CXXIII shows for 1931–33 the rate of natural increase in various sections of the country, representing the combined effect of the several sectional birth and death-rates. Attention may be drawn to the large differences between the different sections of the regions, namely, North I (Durham and Northumberland), and North IV (Cheshire and Lancashire), and between Wales I (Brecknockshire, Carmarthenshire, Glamorganshire and Monmouthshire), and Wales II (the remainder of Wales). The figure for Wales II, 0.1 per 1,000, represents in the statistical sense an almost stationary population.

	XIII.—Natural Increase per 1,000 living, 1	1931 - 1933
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	CITER CACHONOM CALER	CALCULATION OF THE OWNER	MARCHINE STREET, SOUTH STREET,	CARGO CONTRACTOR OF THE OWNER OF	CARGO AND
			1931.	1932.	1933.
England and Wales			3.5	3.3	2.1
Regional Summary—					
South-East	14. 11 C		3.4	3.0	$2 \cdot 0$
Greater London .			3.9	3.5	$2 \cdot 3$
Remainder of South-East		a the part	2.9	2.3	1.7
North			3.2	3.4	1.9
North I			6.1	6.4	$4 \cdot 9$
North II			4.2	4.5	3.0
North III			2.7	2.7	1.6
North IV			2.3	2.5	0.8
Midland			4.6	4.1	2.9
Midland I			4.7	$4 \cdot 2$	3.0
Midland II			4.6	4.2	2.8
East			3.4	2.9	1.9
South-West	harren		1.0	0.8	0.4
Wales			3.4	3.2	2.3
Wales I			4.5	4.2	3.0
Wales II	remained	1 11 11 21	0.7	0.8	0.1
	and annual	Composition		1	
Density Summary of All A London—	Areas	outside	Greater		
County Boroughs		and a	3.4	3.5	1.9
Other Urban Districts		mon ?	3.1	2.9	1.7
Rural Districts			3.7	3.4	2.6
iturur Districts	ALL AND ALL	1.5.9 35 4 10 10 10 10	ALL	ANA TO ANA TO ANA	- 0

Table S, which provides an analysis of migration from 1911 onwards, shows that the balance of passenger movement, which for many years had been in the outward direction, has been reversed during the last four years. The net passenger movement into the United Kingdom was nearly 48,000 in 1933. This contrasts with about 77,000 in 1932 and 91,000 in 1931, and with an outward balance of 100,000 so recently as 1926.

### GREAT BRITAIN AND IRELAND.

*Population.*—The first complete census of the United Kingdom was taken in 1821, when the population numbered 20,893,584 persons; during the 100 years 1821–1921 this number increased by about 126 per cent, the sum of the final census figures for

## Table CXXIV.—Great Britain and Ireland. Vital Statistics. 1921–30, 1931, 1932 and 1933.

· ····································	State of the state of the	the same survey and	and a second second						
United Kingdom for oarb years from <u>1899</u> are set be year 1938 minibared	Great Britain and Ireland.	England and Wales.	Scot- land.	Northern Ireland.	Irish Free State.				
Estimated Population in	the middl	le of the y	year 19 <b>33</b>	(in thousa	unds).				
Males Females Persons	23,863 25,663 49,526	$     19,357 \\     20,993 \\     40,350   $	2,364 2,548 4,912	618 653 1,271	1,524 1,469 2,993				
e (en veros 1921-1930.	Marr	iages.	il below	Will your	in <del>inina</del> S-8 biss				
1933 Persons married per 1,000 living :—	374,028	318,191	34,215	7,630	13,992				
1921–1930 1931 1932 1933	$     \begin{array}{r}       14 \cdot 9 \\       14 \cdot 9 \\       14 \cdot 6 \\       15 \cdot 1     \end{array} $	$   \begin{array}{r}     15 \cdot 5 \\     15 \cdot 6 \\     15 \cdot 3 \\     15 \cdot 8   \end{array} $	$   \begin{array}{r}     13 \cdot 8 \\     13 \cdot 5 \\     13 \cdot 6 \\     13 \cdot 9   \end{array} $	$     \begin{array}{r}       12 \cdot 1 \\       11 \cdot 8 \\       11 \cdot 0 \\       12 \cdot 0     \end{array} $	9.5 8.9 8.8 9.3				
the average in the ter	Biri	ths.	Binting Band S	and man	per tu terorete				
1933           Per 1,000 living :          1921-1930          1931          1932       r.         1933	$748,924 \\ 18 \cdot 8 \\ 16 \cdot 5 \\ 15 \cdot 9 \\ 15 \cdot 1$	$580,413 \\18\cdot 3 \\15\cdot 8 \\15\cdot 3 \\14\cdot 4$	$\begin{array}{c} 86,546\\ 21\cdot 5\\ 19\cdot 0\\ 18\cdot 6\\ 17\cdot 6\end{array}$	$\begin{array}{c} 24,601 \\ 22\cdot 1 \\ 20\cdot 5 \\ 19\cdot 9 \\ 19\cdot 4 \end{array}$	$57,364 \\ 20 \cdot 2 \\ 19 \cdot 3 \\ 18 \cdot 9 \\ 19 \cdot 2$				
in a contract of compare the of anch returns to th	Deat	ths.	<del>findi tab</del> manit in	and the second	in no				
1933           Per 1,000 living :          1921-1930          1931          1932          1933	$ \begin{array}{r} 620,006\\ 12\cdot 5\\ 12\cdot 6\\ 12\cdot 4\\ 12\cdot 5 \end{array} $	$ \begin{array}{r} 496,465\\ 12\cdot1\\ 12\cdot3\\ 12\cdot0\\ 12\cdot3\\ 12\cdot3\\ \end{array} $	$\begin{array}{c} 64,848\\ 13\cdot 7\\ 13\cdot 3\\ 13\cdot 5\\ 13\cdot 2\end{array}$	$   \begin{array}{c}     18,154 \\     15 \cdot 1 \\     14 \cdot 4 \\     14 \cdot 1 \\     14 \cdot 3   \end{array} $	$\begin{array}{c} 40,539\\ 14\cdot 5\\ 14\cdot 5\\ 14\cdot 5\\ 14\cdot 5\\ 13\cdot 5\end{array}$				
Deaths of Infants under 1 year.									
1933           Per 1,000 live births :       1921-1930          1931           1932           1933	49,681 74 69 69 66	36,960 72 66 65 64	7,019 89 82 86 81	1,960 81 73 83 80	3,742 70 69 72 65				

Great Britain and of the estimated population of Ireland in June, 1921, amounting to 47,123,196. Up to the date when the 1931 Census was taken there was a further increase of 4 per cent. The populations of the several portions of the United Kingdom for each census year from 1821 and for individual years from 1894 are set out in Table A.

*Marriages.*—The marriages during the year 1933 numbered 374,003, corresponding to a rate of  $15 \cdot 1$  persons married per 1,000 of the total population. This rate was 0.5 per 1,000 above the corresponding rate in 1932 and 0.2 above the average rate in the ten years 1921–1930.

Births.—The live births registered in the year 1933 numbered 748,984, and were in the proportion of  $15 \cdot 1$  per 1,000 of the total population. This rate was 0.8 below the corresponding rate in 1932 and 3.7 per 1,000 below the average in the ten years 1921–1930.

*Deaths.*—The deaths registered in the year 1933 numbered 620,117, and were in the proportion of 12.5 per 1,000 of the total population. This rate was 0.1 per 1,000 above the corresponding rate in 1932, and was the same as the average in the ten years 1921–1930.

Infant Mortality.—The deaths of infants under one year of age during the year 1933 numbered 49,657, representing a rate of 66 per 1,000 live births. This rate was 3 per 1,000 below that recorded in 1932 and 8 per 1,000 below the average in the ten years 1921–1930.

#### 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 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, Northern Ireland and the Irish Free State. Similar returns are furnished to the Registrars-General of Births and Deaths by Officers in command of His Majesty's ships. The returns of births and deaths at sea received by the Registrar General constitute the "Marine Register Book." During the year 1933 this register was increased by the addition of 59 entries of birth and 912 entries of death.

#### REGISTRATION OF BIRTHS, DEATHS AND MARRIAGES.

**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 1933 by 1,713,260, this addition raising the total of names in the indexes, which at the end of 1933 embraced a period of  $96\frac{1}{2}$  years, to 163,122,074 (Table T).

Searches and Certificates.—Besides the certified copies of the registered births, deaths and marriages kept in England and Wales pursuant to the Registration Acts, a large number of other registers and records are deposited in this Office under statute or other arrangement. A revised list of these various registers and records will be found on pages 149–155 of the Review for 1925. Searches may be made in any of these registers, and certificates obtained on payment of the prescribed fees.

Table CXXV affords an indication of the extent to which the copies of the records kept in this Office have been utilized by the public for legal evidence of births, deaths and marriages since 1866.

Table CXXV.

Table CXXV.									
Years.	Total Searches.	Gratui- tous Searches.	Searches paid for by Fees.	Certifi- cates Issued.	Amount Received.				
1866       (52 weeks)         1875       (52 weeks)         1885       (52 weeks)         1895       (52 weeks)         1905       (52 weeks)         1906       (52 weeks)         1907       (52 weeks)         1908       (53 weeks)         1907       (52 weeks)         1908       (53 weeks)         1909       (52 weeks)         1910       (52 weeks)         1911       (52 weeks)         1912       (52 weeks)         1913       (52 weeks)         1914       (53 weeks)         1915       (52 weeks)         1916       (52 weeks)         1917       (52 weeks)         1918       (52 weeks)         1919       (52 weeks)         1920       (53 weeks)         1922       (52 weeks)         1922       (52 weeks)         1924       (52 weeks)	12,135 26,356 36,450 53,289 65,142 64,340 69,249 72,370 132,169 126,716 140,496 149,752 150,540 188,040 202,939 303,334 272,199 255,462 301,913 284,194 258,461 263,047 269,822 337,521 488,781		12,135 26,356 36,450 53,289 65,142 64,340 69,249 72,370 73,543 75,369 75,005 80,601 79,315 83,447 84,151 105,665 94,796 108,958 131,243 134,747 127,294 119,959 125,704 148,991	10,017 20,282 27,682 35,727 50,310 49,429 53,058 54,870 54,674 57,019 56,347 61,143 60,356 65,817 69,746 88,265 80,374 90,898 107,067 108,684 99,911 90,400 93,701 121,890 115,378	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$				
1926 (52 weeks) 1927 (52 weeks) 1928 (52 weeks) 1929 (52 weeks) 1930 (52 weeks)	541,916 1,002,345 600,678 550,742 1,207,344	407,687 854,084 452,953 402,853 1,053,047	134,229 148,261 147,725 147,889 154,297	105,560 115,009 114,731 116,768 121,549	$\begin{array}{cccccccccccccccccccccccccccccccccccc$				
1931 (53 weeks) 1932 (52 weeks) 1933 (52 weeks)	651,414 598,624 591,668	509,267 464,985 455,664	142,147 133,639 136,004	109,163 104,420 108,050	24,323       1       6         23,086       13       0         23,790       11       0				

\* Including some searches made in 1908.

<sup>†</sup> In addition, there were 91,917 gratuitous searches made for National Insurance Audit purposes.

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x 11986

The 455,664 gratuitous searches during 1933 comprise 42,103 searches made for the purpose of verifying the ages of persons aged 70 and upwards claiming old age (non-contributory) pensions and 214,432 for persons claiming pensions under the Old Age Contributory Pensions Acts, 1925 and 1929; 123,349 for verification purposes in connexion with claims to widows' and orphans' pensions under the Widows', Orphans', etc., Acts, 1925 and 1929; 32,619 to assist dependents of men of H.M. Forces to produce evidence of marriage and of the births of children in connexion with claims to naval and military pensions, separation allowances, etc., and to verify the ages of certain classes of youths and men in connexion with service in the Army, Navy and Air Force; 26,752 for verification of age, etc., in connexion with National Health and Unemployment Insurance; and 16,409 for other public purposes.

**Offences against the Registration Acts.**—In 1933 fifteen persons, on prosecution by order of the Registrar-General, were convicted of offences in connexion with registration. The offences for which convictions were obtained were as under :—

( <i>a</i> )	For failing to register a birth	4
<i>(b)</i>	For failing to re-register a birth under the Legitimacy	
	Act	None
(c)	Giving false information when registering a birth, stillbirth or death	8
(d)	Giving false information for the purpose of procuring	0
(11)	marriage	3

In addition to the above cases proceedings were taken and convictions obtained by the Director of Public Prosecutions in cases reported through the Registrar-General, the offences including those of false registration and making false declarations when giving notice of marriage.

### RE-REGISTRATION OF BIRTHS UNDER THE LEGITIMACY ACT, 1926.

Under the Legitimacy Act, 1926, an illegitimate child of parents who married after the birth of the child was, subject to certain conditions, legitimated; and the Act contained incidental provision to enable the births of such children to be re-registered. During the year 1933 authority was issued for the re-registration of the births of 2,968 children, being 176 less than the preceding year. It is still difficult to speak with any certainty as to the normal figure to be expected in future years, as a large number of applications are not made shortly after the marriage of the parents but are postponed until the children's birth certificates are required on entering or leaving school or attaining the age of 21. 195

The number of authorities issued during each quarter is as follows :----

Quarter.		1927.	1928.	1929.	1930.	1931.	1932.	1933.
March		1,265	1,401	1,075	996	981	854	752
June		1,256	1,170	1,105	1,001	908	762	724
September	•••	1,381	1,242	933	1,006	797	709	718
December		1,593	1,070	933	986	825	819	774
Totals		5,495	4,883	4,046	3,989	3,511	3,144	2,968
ADODUTON	OT	OTTI D	DENT		DITT		DITON	071

#### ADOPTION OF CHILDREN UNDER THE ADOPTION OF CHILDREN ACT, 1926.

The Adoption of Children Act, 1926, provided for the legal adoption of children by Order of the Court, and established a system of registration of such adoptions in an Adoption Register to be kept by the Registrar-General. The number of children whose adoption was registered during 1933 is 4,528. Table CXXVI furnishes an analysis of the Adoption Orders made by reference to the several classes of Courts and the quarterly distribution of the total figure.

#### PARLIAMENTARY AND LOCAL GOVERNMENT ELECTORS.

The returns of Parliamentary and Local Government Electors published in Tables U and V summarise the Register of Electors compiled under the Representation of the People (Equal Franchise) Act of 1928 in respect of the qualifying period of three months ending on the 1st June, 1933.

The particulars have been taken from statements furnished to the Registrar-General by the Registration Officers of the several

	Numl		doption t with.	a Orders	Corresponding number of children <i>i.e.</i> , Entries made in Adopted Children Register.				
Year.	Total.	High Court.	County Court.	Court of Summary Jurisdiction.	Year's Total.	March Quarter.	June Quarter.	September Quarter.	December Quarter.
1927 1928 1929 1930 1931 1932 1933	2,943 3,278 3,294 4,511 4,119 4,465 4,524	133 124 72 74 68 38 61	184 236 224 317 274 264 262	2,626 2,918 2,998 4,120 3,777 4,163 4,201	2,967 3,303 3,307 4,517 4,127 4,467 4,528	329 851 722 1,084 873 1,073 1,029	990 844 787 1,196 1,049 1,178 1,258	774 705 857 983 1,046 1,000 1,004	874 903 941 1,254 1,159 1,216 1,237

#### Table CXXVI.

areas, or in the case of a University forming the whole or part of a University constituency, by the Chancellor, Registrar or other officer dealing with Parliamentary registration.

Registration Officers were instructed that the return of Parliamentary Electors should be the net total of individual Parliamentary Electors in each constituency, all duplicate entries being omitted from the count. In the case of Local Government Electors the number of names on the register was to be given. The instructions further directed that the names of "out voters" (that is, persons whose names appear twice in the Register, by reason of a claim under Rule 24 of the First Schedule to the 1918 Act) should be counted once only in respect of that qualification.

Table U refers to Parliamentary electors, and shows for each Parliamentary constituency in England and Wales, including the University constituencies, the numbers of males and females on the Register, and also the numbers registered in respect of business premises qualifications and the numbers on the absent voters list.

Table V refers to Local Government electors, and shows the numbers of each sex registered in respect of every local government area, *i.e.*, county borough, metropolitan borough, municipal borough, urban district and rural district in England and Wales.

The figures for the whole country are summarised in Table CXXVII and are shown in conjunction with the figures of previous Registers made since the passing of the 1918 Act.

# Table CXXVII.—Parliamentary and Local Government Electors, 1918-1933.

ten et.	(iı	Parlia: ncluding Uni	mentary Rea versity Cons	17	Local Go	vernment F	Register.	
Register.	Persons,	Males.	Females.	Business Premises Qualifica- tions. Males only up to 1928. Persons from 1929 (included im Cols. b-d).	Persons on Absent Voters' List (included in Cols. <i>b-d</i> ).	Persons.	Males.	Females,
а	b	c	d	e	f	g	h	k
1918 (Autumn) 1919 , 1920 , 1920 , 1921 , 1922 , 1923 , 1923 , 1924 , 1925 , 1926 , 1926 , 1927 , 1926 , 1927 , 1928 , 1928 , 1928 , 1929 (Spring) 1930 (Autumn) 1931 , 1932 , 1933 , 1934 , 1934 , 1935 , 1935 , 1935 , 1936 , 1937 , 1	$\begin{array}{c} 17,222,983\\17,465,638\\17,584,552\\17,795,784\\18,001,692\\18,388,833\\18,806,842\\19,167,275\\19,346,954\\19,585,972\\19,586,649\\25,095,793\\25,730,507\\26,135,944\\26,439,713\\26,715,526\end{array}$	$\begin{array}{c} 10.281.054\\ 10.234.887\\ 10.176,750\\ 10.237,344\\ 10.312,248\\ 10.498,179\\ 10.719,922\\ 10.897,545\\ 10.982,128\\ 11.094,031\\ 11.226,396\\ 11.866,794\\ 12,101,108\\ 12,288,852\\ 12,440,109\\ 12,578,340\\ \end{array}$	6,941,929 7,230,751 7,407,802 7,558,440 7,689,444 7,890,654 8,086,920 8,269,730 8,364,826 8,491,941 8,640,253 13,228,999 13,629,399 13,629,399 13,629,399 13,629,399 13,629,399 13,629,399	159,013 205,461 203,471 194,737 199,904 208,694 211,257 217,509 206,199 205,538 205,793 371,594 364,762 365,090 367,684 365,734	254,866 185,227 162,901 151,953 165,564 161,460 155,436 154,432 174,731 174,270	$\begin{array}{c} 13,930,130\\ 14,361,123\\ 14,712,453\\ 15,019,348\\ 15,322,625\\ 15,691,962\\ 16,015,033\\ 16,345,290\\ 16,574,549\\ 16,865,666\\ 17,179,487\\ 18,620,395\\ 18,629,395\\ 18,879,147\\ 19,156,018\\ 19,418,156\\ 19,659,678\\ \end{array}$	6,998,665 7,176,019 7,364,912 7,527,861 7,700,108 7,873,461 8,007,384 8,157,607 8,284,181 8,444,718 8,648,017 8,825,225 8,905,768 9,036,870 9,160,409 9,274,801	6,931,465 7,185,104 7,347,541 7,491,487 7,622,517 7,518,501 8,007,649 8,187,683 8,290,368 8,420,948 8,571,470 9,795,170 9,795,170 9,795,170 9,795,171 10,384,877

It will be observed that the sex distribution of the electorate which, in respect of the Parliamentary Register, was formerly in the proportion of about 1.3 men to each woman, was completely altered by The Representation of the People (Equal Franchise) Act of 1928. That Act, which placed women on the same footing as men in regard to the franchise, added about 41 million women to the Parliamentary electorate and nearly 11 million to the Local Government electorate, and as a consequence women now outnumber men by approximately 12 per cent. in the case of each. The somewhat abnormal increase in the male electorate between 1928 and 1929-an interval of six months, it should be noted, in place of the usual 12 months period-cannot be explained by the new Act which left the male franchise unaltered apart from a trifling addition-approximately 3,700-in respect of men registered in respect of their wives' occupation of business premises, and must be mainly ascribed to the special procedure, adopted for the first time in connexion with the 1929 register, of the universal service of a compulsory form of return which disclosed and made good omissions from the registers on the pre-1928 Act franchise.

Including a certain amount of plural representation in the case of those persons registered in more than one constituency by reason of their possessing the necessary residence or business qualification, or being entitled to be registered in respect of a University constituency, the total Parliamentary electorate of 26,715,526 represents  $66\cdot 2$  per cent. of the estimated total population, or  $65\cdot 0$  per cent. of the male and  $67\cdot 3$  per cent. of the female population; in the case of the rather more restricted Local Government franchise, the numbers are somewhat less and the proportions correspondingly lower, the total electorate being  $48\cdot 7$  per cent. of the whole population, or  $47\cdot 9$  per cent., and  $49\cdot 5$  per cent. in the case of males and females separately.

Of the total of the Parliamentary Registers, the bulk, viz. 26,617,720, represents the aggregate voting strength in the 509 geographical constituencies into which England and Wales is divided, the balance of 97,806 representing the five University constituencies. Eleven of the Boroughs, and three University constituencies, however, each return two members, so that the total representation in Parliament is by 528 members, 520 in respect of the geographical divisions, with an average electorate of 51,188 per member and eight in respect of the Universities, with an average electorate of 12,226.

#### MISCELLANEOUS.

Other tables appearing in Part II of the Statistical Review which have not formed the subject of special comment in the foregoing pages are :---

Table W, showing the Population, Births, Deaths, Infant Mortality and Marriages, with Rates in British Islands and Dominions, 1933.

- Tables X and Y, showing the census populations respectively of the British Empire, Dominions, etc., and of Foreign Countries.
- Appendix, showing changes in boundaries of various local government districts and the areas and populations involved.

## WEATHER OF THE YEAR 1933. ENGLAND AND WALES.

The year 1933 was distinguished by an exceptional deficiency of rainfall. Other important features were the marked excess of sunshine, the unusual warmth experienced from March to October, the great snowstorm in February and the abnormal sequence of thunderstorms in June.

The percentage of the normal rainfall over England and Wales as a whole was 83. The year was not as dry as 1921 with 70 per cent. or 1887 with 74 per cent. but, since 1870, the only other comparable years were 1893 with 83 per cent. and 1870 with 82 per cent. February, March and October alone gave an excess of rainfall, the excess being marked in February (160 per cent.). The deficiencies were outstanding in August, November and December and the long sequence of dry months, from April to September inclusive, was exceptional. The total rainfall for the year exceeded the average only to the east of the Pennines from Sunderland to Goole and locally in Hampshire.

With regard to temperature, the year under review was noteworthy. Mean temperature exceeded the normal in all districts, the excess varying from  $1.0^{\circ}$  F. in the Channel Islands to  $2.0^{\circ}$  F. in north-east England. An unusually cold spell occurred from January 20th to 29th, while mean temperature for February was, on the whole, rather above the normal. There followed a sequence of eight warm months. March was excessively mild : at Greenwich there is no other March with such persistent warmth by day in a record which goes back to 1841 and at Southport no warmer March has occurred in 62 years' records. The outstanding feature of the summer months was the unusual warmth of the period June to September as a whole. As far as can be ascertained the mean temperature of the four consecutive months exceeded that of any other similar period since before 1881. The very mild weather lasted until 25th October. It was not, however, until about 25th November that really cold weather set in and continued until the end of the year. The persistent and severe cold in December, particularly in southern districts, was perhaps as striking as the exceptionally warm summer. At several places in the southern half of England it was the coldest December since 1890, and at some individual stations the deviation from the normal mean temperature was more than  $-7^{\circ}$  F.

Sunshine was excessive, particularly from January to March and June to September. Over the country generally the total sunshine during June to September probably exceeded that of any four consecutive months since the similar period in 1911.

**Further information.**—Tables relating to meteorological elements are given in Part I (Tables 30–32). A description of the weather of each month appears in the Quarterly Return of the Registrar-General and a summary of the observations at Greenwich for each month of the year appears in Table XI of the Return for the fourth quarter.

Charts showing the distribution of pressure, temperature, sunshine and rainfall for the year, together with summaries of the observations at numerous stations will be found in the Annual Summary of the Monthly Weather Report issued by the Meteorological Office.

A list of the publications of the Meteorological Office will be found in "List M" issued by H.M. Stationery Office.

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