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STATISTICAL REVIEW

OF

ENGLAND AND WALES

FOR THE YEARS

1938 and 1939

(New Annual Series, Nos. 18 and 19)

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The publication of a Text volume covering the two years 1938 and 1939 is a departure from the pre-war practice under which a textual commentary was produced each year in association with and following the publication of Part I and II of the Statistical Review.

During the war, printing difficulties made it impossible to maintain the regular pre-war publication programme and although the Statistical Review (Parts I and II) for 1938, 1939 and 1940 appeared at intervals between 1940 and 1944, publication of Text volumes was not possible. Much of the material for the Text volumes was prepared however during the war, and when facilities for printing became available, it was decided to issue a single Text volume to cover the two pre-war years. The next Text Volume will cover the years 1940–45. The printing of Part I and II (Tables) for 1945 is now proceeding and publication is expected at an early date.

Included in the new material in this Text Volume is the commentary on the Fertility material obtained as a result of the provisions of the Population Statistics Act which came into operation in July 1938.

"Science has nothing to offer more inviting in speculation than the laws of vitality, the variations of those laws in the two sexes at different ages, and the influence of civilization, occupation, locality, seasons, and other physical agencies, either in generating diseases and inducing death, or in improving the public health."

[*William Farr to the Registrar-General, May, 1839.*]

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STATISTICAL REVIEW, 1938 and 1939

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DEATHS.

In 1938 the deaths of 478,829 persons were registered in England and Wales, 246,731 of these being males and 232,098 females.* The total was 6·0 per cent. below that for 1937.

In 1939 the deaths of 499,804 persons were registered, 255,781 being of males and 244,023 of females.* The total was 4·4 per cent. above that for 1938.

Deaths of non-civilians registered in 1938 and preceding the outbreak of war in 1939 are included in all tables and allocated to their administrative area of residence. Deaths of non-civilian males registered on and after 3rd September, 1939, are excluded from all tables in Part I, 1939, except Tables 3 and 4 (total deaths registered) and Tables 20 and 21A and Appendix BII which give full details of the 836 non-civilian deaths registered in England and Wales during that period.

The assignment of deaths to place of residence was complicated in 1939 by the fact that during the last few months of the year many civilians were temporarily resident in areas away from their homes. During the last quarter of the year all deaths were assigned to the temporary home address when two home addresses were given, and in the case of non-institution deaths occurring in an area which was not an "evacuation area" in the official sense and for which the only home address stated was in an evacuation area the assignment was made to the area where the death occurred. The reason for this departure from the usual practice regarding deaths of persons away from home was that from the date of the National Register enumeration on 29th September, 1939, changes of address for more than a few weeks duration were registered and taken account of in the calculation of the local populations at risk, which is not the case in normal times.

Death-rates.—The death-rates used in this Review are of several kinds, and are further complicated in 1939 by the large scale movements of population which took place in the latter half of that year and by the drafting of males into the armed forces. For years 1933 to 1939 they are based upon the original population estimates shown in Tables 1, 2, 17, 29 for those years.

Crude death-rates for 1938, whether of England and Wales or of any region

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* In addition 167 deaths of males were registered in 1938, and 98 in 1939, which occurred in the Gresford Colliery disaster in 1934 and on which the inquests had remained adjourned since that date pending further evidence. These deaths have been appended in notes to the appropriate statistical tables but have not been included in the annual totals or death rates for 1938 or 1939. They would best be added to the deaths of 1934, raising the crude death-rate of that year from 12,511 to 12,524 per million for males and from 11,783 to 11,789 for persons. The age distribution of the deaths, which were all assigned to No. 194, Other or unstated forms of accidental violence, is shown in notes below Tables 25 for the respective years. The crude death-rate of males from all violent causes in 1934 would be raised by their inclusion from 782 to 796 per million and of persons from 562 to 568.

or locality, represent the number of deaths which were registered during the year as belonging to the area in question, after correction for transfers to the place of residence of the deceased, per 1,000 or million of the corresponding estimated population at the middle of the year as given in Table 17. In this rate are included deaths at all ages. For England and Wales as a whole the crude death-rate in 1938 was 11·6 per 1,000 (Table 3), or more exactly 11·618 (Table 7).

Composite crude death-rates for 1939, which for that year take the place of crude rates throughout, represent the number of deaths registered during the year as belonging to the area in question, with deduction of those of non-civilian males registered during the war period from 3rd September onwards and corrected for transfers to place of residence as explained above, per 1,000 or million of the corresponding estimated population at risk as given in Table 29. The populations used for these rates were calculated by means of the mid-year population and the National Register of civilians at 29th September and at subsequent dates in such a way that they correspond with the deaths as far as possible. For England and Wales as a whole the composite crude rate of 12·097 per 1,000 (Table 7) differed only slightly from the crude rate as normally defined (12·055), the former as shown in Table 3 and the latter as given in the Quarterly Returns being 12·1 in each instance. For some regions and localities, however, the correction is important owing to the movements of population which occurred after mid-year. Greater London, for example, had an estimated mid-year population of 8,728,000 and deaths numbering 90,345 (Table 17), together with an unknown fraction of the 836 non-civilian deaths registered in the whole country. Whatever the fraction of these non-civilians with residences in Greater London, the crude rate as usually defined would have been 10·4 per 1,000, whereas the composite rate was 10·8, being based upon the estimated population at risk, 8,375,200 (Table 29), which was considerably less than the mid-year population. The death-rates designated as " crude " throughout the statistical tables for 1939 are composite rates as defined above and may be regarded as comparable with the crude rates of previous years except in so far as they were influenced by changes in the composition of the population at risk brought about by the increasing proportion of older people and recruitment of the younger and healthier sections of adult males into the armed forces. The effects of the changes in sex and age proportions are corrected by standardization (see below) but the effects upon death rates of physical selection in recruitment remain. Table 1 shows that the population used for death-rate calculation was less than the mid-year estimate by approximately a two-hundredth part of the whole, and if this section of the population, consisting mainly of non-civilian males, was so healthy as to have a normal mortality of zero the effect of its withdrawal would be to raise the death-rate of the residual population by about one part in 200. Selective recruitment in the physical sense as well as by age cannot therefore have enhanced the crude death-rate by more than ·06 per 1,000 population and probably affected it by much less.

Specific death rates relate either to mortality assigned to specific causes by the processes outlined on pp. 47-49, or else to the mortality amongst selected groups of persons specified according to their sex, age or civil condition. Specific rates of the latter type are, with certain exceptions, usually obtained by relating the numbers of deaths registered as being those of persons in the selected group to the estimated number of such persons alive at the mid-year. For 1939, however, the appropriate section of the composite population, as given in Table 1, has been used in place of a mid-year estimate. Exceptions to the general rule are the various rates of infant mortality which are based upon the number of live births registered during the year, and certain death-rates connected with childbearing which, for reasons explained in the section on maternal mortality, are based upon the number of live and stillbirths registered during the year. In the calculation of infant and maternal rates for separate areas in 1939 births occurring away from home and registered during the last quarter of the year were transferred to the place of temporary or permanent residence of the mother in accordance with the rule defined above for deaths, since otherwise the denominators of the rates would not correctly represent the numbers of infants and mothers at risk. The numbers of births used for these local rates differed, therefore, in many areas from the numbers used for the calculation of birth-rates which are given in Table 17.

Standardized death-rates are attempts to express the mortality of a population of changing or abnormal age distribution by a single figure calculated in such a way that the changes or abnormalities in constitution do not appreciably influence it. The standardized rates used in this Review for England and Wales as a whole, whether for all causes or specific causes, are the rates which would result if each sex and age group of the census population in 1901 was subject to the death-rate at that age during the year to which the rate applies.* The use of composite death-rates, excluding non-civilians during the latter part of the year, introduced some effects of physical selection at the young adult male age groups, but the total effect of this upon the national standardized rate for 1939 cannot have been appreciably greater than in the case of the crude rate and may be ignored. On this basis of standardization the rate from all causes in 1938 was 8·5 per 1,000 living, and in 1939 it was again 8·5, compared with 9·3 in 1937. The lowest standardized rate previously recorded was 9·0 in 1935.

The population of 1901 is no longer a good standard owing to the rapid changes in the proportionate age distribution which have occurred since that date, but a change to some other standard of more recent date such as 1931 census population would only temporarily remove this objection at the cost of grave disadvantages to the continuity of recorded death-rates. More complicated rates such as the life-table death-rate, whilst they would be free from some of the faults of the standardized rate as at present defined, suffer from the disadvantage that they postulate conditions which are hypothetical and their precise meaning is difficult to visualize. The important effects of a continued low birth-rate and rapidly increasing proportion of old people in the population upon the crude and standardized rates are apparent in the divergent trend of these rates since 1901 when they were, of course, equal. From 16·9 per 1,000 persons living, the crude rate declined to 12·1 in 1921, but since then has undergone no appreciable change, the rate in 1921–25 being 12·1, in 1926–30 12·1, in 1931–35 12·0 and in 1936–39 12·1. The standardized rate, however, which declined from 16·9 to 11·3 by 1921, has continued to fall, averaging 10·3 per 1,000 in 1926–30, 9·6 in 1931–35 and 8·9 in 1936–39.

Since the rate of decline in death-rates has been greater in early and middle life than at advanced ages, and since the 1901 population now underweights the population at ages over 65, it follows that the S.D.R. has in recent years tended to exaggerate the rate of fall of mortality. For this and other reasons it is proposed to change the basis of standardization in 1941.

Another method of expressing mortality by figures which are not influenced by the proportions at risk at different ages is to calculate an " equivalent

* 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.

average death-rate,"* that is to say an arithmetical mean of the rates at quinquennial groups of ages up to some convenient limit of age such as 65, this being equivalent to calculating a standardized death-rate at ages under 65 based upon a population equally distributed over the 13 age-groups.† This has the effect at present of giving too great weight to mortality at ages 45–65, but the extent of that overweighting is diminishing year by year, whereas the underweighting of these ages by use of the 1901 standard population becomes continually more pronounced. This is made clear by the comparison of populations in Table I.

Table I.—Population of Persons in England and Wales by Ages, per 10,000 at all ages, 1901, 1911, 1921, 1931, 1937, 1938 and 1939

	1901 Standard	1911 Census	1921 Census	1931 Census	1937 Estimated mid-year‡	1938 Estimated mid-year‡	1939	
							Estimated mid-year‡	As used for rates
0– ...	1,143	1,069	877	749	680	683	690	694
5– ...	2,099	1,995	1,895	1,635	1,485	1,449	1,415	1,421
15– ...	1,958	1,805	1,756	1,734	1,618	1,607	1,592	1,565
25– ...	1,616	1,651	1,520	1,605	1,681	1,675	1,671	1,663
35– ...	1,228	1,344	1,411	1,368	1,429	1,447	1,465	1,469
45– ...	892	978	1,167	1,235	1,239	1,241	1,244	1,250
55– ...	597	637	769	932	1,013	1,020	1,026	1,033
65– ...	331	377	434	536	613	628	643	648
75– ...	121	126	151	182	215	221	225	227
85 and up	15	18	20	24	27	29	29	30
All ages ...	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000

The equivalent average death-rates at ages under 65 for each sex give a simple measure, unaffected by age distribution of the mortality up to that age, but the information given by these two figures needs to be supplemented by rates at 65–75 and 75 and over in order to complete the record of mortality.

In Table II the trends for each sex, since 1901, of (*a*) the crude death-rate, (*b*) the standardized death-rate, (*c*) the equivalent average death-rate under 65, and (*d*) the life-table death-rate (1,000 divided by the complete expectation of life at birth) are compared. The proportionate fall in the equivalent average death-rate under 65 has been only slightly greater than that of the standardized rate at all ages, notwithstanding that the improvement at the excluded ages over 65 has been very much less than at the earlier ages. Their simple definition and ready calculation, and the fact that they are not dependent upon an arbitrary standard population out of relation to present-day conditions, gives these equivalent rates certain advantages over the standardized rates for separate causes, and these alternative rates have been given in several tables of this Review.

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

† If rates at all the quinquennial age groups are not available, twice the rate for the decennial group can be substituted without appreciable error.

‡ Revised in the light of the National Register enumerated population, 1939.

Table II.—Trend of Crude and Corrected Death-Rates since 1901 by Sex; Rates per 1,000 living and per cent. of the rate in 1911

	Crude death-rate all ages		Standardized death-rate all ages		Equivalent average rate under 65		Life-table death-rate all ages	
	M	F	M	F	M	F	M	F
	Rates per 1,000 living.							
1901 ...	18·1	15·8	18·5	15·5	16·2	13·2	—	—
1911 ...	15·6	13·7	15·6	13·0	13·6	11·0	19·4	18·1
1921 ...	12·9	11·3	12·5	10·2	10·5	8·5	18·0	16·8
1931 ...	13·0	11·6	11·3	9·0	9·3	7·2	17·0	15·9
1932 ...	12·7	11·4	10·9	8·7	8·9	6·9	—	—
1933 ...	12·9	11·7	10·9	8·8	9·1	7·0	—	—
1934 ...	12·5	11·1	10·4	8·3	8·8	6·7	—	—
1935 ...	12·5	11·1	10·2	8·0	8·5	6·4	—	—
1936 ...	12·9	11·4	10·4	8·2	8·7	6·4	—	—
1937 ...	13·2	11·7	10·5	8·2	8·8	6·5	16·5*	15·5*
1938 ...	12·5	10·8	9·8	7·5	8·2	5·9	16·3*	15·2*
1939 ...	12·9	11·3	9·7	7·4	8·1	5·8	16·2*	15·1*
	Per cent. of rate in 1911.							
1901 ...	116	115	119	119	119	120	—	—
1911 ...	100	100	100	100	100	100	100	100
1921 ...	83	82	80	78	77	77	93	93
1931 ...	83	85	72	69	68	65	88	88
1937 ...	85	85	67	63	65	59	85*	86*
1938 ...	80	79	63	58	60	54	84*	84*
1939 ...	83	82	62	57	60	53	84*	83*

* Estimate from abridged life table based on annual rates.

For almost all the causes of death shown in Table 8 the standardized rates were below the average for the preceding five years, both in 1938 and 1939. The only causes which showed appreciable increases over the preceding five-year average were:—For 1938 but not 1939, acute poliomyelitis in both sexes, cancer, non-malignant tumours and disseminated sclerosis in males, and liver diseases (other than cirrhosis) in females; for each year 1938 and 1939, leukæmia, cardiovascular degeneration and other chronic myocarditis, coronary disease and angina pectoris and arteriosclerosis (excluding cerebral hæmorrhage) in both sexes, diseases of the veins and liver diseases (other than cirrhosis) in males, and lymphadenoma, paralysis agitans and aneurysm in females; for 1939 but not 1938, diabetes and paralysis agitans in both sexes, adrenal disease, gastric ulcer and accidents in males, and disseminated sclerosis, disordered action of the heart and diseases of the veins in females. The considerable increases for degenerative diseases of the heart have been partly offset by the decline in the rate of mortality certified as due to old age.

Adjusted Death-Rates for Local Areas.—In the Review for 1934 the methods employed before 1911 to correct local death-rates for peculiarities in the sex and age constitutions of their populations were summarized, and in that and each subsequent Review the methods used from 1911 onwards have been explained.

In 1934 an *areal comparability factor* (A.C.F.) was calculated for each separate

administrative area, county aggregate, county and region, the method of calculation being as follows: Standard national death-rates for the triennium 1930–32 at various sex and age groups were obtained by dividing the deaths registered in England and Wales in the three years by three times the census population. The standard rates were multiplied by the corresponding groups of the census population in 1931 of the area (any boundary changes since the census being taken into account). The age groups used may be conveniently reduced to 11 without seriously affecting the accuracy of the resulting factor, viz. persons under 5, persons aged 5–35, males aged 35–55, 55–65, 65–75, 75–85, females of the same ages and persons aged 85 and over. In certain areas where the population at 5–35 was known to be abnormally distributed owing to the presence of large schools or institutions for young people this age group was further subdivided. The sum of the resulting products divided by the total population gave the expected mean local death-rate at all ages in 1930–32, and the ratio of the mean crude death-rate of England and Wales in 1930–32 to this local index rate was the A.C.F. for the area as given in Column 13 of Table 17 for each of the years 1934 to 1938.

The A.C.F. for 1938 relates to the population of the area as defined by boundaries during that year, but is based upon the sex and age constitution of that area as it was determined at the census of 1931. Provided that in the interval boundary changes or age selective movements of population important enough to change the age distribution of the population included in a different way to that of the country as a whole were not known to have occurred, the A.C.F. remained unchanged from year to year. In 1939 evacuation movements disturbed the relative age distributions of some local areas to a considerable extent, and since the National Register enumeration provided a basis for re-calculation of the whole series of A.C.F.'s this was done.

The A.C.F. for 1939 is obtained by applying the national death-rates for the various sex-age groups in that year to the local population of the area at risk throughout the year, as estimated from the National Register and from such information as was available regarding the ages concerned in the evacuation movements before the enumeration was made. The factors given in Column 13 of Table 17 for 1939 differ considerably in some instances from those for 1938 and preceding years. For the aggregate of rural districts, for example, the 1938 factor was 0·89 but became 0·96 in 1939, this change being mainly due to the large influx of children during September, 1939, which tended to counteract the effect upon death-rates of the normal rural excess of old people. In some rapidly growing urban areas large discrepancies in A.C.F. between 1938 and 1939 may, however, arise from the fact that between 1931 census and the National Register enumeration of 1939 the age constitution of the population was changing in a different way or at a different rate from that of the country as a whole and that this was not known and taken account of until the A.C.F. could be recalculated on the new basis for 1939.

The crude death-rate of an area when multiplied by the A.C.F. applicable to the year in question gives the *adjusted death-rate*, which is comparable with the adjusted death-rate of any other area, or with the crude death-rate of England and Wales (for which the A.C.F. is necessarily unity) *in the same year*. An adjusted death-rate is not quite comparable with another for a different year owing to the progressive change in the age constitution of all populations; for comparison with other years it is necessary, therefore, to obtain local standardized death-rates by a further correction factor, as described below. The adjusted death-rates for 1938 and 1939 are obtained by multiplying the local crude death-rates in Column 12 of Table 17 by the corresponding A.C.F. in column 13; and the indices given in column 14 are the ratios of the adjusted local death-rates to the crude death-rate of England and Wales in the same year.

If it is desired to calculate *standardized death-rates*, based on 1901 standard population and comparable with those given for separate areas in the Annual Report for 1911, the adjusted death-rate must be further multiplied by the time comparability factor (T.C.F.) or ratio of the standardized national rate (persons) to the crude national rate (persons) for the year in question.

$$\text{Adjusted local death-rate} = \text{A.C.F.} \times \text{crude local D.R.}$$

$$\text{Ratio of local adjusted death-rate to national rate} = \text{A.C.F.} \times \frac{\text{crude local D.R.}}{\text{crude national D.R.}}$$

$$\text{Standardized local death-rate} = \text{T.C.F.} \times \text{A.C.F.} \times \text{crude local D.R.}$$

The numerical values of the T.C.F. for the years 1929 to 1939 are:—1929, ·853; 1930, ·838; 1931, ·820; 1932, ·808; 1933, ·796; 1934, ·790; 1935, ·768; 1936, ·759; 1937, ·746; 1938, ·736; 1939, ·702.

The assumption here involved is that the distribution by sex and age of the local population underwent between 1931 Census and 1938 the same proportionate changes as were estimated to have occurred in the national population, these latter changes between census years having been calculated annually since 1915 by adding births and deducting deaths at various ages with the necessary correction for migration. Although this assumption is not necessarily true in the case of certain rapidly growing areas, it is the best approximation which can be made and is more satisfactory than the assumption made in local standardization for intercensal years before 1931, namely, that the local sex and age distribution remained unchanged until it was again ascertained by the next census.* For 1939 the National Register enumeration in that year was utilised in the calculation of A.C.F.'s, as already explained.

The A.C.F.'s in Table 17 can only be applied to mortality from all causes, although for causes of death whose incidence according to sex and age is similar to that for all causes combined the appropriate factor would be found to be very similar. For most causes, however, the specific A.C.F., which can be calculated for use in years 1930 to 1938 by substituting death-rates from the specified cause in 1930–32 for the death-rates from all causes, differs from the factor tabulated. This is shown below by a few examples which were obtained for the county boroughs of Bournemouth and St. Helens in 1934.

	Areal comparability factors, 1934, for:—					
	All causes	Cancer	Measles	Diabetes	Heart disease	Respiratory tuberculosis
Bournemouth ...	0·75	0·70	1·39	0·68	0·65	1·01
St. Helens ...	1·23	1·32	0·80	1·34	1·46	0·97

Table III gives the standardized death-rates for London, all county boroughs, other urban areas and all rural districts in the years 1911–14, calculated by the direct method of standardization; and for London Administrative County and the aggregates of areas outside Greater London in 1931–35 and 1936–39, calculated by means of the A.C.F. and T.C.F. as explained above. The exclusion of parts of Greater London from the aggregates does not seriously affect the comparison with 1911–14, the S.D.R. for county boroughs being raised by 1 per

* No such correction for the changing age distribution from year to year was applied in the calculation of the standardized rates for separate areas given in the Annual Reports for 1912, 1913 and 1914, the assumption being that the T.C.F. remained the same as in the census year 1911. The national S.D.R. was, of course, corrected year by year for estimated changes in the age distribution. At that time, however, these changes were slow and the effect of this correction upon the 1912-1914 local rates is found to be slight; it reduced the average standardized rates for the 4-year period 1911-1914 by about 0·6 per cent. of the rates. Wherever standardized death-rates of separate areas are given in this Review the necessary correction has been applied, no matter to what year or years they refer.

cent. and that for other urban districts by 3 per cent. whilst the rural district rate is unaffected. At the foot of the table the standardized (percentage) mortality ratios are given.

In the quarter of a century from 1911–14 to 1936–39 London's S.D.R. declined from 14.5 to 9·0 or by 38 per cent. and the rural district rate from 10·9 to 8·1 or by 26 per cent. Comparing county borough with rural rates, it is apparent that owing to the more rapid reduction in urban than rural mortality the percentage excess, which provides a measure of the handicap imposed by urban residence, has been reduced from 46 per cent. to less than half that value in the course of 25 years.

Table III.—Standardized Mortality at all ages in London, Urban and Rural Aggregates, and percentage excess in the County Boroughs compared with Rural districts, 1911-14, 1931-9

	England and Wales	London administrative county	Aggregate of county boroughs*	Aggregate of other urban districts*	Aggregate of rural districts*	Per cent. excess in county boroughs over rural districts
	Standardized death rates per 1,000 persons.					
1911 ...	14·2	15·3	16·6	14·0	11·4	+46
1912 ...	12·9	13·8	15·2	12·4	10·5	+45
1913 ...	13·3	14·3	15·6	12·8	10·7	+46
1914 ...	13·5	14·6	16·1	12·9	10·8	+49
Average 1911–14	*13·5*	*14·5*	*15·9*	*13·0*	*10·9*	*+46*
1931 ...	10·1	10·4	11·4	10·1	8·9	+28
1932 ...	9·7	10·1	10·7	9·7	8·7	+23
1933 ...	9·8	10·2	11·1	9·8	8·7	+28
1934 ...	9·3	9·8	10·3	9·2	8·4	+23
1935 ...	9·0	8·9	10·2	9·1	8·2	+24
Average 1931–35	*9·6*	*9·9*	*10·7*	*9·6*	*8·6*	*+24*
1936 ...	9·2	9·5	10·3	9·2	8·3	+24
1937 ...	9·3	9·5	10·4	9·3	8·2	+27
1938 ...	8·5	8·6	9·6	8·6	7·7	+25
1939 ...	8·5	8·5	9·2	8·6	8·1	+14
Average 1936–39	*8·9*	*9·0*	*9·9*	*8·9*	*8·1*	*+22*
	Standardized (percentage) mortality ratios.†					
1911–14 ...	100	107	118	96	81	—
1931–35 ...	100	103	111	100	90	—
1936 ...	100	103	112	100	90	—
1937 ...	100	102	112	100	88	—
1938 ...	100	101	113	101	91	—
1939 ...	100	100	108	101	95	—

* Outside Greater London from 1931 onwards.

† Percentage ratio of local adjusted to national crude death-rate (1931–39) or percentage ratio of local standardized to national standardized death-rate (1911–14).

The changes which took place in the standardized death-rates of individual county boroughs between 1911–14 and 1931–34 were dealt with in the Review for 1934 (pp. 144–150).

Statistical Significance of Death Rates.—Whilst it is most desirable that conclusions should not be drawn from differences between death rates without inquiring first whether the differences have any statistical significance when account is taken of the numbers of deaths on which the rates are based, it is scarcely practicable to introduce into the many tables of death-rates in the Annual Review any statistical measure of their significance. In Part I of the Review, however, all death rates based upon less than 20 deaths have been distinguished by italic type in order to convey a warning that such rates are subject to a specially large amount of variation in proportion to their magnitude owing to the small number of persons whose experience is being recorded, and in such cases a test of statistical significance should always be applied before making even a tentative deduction from rate differences. The necessity for such a test still holds for rates based upon numbers of deaths exceeding 20, but the likelihood that a given deviation from some expected value has arisen merely by chance diminishes as the size of the experience increases. In the Text an approximate test of significance has been applied to death rates wherever it has been deemed to be important.

Provided that the deaths are few in comparison with the population at risk (as is usually the case except at ages over 75) an approximate measure of the variability, or standard error, of the number of deaths is given by the square root of that number. This rule pre-supposes the independence of the deaths one of another and would cease to be accurate if a large proportion of the recorded deaths was due to some factor, for instance, an explosion or an epidemic, affecting simultaneously a large number of persons in the population under consideration. This is rarely of importance in connection with death-rates from all causes combined. For practical application it is generally more convenient to deduce the standard error from the actual deaths rather than from "expected" deaths based on some standard mortality, although in some circumstances the latter may have theoretical advantages as a basis for calculating the standard error. If the recorded deaths in a population group happen to be zero it is necessary if a standard error is required to calculate it from the square root of the deaths expected by applying some standard rate to the population. When comparison is being made with a standard rate, such as the national death rate or the mortality in all county boroughs, it may also be convenient in some cases to substitute the square root of the deaths expected if the standard rate were operative on the local population. It is not of much practical importance which of these measures of variability is used and the method which is most readily applicable by means of the data tabulated and which seems most suitable to the comparison required will be employed. What is of more importance is to remember that little or no useful purpose can be served by measuring the standard errors of crude death-rates which are affected by differences in sex and age constitution of the populations. Before any test of the statistical significance of a difference between two rates can be usefully applied both rates must first be corrected to a common standard to remove the effects of peculiarities in the constitution of the population at risk.

The extent to which the number of deaths which happen to occur in populations of the same size and constitution in the same year may vary on account of random sampling, and the decrease in the proportionate amount of such variability as the size of the experience increases, may be seen from the following values of the standard error, expressed as a percentage of the number of deaths in each instance :—

No. of deaths	10	20	50	100	200	500	1,000
Standard error as percentage of No. of deaths	±32	±22	±14	±10	±7	±4	±3

A positive deviation from the average number of deaths amounting to as much as twice the standard error may occur about once in 44 times and the odds against such a deviation being due to chance would be about 43 to 1.* These would likewise be the odds against a negative deviation amounting to twice the standard error being due to chance. Taking this as a reasonable arbitrary limit of unlikelihood no deviation will be regarded as statistically significant unless it equals or exceeds twice the square root of the number of deaths. Thus, a number of towns, each of such a size as to produce on the average 50 annual deaths, may have in the same year numbers of deaths ranging from 36 to 64 without the differences having any hygienic significance (15 being a just significant variation from 50 according to the definition).

The application of this convention to determine the significance of differences between infant mortality rates or other rates not requiring correction for age constitution is a simple matter. The standard error of the rate R (per unit) is given by the ratio of the square root of the deaths D to the population at risk P, and since in this case $P = D/R$, the standard error of R can be expressed as $R/\sqrt{D}$ and obtained by simply dividing the rate by the square root of the number of deaths. This last expression is equally applicable whether R is measured per unit, per cent. or per 1,000 of the population or births. Thus, for a town with an infant mortality rate of 69 per 1,000 births based on 25 deaths, the rate of 69 has a standard error of the order 69/5 or about 14.

The same simple rule applies also to the ratios of registered to standard deaths or of adjusted to national death rates given in column 14 of Table 17, the standard errors of these (or of similarly calculated adjusted or standardized mortality rates) being most easily obtained by dividing the ratio or rate by the square root of the number of recorded deaths on which it is based. Thus, Table 17 for 1938, page 83, shows that Letchworth Urban District recorded 144 deaths, giving an adjusted death rate ·85 times the national rate. The standard error of the mortality ratio was therefore ·85/12 or ·071 and, regarding deviations of less than twice the standard error as merely due to chance, variations from year to year within the limits ·85±·14, that is, between ·71 and ·99, have no statistical significance.†

The difference between two death rates can only be regarded as significant if it amounts to twice the standard error of that difference, that is, to twice the square root of the sum of the squares of the standard errors of the death rates.

In Table IV the Great Towns, that is to say County and Metropolitan Boroughs together with other towns having 50,000 or more population in 1938, are arranged in 8 groups as follows:—

* A positive deviation not less than the standard error may be expected about once in 6 times, and a positive deviation not less than 1½ times the standard error about once in 15 times.

† If it is desired to compare an adjusted death rate with the national death rate and if it is thought preferable to use the deaths expected if the national mortality was operative as basis for the standard error, the alternative calculation is as follows. If S is the national rate per 1,000, P the local population and C the local comparability factor (column 13 of Table 17), the "expected" deaths on the basis of the national rate are given approximately by SP/1,000C and the standard error of A (the local adjusted rate per 1,000) is measured by dividing the square root of this number by P and multiplying by 1,000, giving $\sqrt{1{,}000S/PC}$. If A differs from S by less than twice the resulting figure it is not significantly different from it.

1. Metropolitan Boroughs.
2. Towns in London's Outer Ring with 100,000 or more population.
3. Towns in London's Outer Ring with 50,000 but less than 100,000.
4a. County Boroughs outside Greater London with 250,000 or more.
4b. County Boroughs (including Rhondda U.D.) outside Greater London with 100,000 but less than 250,000.
4c. County Boroughs outside Greater London with 50,000 but less than 100,000.
4d. County Boroughs outside Greater London with less than 50,000.
5. Other towns outside Greater London with 50,000 but less than 100,000.

Table IV.—Standardized Mortality at All Ages in years 1935 to 1939 and Infant Mortality in 1938-39 in the Great Towns grouped according to their population,* separating those of Greater London.

Town	Regional letter	Standardized mortality ratio (per cent.), all ages, compared with the group figure for same year								Infant mortality rate 1938-39 compared with group			
		S.M.R. of group and excess or defect for each town					Standard error of S.M.R.†	Significantly above or below group S.M.R.		I.M.R. for 1938-9	Excess or defect from group	Standard error of I.M.R.	Significantly above or below group I.M.R. 1938-9
		1935	1936	1937	1938	1939		1938	1939				
Group 1	GL	99	104	103	100	101				53			
Battersea ...		+ 3	+ 3	0	+ 1	− 1	2·5			57	+ 4	3·7	
Bermondsey ...		+15	+17	+10	+ 9	− 2	3·2	High		41	−12	3·9	Low
Bethnal Green ...		0	+15	+12	+10	+ 3	3·4	High		55	+ 2	4·7	
Camberwell ...		+ 2	0	0	+ 6	− 3	2·0	High		50	− 3	2·9	
Chelsea		− 7	− 8	− 6	− 1	− 3	3·6			58	+ 5	7·3	
Deptford ...		0	+ 1	− 4	+ 6	0	3·1			52	− 1	4·3	
Finsbury ...		+18	+22	+25	+21	+13	4·4	High	High	54	+ 1	6·2	
Fulham		+ 1	+ 1	+ 4	+ 1	− 1	2·5			49	− 4	3·6	
Greenwich ...		− 5	− 8	− 4	− 4	− 9	3·0		Low	48	− 5	4·3	
Hackney ...		− 4	0	− 8	− 3	+ 1	2·1			49	− 4	3·0	
Hammersmith ...		+ 6	+ 2	+ 2	0	0	2·7			53	0	3·8	
Hampstead ...		− 9	−16	−14	− 8	− 9	2·9	Low	Low	48	− 5	4·9	
Holborn		+10	+ 2	− 1	− 3	0	5·1			70	+17	12·2	
Islington ...		− 1	+ 1	+ 4	+ 4	+ 3	1·8	High		58	+ 5	2·6	
Kensington ...		− 2	− 7	− 1	− 4	+ 1	2·2			72	+19	4·1	High
Lambeth ...		+ 4	− 2	+ 2	+ 2	+ 7	1·8		High	54	+ 1	2·7	
Lewisham ...		−14	−13	−14	− 9	− 8	1·9	Low	Low	45	− 8	2·7	Low
Paddington ...		+ 3	+ 1	+ 2	− 4	+ 3	2·5			63	+10	4·1	High
Poplar		+ 6	+11	+10	+ 9	+ 6	2·8	High	High	46	− 7	3·4	Low
St. Marylebone ...		+ 2	0	+ 1	− 5	− 4	3·0			60	+ 7	6·1	
St. Pancras ...		+ 6	+ 6	+ 2	+ 1	+ 6	2·3		High	59	+ 6	3·6	
Shoreditch ...		+ 7	+12	+ 8	+ 8	+ 8	3·6	High	High	48	− 5	4·6	
Southwark ...		+14	+12	+19	+15	+12	2·7	High	High	53	0	3·7	
Stepney		+14	+18	+12	+12	+ 9	2·4	High	High	59	+ 6	3·4	
Stoke Newington		− 8	−14	− 5	− 9	0	4·0	Low		37	−16	5·3	Low
Wandsworth ...		−12	−13	−10	−10	−14	1·4	Low	Low	47	− 6	2·4	Low
Westminster ...		+ 4	− 4	− 7	− 7	−11	2·6	Low	Low	46	− 7	4·8	
Woolwich ...		− 7	− 5	− 8	− 5	− 9	2·4	Low	Low	49	− 4	3·4	
Group 2	GL	90	92	93	91	92				44			
Croydon C.B. ...		− 7	− 7	− 3	− 6	− 5	1·7	Low	Low	40	− 4	2·5	
Ealing		− 5	− 9	−15	−10	− 4	2·2	Low		45	+ 1	3·0	
East Ham C.B.		+ 7	+ 5	+ 3	+10	+ 6	2·7	High	High	47	+ 3	3·6	
Hendon		− 4	−11	− 7	−11	−12	2·3	Low	Low	36	− 8	3·1	Low
Ilford		−15	−17	−14	−14	− 6	2·2	Low	Low	35	− 9	2·8	Low
Leyton		− 6	− 7	− 4	− 9	− 1	2·5	Low		39	− 5	3·6	
Tottenham ...		+ 4	+ 9	+ 8	+11	+ 2	2·6	High		43	− 1	3·5	
Walthamstow ...		− 3	− 1	+ 5	+ 7	+ 2	2·6	High		35	− 9	3·3	Low
West Ham C.B.		+16	+18	+18	+17	+14	2·0	High	High	51	+ 7	2·6	High
Willesden ...		+ 6	+ 6	+ 1	+ 2	+ 1	2·2			53	+ 9	3·0	High

* For definition of the groups, see pages 10 and 11.

† Average S.M.R. for 1938–9 ÷ square root of mean annual deaths.

Table IV (*contd.*)

Town	Regional letter	Standardized mortality ratio (per cent.), all ages, compared with the group figure for same year								Infant mortality rate 1938-39 compared with group			
		S.M.R. of group and excess or defect for each town					Standard error of S.M.R.†	Significantly above or below group S.M.R.		I.M.R. for 1938-9	Excess or defect from group	Standard error of I.M.R.	Significantly above or below group I.M.R. 1938-9
		1935	1936	1937	1938	1939		1938	1939				
Group 3	GL	81	84	82	83	88				40			
Acton		+13	+20	+13	+10	+ 1	3·5	High		58	+18	5·9	High
Barking		+ 1	− 2	− 3	− 5	+ 4	3·6			37	− 3	4·1	
Beckenham ...		−10	− 9	−12	−12	− 9	3·0	Low	Low	34	− 6	4·4	
Brentford and Chiswick ...		+ 7	+17	+13	+13	+10	3·7	High	High	42	+ 2	5·3	
Dagenham ...		− 8	− 3	− 5	− 1	+ 1	3·4			50	+10	3·6	High
Edmonton ...		+ 1	− 4	+ 2	+ 3	+ 1	2·9			42	+ 2	3·6	
Enfield		+ 4	− 1	+ 4	− 2	+ 1	2·9			43	+ 3	3·5	
Finchley		+ 7	− 1	+ 4	+ 3	0	3·3			36	− 4	4·4	
Harrow		− 4	−10	− 9	−11	−13	2·0	Low	Low	38	− 2	2·4	
Heston and Isleworth		− 4	− 5	− 6	− 5	− 4	2·7			48	+ 8	4·1	
Hornsey		+ 3	+ 6	+ 5	+ 6	− 3	2·7	High		31	− 9	3·7	Low
Mitcham ...		0	+ 8	+ 2	+ 5	0	3·7			35	− 5	4·2	
Southgate ...		− 6	− 4	+ 3	− 3	− 8	3·1		Low	29	−11	4·3	Low
Twickenham ...		+10	+ 7	+ 2	+ 1	0	2·7			36	− 4	3·6	
Wembley ...		− 8	− 9	− 8	− 9	−11	2·6	Low	Low	41	+ 1	3·4	
Wimbledon ...		+ 7	+ 2	+12	+10	− 7	3·3	High	Low	38	− 2	5·4	
Wood Green ...		+ 4	+ 8	+ 8	+ 6	+ 6	3·8			36	− 4	5·3	
Group 4*a*		116	112	113	114	113				61			
Birmingham ...	M1	−12	− 7	− 7	−11	− 8	1·0	Low	Low	60	− 1	1·3	
Bradford ...	N3	+ 6	+11	+ 6	+ 5	+ 4	1·8	High	High	60	− 1	2·8	
Bristol	M1	−25	−14	−21	−15	−11	1·4	Low	Low	42	−19	1·8	Low
Kingston-on-Hull	N2	− 1	+ 3	− 1	+ 2	+ 3	1·9			66	+ 5	2·4	High
Leeds	N3	+ 5	+ 8	+ 3	+ 3	+ 3	1·5	High	High	61	0	2·0	
Leicester ...	M2	−15	−14	−10	−16	−16	1·8	Low	Low	47	−14	2·5	Low
Liverpool ...	N4	+16	+13	+14	+14	+12	1·2	High	High	72	+11	1·5	High
Manchester ...	N4	+16	+17	+15	+10	+ 8	1·3	High	High	65	+ 4	1·7	High
Newcastle-on-Tyne	N1	+ 7	+11	+ 9	+ 8	+ 5	2·0	High	High	64	+ 3	2·6	
Nottingham ...	M2	− 6	0	− 2	− 1	+ 1	1·9			69	+ 8	2·8	High
Portsmouth ...	SE	−16	−15	−21	−10	−14	1·8	Low	Low	56	− 5	2·7	
Sheffield	N3	− 1	+ 2	+ 1	− 3	− 6	1·4	Low	Low	49	−12	1·7	Low
Stoke-on-Trent ...	M1	+13	+13	+16	+ 5	+ 8	2·1	High	High	56	− 5	2·5	Low
Group 4*b*		114	113	115	114	112				59			
Birkenhead ...	N4	+ 2	+ 1	− 1	0	0	2·7			67	+ 8	3·7	High
Blackburn ...	N4	+15	+10	+13	+17	+ 8	3·0	High	High	63	+ 4	4·8	
Blackpool ...	N4	− 5	+ 2	+ 7	0	−13	2·4		Low	52	− 7	4·4	
Bolton	N4	+12	+ 9	+10	+10	+12	2·5	High	High	59	0	3·6	
Bournemouth ...	SE	−29	−27	−27	−23	−27	2·1	Low	Low	46	−13	4·1	Low
Brighton ...	SE	−17	−11	−24	−19	−12	2·1	Low	Low	52	− 7	3·6	
Coventry... ...	M1	−14	−12	−12	−12	− 8	2·2	Low	Low	56	− 3	2·7	
Derby	M2	−10	−10	− 7	−10	− 5	2·6	Low		52	− 7	3·6	
Gateshead ...	N1	+14	+11	+10	+ 9	+12	3·2	High	High	64	+ 5	4·0	
Huddersfield ...	N3	+ 8	+ 7	+ 5	+ 2	0	2·8			68	+ 9	4·5	High
Middlesbrough ...	N2	+19	+ 6	+16	+11	+16	3·0	High	High	74	+15	3·7	High
Norwich	E	−24	−22	−29	−19	− 8	2·6	Low	Low	31	−28	3·1	Low
Oldham	N4	+27	+25	+29	+25	+18	3·1	High	High	61	+ 2	4·3	
Plymouth ...	SW	− 9	−10	−11	−11	−13	1·9	Low	Low	47	−12	2·6	Low
Preston	N4	+15	+16	+12	+10	+ 6	3·1	High		65	+ 6	4·3	
Rhondda U.D. ...	W1	+16	+20	+19	+30	+14	3·3	High	High	69	+10	4·4	High
St. Helens ...	N4	+14	+10	+ 5	+ 7	+ 3	3·4	High		74	+15	4·4	High
Salford	N4	+17	+24	+24	+19	+18	2·6	High	High	72	+13	3·4	High
Southampton ...	SE	−17	−14	−16	−12	− 8	2·2	Low	Low	50	− 9	2·9	Low
Southend-on-Sea	SE	−20	−25	−17	−16	−24	2·2	Low	Low	35	−24	3·4	Low
South Shields ...	N1	+ 8	+ 9	+ 6	+19	+ 6	3·3	High		66	+ 7	4·2	
Stockport ...	N4	− 6	+ 2	+ 3	+ 4	+ 3	2·7			63	+ 4	4·0	
Sunderland ...	N1	+11	+ 5	+11	+ 9	+14	2·5	High	High	72	+13	3·2	High
Walsall	M1	− 7	− 3	− 7	− 8	− 2	3·1	Low		61	+ 2	3·9	
Wolverhampton	M1	−11	−14	−11	− 9	−13	2·5	Low	Low	53	− 6	3·3	
Cardiff	W1	− 3	− 3	− 6	− 4	+ 2	2·1			53	− 6	2·8	Low
Swansea	W1	− 2	+ 2	+ 1	+ 2	0	2·6			55	− 4	3·3	

† Average S.M.R. for 1938-9 ÷ square root of mean annual deaths.

Table IV (*contd.*)

Town	Regional letter	Standardized mortality ratio (per cent.), all ages, compared with the group figure for same year								Infant mortality rate 1938-39 compared with group			
		S.M.R. of group and excess or defect for each town					Standard error of S.M.R.†	Significantly above or below group S.M.R.		I.M.R. for 1938-9	Excess or defect from group	Standard error of I.M.R.	Significantly above or below group I.M.R. 1938-9
		1935	1936	1937	1938	1939		1938	1939				
Group 4*c*		110	110	109	110	108				56			
Barnsley ...	N3	+ 3	+ 8	+12	+ 4	+ 2	3·9			59	+ 3	4·9	
Barrow-in-Furness	N4	+12	+ 4	+15	+ 5	+ 7	3·9			57	+ 1	5·1	
Bath	SW	−22	−18	−18	−14	− 8	3·0	Low	Low	43	−13	4·9	Low
Bootle	N4	+19	+23	+12	+21	+16	4·2	High	High	73	+17	4·9	High
Burnley	N4	+26	+16	+26	+21	+15	3·5	High	High	67	+11	5·6	
Bury	N4	+19	+ 4	+17	+ 9	+14	4·1	High	High	59	+ 3	6·3	
Carlisle	N2	− 3	+ 3	+ 1	− 5	+ 9	4·0		High	62	+ 6	5·6	
Darlington ...	N1	− 1	+ 1	0	+ 7	− 4	3·6			57	+ 1	4·9	
Dewsbury ...	N3	+ 4	+22	+14	+ 8	+ 1	4·3			51	− 5	5·8	
Doncaster ...	N3	−16	− 8	− 8	− 7	− 3	3·7			52	− 4	5·0	
Dudley	M1	− 1	− 1	+ 5	+ 2	+ 1	4·2			58	+ 2	5·1	
Eastbourne ...	SE	−22	−23	−18	−16	−29	3·1	Low	Low	45	−11	5·9	
Exeter	SW	−22	−17	−19	−14	−11	3·2	Low	Low	50	− 6	5·1	
Gloucester ...	M1	− 9	−12	−10	− 8	− 2	3·8	Low		49	− 7	5·2	
Great Yarmouth	E	−16	−17	−10	−18	−10	3·6	Low	Low	47	− 9	5·6	
Grimsby	E	− 1	− 7	−10	− 5	− 2	3·2			51	− 5	4·0	
Halifax	N3	+13	+14	+ 6	+10	+10	3·1	High	High	59	+ 3	4·7	
Hastings ...	SE	−18	−19	−18	−20	−11	2·9	Low	Low	35	−21	4·8	Low
Ipswich	E	−24	−16	−27	−18	−16	2·8	Low	Low	46	−10	3·9	Low
Lincoln	E	−11	− 7	0	− 2	− 3	3·7			46	−10	5·2	
Northampton ...	M2	−20	−13	−10	−18	−16	2·8	Low	Low	44	−12	4·2	Low
Oxford	SE	−27	−29	−29	−33	−29	2·6	Low	Low	29	−27	3·2	Low
Reading	SE	−16	−16	−16	−14	− 9	2·7	Low	Low	45	−11	3·8	Low
Rochdale ...	N4	+15	+21	+21	+16	+ 9	3·4	High	High	59	+ 3	5·3	
Rotherham ...	N3	+ 3	+ 3	− 3	− 6	− 6	3·6			53	− 3	4·5	
Smethwick ...	M1	− 2	−10	− 2	0	−14	3·4		Low	59	+ 3	5·0	
Southport ...	N4	− 6	− 7	− 2	+ 1	− 2	3·0			61	+ 5	6·2	
Tynemouth ...	N1	+ 5	− 3	+ 6	+ 6	− 1	3·9			65	+ 9	5·4	
Wakefield ...	N3	+ 5	+10	− 8	− 2	+ 4	4·1			59	+ 3	5·9	
Wallasey ...	N4	− 3	− 4	− 3	− 2	− 3	3·0			54	− 2	4·6	
Warrington ...	N4	+13	+14	+12	+ 6	− 1	3·8			63	+ 7	4·9	
West Bromwich	M1	+ 9	+ 6	+ 4	+ 9	+ 6	3·7	High		58	+ 2	4·4	
West Hartlepool	N1	+13	+ 7	+ 9	+12	+ 7	4·0	High		64	+ 8	4·9	
Wigan	N4	+33	+18	+29	+24	+13	3·9	High	High	86	+30	5·6	High
Worcester ...	M1	− 6	− 9	− 8	−10	− 1	3·9	Low		46	−10	5·3	
York	N3	−12	−10	−11	−18	−15	2·8	Low	Low	48	− 8	3·9	Low
Merthyr Tydfil ...	W1	+31	+19	+20	+42	+13	4·5	High	High	81	+25	6·6	High
Newport	W1	+ 7	0	+ 5	+ 5	+ 8	3·3		High	58	+ 2	4·4	
Group 4*d*		109	103	104	103	106				55			
Burton-upon-Trent	M1	− 2	− 3	− 4	− 8	0	4·2			50	− 5	6·0	
Canterbury ...	SE	−15	−15	−17	−18	−18	4·8	Low	Low	27	−28	6·0	Low
Chester	N4	+13	+15	+15	+18	+11	4·8	High	High	76	+21	7·5	High
Group 5		108	99	100	100	101				48			
Ashton-under-Lyne	N4	+21	+30	+41	+31	+19	4·7	High	High	68	+20	7·3	High
Cambridge ...	E	−29	−20	−27	−24	−16	2·8	Low	Low	35	−13	4·4	Low
Cheltenham ...	M1	−23	− 9	− 3	−13	+ 3	3·4	Low		38	−10	5·0	Low
Chesterfield ...	M2	+ 5	+ 9	+12	+ 7	+ 1	3·9			47	− 1	4·7	
Crosby	N4	− 7	+ 8	+ 6	+ 2	+ 3	4·0			65	+17	6·5	High
Gillingham ...	SE	− 7	− 9	− 7	−17	−20	3·1	Low	Low	38	−10	4·3	Low
Hove	SE	−15	− 4	− 5	0	− 2	3·1			33	−15	5·6	Low
Keighley ...	N3				+22	+13	4·3	High	High	62	+14	6·7	High
Luton	SE	−12	−11	−10	−12	− 5	3·1	Low		41	− 7	3·6	
Newcastle-under-Lyme	M1	+ 8	+ 8	+14	+11	+ 3	4·0	High		55	+ 7	5·0	
Poole	SW	−20	−10	−12	−13	−16	3·0	Low	Low	44	− 4	4·6	
Stanley (Durham)	N1	+11	+13	+20	+20	+10	4·7	High	High	67	+19	6·6	High
Stockton-on-Tees	N1	+ 8	+ 5	+12	+10	+16	4·0	High	High	59	+11	4·8	High
Stretford ...	N4	− 2	+10	+ 8	− 2	+11	4·1		High	45	− 3	5·7	
Swindon	SW	−17	+ 3	− 9	+ 1	− 2	3·7			46	− 2	5·2	
Thurrock ...	SE		−13	−15	−11	−10	3·6	Low	Low	48	0	4·6	
Watford	SE	−27	−14	−21	− 9	− 7	3·5	Low	Low	39	− 9	4·4	Low

† Average S.M.R. for 1938-9 ÷ square root of mean annual deaths.

The first five columns give the S.M.R. (expressed as a percentage) for the groups and individual towns in each year 1935 to 1939, and the excess or defect from the group figure for each town. The next column gives the standard errors applicable to the 1938 and 1939 ratios, and these apply to a near enough approximation to the previous years also. Where the excess in 1938 and/or 1939 was at least twice the standard error the word " High " is entered in the appropriate column, signifying that the adjusted death rate was significantly above the adjusted rate for the group to which the town belonged. Similarly the word " Low " signifies a rate significantly below the group figure.

In the last four columns of the table are shown the infant mortality rates in the two-year period 1938–39, the excess or defect of rates for individual towns from the group rate, the standard errors and whether significantly above or below the group rate.

If it is desired to make comparison with the national mortality instead of with the group rate, 100 should be subtracted from the percentage S.M.R. or 51·5 from the infant mortality rate, and if the resultant excess or defect amounts to twice the appropriate standard error it may be regarded as significant.

Standardized Mortality of Urban Areas

The standardized mortality figures of the towns, grouped according to their population in 1938, were as shown below in the years 1935 to 1939, the figures being derived from Table IV with addition of the residual aggregate of other urban districts outside Greater London which had populations below 50,000.

	1935	1936	1937	1938	1939
England and Wales (all areas) ...	100	100	100	100	100
County boroughs outside Greater London :					
250,000 and over (4a)	116	112	113	114	113
100,000–250,000 (4b)	114	113	115	114	112
50,000–100,000 (4c)	110	110	109	110	108
Under 50,000 (4d)	109	103	104	103	106
Other towns outside Greater London :					
50,000–100,000 (5)	108	99	100	100	101
Under 50,000	100	100	101	99	100
London Administrative County (1) ...	99	104	103	100	101
Towns of London's outer ring :					
100,000 and over (2)	90	92	93	91	92
50,000–100,000 (3)	81	84	82	83	88

An upward progression of rates with increasing population is apparent amongst the county boroughs and parts of Greater London, but not amongst other towns outside Greater London.

When northern and southern towns of similar population are compared on a regional basis (indicated by regional letters in Table IV), whether county boroughs or not, by the approximate method of taking the arithmetic mean of the S.M.R.'s of the towns composing the group, the result is as follows :—

	50 to 100 thousand population			100 to 250 thousand population			250 or more thousand population		
	1935–7	1938	1939	1935–7	1938	1939	1935–7	1938	1939
Durham, Northumberland (N1)	114	117	109	123	126	123	123	122	118
Lancashire, Cheshire (N4)	121	118	116	125	124	118	129	126	123
Yorkshire and rest of North (N2, 3) ...	111	108	108	124	120	120	117	116	114
North	116	115	112	124	124	119	121	120	117
South-East (not Greater London) (SE) ...	89	90	91	94	96	94	96	104	99
East, South-West (E, SW)	95	95	96	96	99	101	—	—	—
South and East, without Greater London ...	92	92	93	95	97	97			

In each regional area and each period of time the towns with 100 thousand or more population registered higher death rates than those with populations between 50 and 100 thousand ; and in Lancashire, Cheshire and the south-east a further increase was shown by the towns of over 250 thousand population, though in the other regional groups this was not the case.

Of the metropolitan boroughs in 1938, Finsbury, Southwark, Stepney, Bethnal Green, Bermondsey, Poplar, Shoreditch, Camberwell and Islington, arranged in descending order of their mortality figures, gave rates significantly above London as a whole ; and in 1939 the corresponding list was Finsbury, Southwark, Stepney, Shoreditch, Lambeth, Poplar and St. Pancras. On the other hand Hampstead, Lewisham, Wandsworth, Westminster and Woolwich had significantly low rates in both years, Stoke Newington in 1938 and Greenwich in 1939. In London's outer ring East Ham, West Ham and Brentford and Chiswick gave high rates in both years, whilst Tottenham, Walthamstow, Wimbledon, Acton and Hornsey had high rates in 1938 but not in 1939. Croydon, Ealing, Ilford, Leyton, Beckenham, Harrow, Hendon, Southgate and Wembley registered specially low mortality.

Of the largest county boroughs (group 4a) Liverpool, Manchester, Newcastle on Tyne, Stoke on Trent, Bradford and Leeds, arranged in descending order, gave rates significantly above the group figure in 1938, and the same towns showed significant excess in 1939 with only slight change in order, whilst Birmingham, Bristol, Leicester, Portsmouth and Sheffield registered low rates in both years. Of the towns ranking next in size (4b) Rhondda, Oldham, Salford, South Shields, Blackburn, Middlesbrough, Bolton, Preston, Gateshead, Sunderland and St. Helens gave high rates for the group in 1938, and the same towns showed excess in 1939 (not significant in the case of Preston, South Shields and St. Helens). In this group Bournemouth, Brighton, Coventry, Derby, Norwich, Plymouth, Southampton, Southend and Wolverhampton returned low rates in both years. Of the smaller towns with 50 to 100 thousand population outside Greater London (4c, 5) 11 northern towns together with West Bromwich, Newcastle under Lyme and Merthyr Tydfil gave high rates in 1938, and 12 northern towns with Merthyr Tydfil and Newport in 1939. Low rates in both years were shown by all the smaller southern towns except Hove and Swindon, and by Great Yarmouth, Ipswich and Cambridge in the East.

Mortality at different portions of the year

Table 4 gives the quarterly deaths for each sex, and death rates per 1,000 persons in decennial periods from 1841 to 1930 and in each year from 1929. The present stability of the death-rate in the last three quarters of the year is evident from the fact that the average rate for these quarters during the years 1929–1939 ranged only from 10·7 to 11·3, whereas the March quarter rate fluctuated between 13·2 and 20·9, being 13·6 in 1938 and 15·1 in 1939.

The contributions of the four quarters to the year's mortality in 5-year periods since 1851, and in each year since 1931, are shown in Table V. The crude quarterly rates in Tables V and 4 do not measure the real improvement since 1901, however, owing to the increasing average age of the population, although the ratios in the right-hand part of the table are not changed appreciably if the rates are standardized. This is seen from the comparison of crude and standardized rates at the foot of Table VI, which give for 1939 the following ratios :—

		March	June	September	December	Year
Ratio of standardized	M	·763	·765	·766	·751	·762
to crude death rate	F	·647	·663	·664	·646	·654

In any event the crude rates provide a better basis when comparing one quarter with another in the same year, though not when comparing rates for the same quarter in different years. Assuming that standardization affects each quarter's death-rates for persons to the same extent as it affects the year's rate, the quarterly rates in Table V could be standardized by multiplying the crude rates by the appropriate " time comparability factor " (given for years 1929–1939 on page 7) ; but, as already pointed out, the use of 1901 population as standard exaggerates the rate of fall.

Table V.—Quarterly Death-rates in each quinquennium 1851-1935 and in each year 1931 to 1939 with ratio to yearly rate taken as 100.

	Death-rate per 1,000 living				Ratio to yearly rate taken as 100			
	March	June	September	December	March	June	September	December
1851–55	25·3	22·5	21·0	21·9	111	99	93	96
1856–60	24·1	21·6	19·6	21·9	111	99	90	100
1861–65	25·7	22·0	20·4	22·3	114	97	90	99
1866–70	24·7	21·6	21·5	22·0	110	96	96	98
1871–75	24·3	21·1	20·4	22·1	110	96	93	100
1876–80	23·2	20·7	18·8	20·6	112	100	90	99
1881–85	21·4	19·3	17·6	19·4	110	99	91	100
1886–90	21·7	18·0	17·0	18·9	115	95	90	100
1891–95	21·8	18·5	16·4	18·1	117	99	88	97
1896–1900	19·5	16·6	17·5	17·2	110	94	99	97
1901–05	17·9	15·2	14·9	16·1	112	95	93	101
1906–10	17·4	14·1	12·6	14·7	118	96	86	100
1911–15	16·9	13·7	12·7	14·0	118	96	89	98
1916–20	17·5	13·5	10·9	15·8	122	94	76	110
1921–25	15·1	11·9	9·6	12·0	124	98	79	98
1926–30	15·9	11·5	9·4	11·6	131	95	78	96
1931–35	15·4	11·5	9·6	11·7	128	96	80	98
1931	16·5	11·5	9·6	11·7	134	93	78	95
1932	15·4	11·6	9·7	11·5	128	97	81	96
1933	17·1	10·8	9·4	12·0	139	88	76	98
1934	14·6	11·8	9·6	11·2	124	100	81	95
1935	13·2	12·0	9·8	12·0	113	103	84	103
1936	15·1	11·8	9·7	12·0	125	98	80	99
1937	16·2	11·6	9·7	12·3	131	94	78	99
1938	13·6	11·6	9·9	11·5	117	100	85	99
1939*...	15·1	11·7	9·9	11·8	125	97	82	98

* Rates based on civilians only after 3rd September.

Table VI.—Quarterly Death-rates at Age-groups and All ages (crude and standardized) for each sex, with ratio to yearly rate taken as 100. 1939. (Including non-civilians and based on mid-1939 population).

	Death-rates per 1,000 living					Ratio to yearly rate taken as 100			
	March	June	September	December	* Year	March	June	September	December
MALES									
0–	20·10	15·29	12·47	13·06	15·20	132	101	82	86
5–	1·88	1·63	1·51	1·58	1·65	114	99	92	96
10–	1·22	1·05	1·09	0·96	1·08	113	97	101	89
15–	2·35	2·32	2·07	2·17	2·23	105	104	93	97
25–	3·02	2·65	2·56	2·72	2·74	110	97	93	99
35–	5·19	4·23	3·87	4·46	4·44	117	95	87	100
45–	12·60	9·87	8·74	10·29	10·36	122	95	84	99
55–	29·33	23·50	20·25	24·20	24·30	121	97	83	100
65–	67·21	54·03	45·93	55·28	55·56	121	97	83	99
75–	181·29	135·02	107·84	136·28	139·90	130	97	77	97
85 and over	391·83	269·35	195·83	279·75	283·64	138	95	69	99
All ages :									
Crude ...	15·83	12·47	10·57	12·55	12·84	123	97	82	98
Standardized	12·08	9·54	8·10	9·43	9·78	124	98	83	96
FEMALES									
0–	15·53	12·37	9·89	10·62	12·08	129	102	82	88
5–	1·64	1·28	1·13	1·21	1·31	125	98	86	92
10–	1·21	0·99	0·87	0·82	0·97	125	102	90	85
15–	2·21	1·98	1·75	1·77	1·92	115	103	91	92
25–	2·86	2·48	2·22	2·34	2·48	115	100	90	94
35–	4·16	3·37	3·16	3·39	3·52	118	96	90	96
45–	8·35	6·81	6·19	6·90	7·06	118	96	88	98
55–	18·98	15·15	13·43	15·55	15·76	120	96	85	99
65–	51·27	38·77	33·26	39·28	40·59	126	96	82	97
75–	143·58	101·30	81·36	100·72	106·55	135	95	76	95
85 and over	351·73	237·09	183·47	240·14	252·61	139	94	73	95
All ages ...									
Crude ...	14·40	10·91	9·25	10·82	11·33	127	96	82	96
Standardized	9·32	7·23	6·14	6·99	7·41	126	98	83	94

* These rates differ from those in Table 5 for reason stated in heading.

The improvement since 1901–05 has been relatively greatest in the September quarter and least in the March quarter.

Table VI gives the quarterly death-rates by age groups for each sex in 1939, and the ratios of the rates to the annual death-rate at the same age. At every age period except 10–15 for each sex the September quarter had the lowest rate and at every age period the March quarter had the highest. For children under 5 the quarterly rates ranged from 82 per cent. of the annual rate in the former to about 130 per cent. in the latter. The relative variation between the quarters diminished with advancing age to a minimum at 15–20 and then increased up to ages 45 in males and 35 in females ; it then changed little up to 75 in males and 65 in females. At advanced ages the seasonal effect was considerably greater, the March quarter rate for old people of 85 years and over being approximately double that in the September quarter.

Mortality of each sex.—Table VII shows the death rates of males at different

age groups and at all ages (standardized) expressed in terms of the corresponding female rates taken as 100, for quinquennial periods from 1841–45 to 1931–35 and separate years from 1926 to 1939. These sex-ratios are derived from Table 5 (with substitution in 1911–15 and 1916–20 of rates based on the total male population and all deaths registered in this country in place of the civilian male rates shown therein).

The excess of male over female standardized mortality in 1938 and 1939 was 31 per cent., compared with 28 in 1937, 27 in 1936, 24 in 1931–35, 19 in 1901–05, 15 in 1871–75 and 9 in 1841–45, so this excess continues to increase progressively. In 1938 the relative excess was least at ages 5–10, but in 1939 it was least at 25–35, the sex-ratio at 5–10 being unusually high; at ages 55–65 the male excess reached and surpassed 50 per cent. in 1938 and 1939.

Table VII.—Mortality of Males per cent. of that of Females at Various ages from 1841-45 onwards. (*See* Table 5.)

	All ages standardized	0–	5–	10–	15–	20–	25–	35–	45–	55–	65–	75–	85 and upwards
1841–45	109	117	102	92	88	105	95	101	114	111	111	109	106
1846–50	108	116	103	95	91	104	94	99	113	112	111	109	107
1851–55	110	116	104	98	90	103	97	102	118	114	112	110	106
1856–60	109	115	99	96	90	102	96	103	118	115	111	108	107
1861–65	111	115	102	98	93	105	100	109	122	118	112	109	110
1866–70	113	115	107	100	94	106	105	113	124	120	115	109	111
1871–75	115	117	108	100	97	109	109	119	128	121	114	111	110
1876–80	116	118	107	97	96	108	109	119	129	122	114	112	111
1881–85	115	118	102	97	96	102	104	117	127	122	116	113	112
1886–90	116	119	100	97	98	106	107	117	129	122	117	112	114
1891–95	116	119	98	96	100	108	108	118	128	121	115	111	110
1896–00	118	118	98	96	106	120	116	122	129	124	117	113	109
1901–05	119	119	97	95	107	119	118	121	130	128	119	115	110
1906–10	120	119	97	95	107	121	118	121	129	128	121	115	113
1911–15	122	120	100	95	111	122	124	126	132	133	124	118	115
1916–20	124	121	100	92	114	122	124	131	135	137	132	121	111
1921–25	122	124	104	100	100	113	114	130	132	133	127	119	110
1926–30	124	125	110	105	106	108	112	134	140	136	130	121	107
1931–35	124	126	110	100	109	114	106	126	142	139	132	123	113
1926	123	124	109	100	104	107	112	133	135	134	129	123	111
1927	123	125	109	107	104	110	112	135	137	134	129	120	108
1928	125	126	109	113	108	103	112	130	138	136	130	123	110
1929	122	122	113	100	108	110	111	139	143	134	126	117	103
1930	127	128	110	104	109	112	111	133	144	139	133	121	103
1931	126	128	115	100	108	114	106	129	140	135	132	121	111
1932	125	125	116	108	114	114	110	123	135	137	134	123	110
1933	124	126	110	107	113	114	109	124	141	137	129	122	110
1934	125	124	104	100	109	115	107	124	142	142	132	124	111
1935	127	126	111	100	105	112	107	125	146	143	134	126	112
1936	127	128	117	118	105	112	111	126	142	147	133	127	112
1937	128	127	118	109	117	108	111	128	146	149	133	125	108
1938	131	129	106	118	118	122	116	129	148	150	137	130	112
1939	131	126	131	110	119	113	108	126	147	155	137	131	112

The causes of death accounting for the large male excess may be gathered from Table 8, in which mortality differences in crude death rates arising from the greater average age of females than of males are to some extent eliminated by the fact that the standardized rates are calculated from a common population basis (the age distribution of persons in 1901).

The causes chiefly responsible for the 31 per cent. excess amongst males, with the contribution of each to the total differences of 2,297 per million in 1938 and 2,293 in 1939, were heart diseases (469 in 1938, 538 in 1939), respiratory diseases (403, 324), accidents (296, 335), diseases of the digestive system (200, 187), tuberculosis (157, 171), cerebral hæmorrhage and arteriosclerosis (113, 131), cancer (105, 108) and suicide (73, 64), which together accounted for 1,816 of the total in 1938 and 1,858 in 1939. The principal causes common to both sexes shown in Table 8 for which female standardized mortality exceeded that of males, with the amounts of female excess in each year, were mitral valve disease (38, 42), diabetes (24, 27), rheumatoid and osteoarthritis (25, 24),

gall stones and other diseases of the gall bladder and ducts (20, 19), whooping cough (12, 13), disordered action of the heart (10, 11), non-malignant tumours (9, 11), pernicious anæmia (6, 11), rheumatic fever (6, 5) and accidental burns (6, 4).

Infant Mortality.

The deaths of infants registered at ages under one year numbered 32,724 in 1938 and 31,190 in 1939, out of 478,829 and 499,804 respectively at all ages. The rates of infant mortality per 1,000 live-births registered during the year were 52·7 in 1938 and 50·4 in 1939, the previous low record being 56·9 in 1935. The numbers of live and still births registered in each quarter are given in Table D, and the months in which the births registered from July, 1938, to December, 1939, occurred can be deduced from Table YY. The latter table for 1939 shows that of the stillbirths registered during that year 382 occurred in the last three months of 1938. Adding these to the stillbirths registered in 1938 and occurring during the December quarter, as shown in Table YY of 1938 Review, and completing the figures for the December quarter of 1939 in the same manner by adding in the 393 stillbirths which were not registered until 1940, the following comparison between registrations and occurrences of stillbirths in the six quarters is obtained.

	1938		1939			
	September	December	March	June	September	December
Registered in quarter ...	6,072	5,833	6,295	6,362	5,946	5,706
Occurring in quarter	6,070	5,915	6,315	6,337	5,975	5,693

In the December quarter of 1938, registrations were 1·4 per cent. less than the number of stillbirths which occurred, but in each of the other quarters the error involved by using registration as a measure of occurrence was less than 0·5 per cent., and for the whole year 1939 it was less than 0·05 per cent.

For live births the corresponding comparison, also obtained from Tables D and YY, is as follows:—

	1938		1939			
	September	December	March	June	September	December
Registered in quarter ...	158,082	143,756	153,382	164,306	161,023	140,641 = 619,352.
Occurring in quarter	154,203	148,252	152,729	163,126	155,458	143,166 = 614,479.

Here the discrepancies were larger, as might be expected from the longer and more variable time-lag between occurrence of births and their registration. In the pre-war period this time-lag averaged about a month, but during 1939, even before food rationing was introduced, it was tending to become less, with the result that in the whole of that year 619,352 live births were registered although only 614,479 occurred. The registered live births in 1939 were, therefore, 0·8 per cent. in excess of the number of children who were born alive during the year. This means that neo-natal mortality rates, if based in the usual way upon the registered births of 1939, would be understated from this cause alone to the extent of 0·8 per cent. The conventional use of the registered births of the same year is in any event an approximation since part of the infants at risk were born in the preceding year, and when the birth-rate is changing, infant deaths at 0–1, 1–3, 3–6, 6–9 and 9–12 months ought to be related back

to the birth occurrences during the periods when those infants were born and the rates calculated accordingly, the corrected infant mortality rate being the sum of these partial rates.

The comparative figures given above show, for example, that in the period October, 1938, to September, 1939, 619,565 live births occurred, which differs by 3 in 10,000 from the number of registrations in 1939 ; in the period July, 1938, to June, 1939, the number was 618,310 which differs from the 1939 registrations by 17 in 10,000. For the first 4 weeks of age and at all ages under 1 year the correction factors for 1939 calculated as indicated above were as follows :—

Neo-natal rate (under 4 weeks)	1·0060
Infant mortality rate (under 1 year)	1·0042

In the discussion of 1939 rates the corrected rate will be given in parenthesis where it is appreciably different from the tabulated rate.

The rates in the four quarters of 1938, per 1,000 live births registered in the same quarter, were 68, 49, 42 and 52 ; and in the four quarters of 1939 they were 65(66), 48(50), 40(41) and 49(46). Table VIII shows the changes in the quarterly rates since 1871–75, and in the annual rates from diarrhœal diseases and other causes since 1861–65. Down to 1901–05 the September quarter maintained the highest rate and in the next decade it differed little from the March quarter ; but from 1916–20 onward, whilst the diarrhœal rate was falling rapidly to its present level of about 5 per 1,000 live births, the September quarter's rate changed its position from highest to lowest amongst the quarters.

Table VIII.—Average Rates of Infant Mortality by Quarters, and Average Annual Rates from Diarrhœa and other causes, in Quinquennial periods 1861-1935 and in each year 1931 to 1939.

	Annual average rates			Quarterly averages of rates per 1,000 live births registered in the same quarter			
	All causes	Diarrhœal diseases	Other causes	March	June	September	December
1861–65 ...	151	15	136	—	—	—	—
1866–70 ...	157	20	137	—	—	—	—
1871–75 ...	153	19	134	151	133	180	149
1876–80 ...	145	16	129	147	128	161	143
1881–85 ...	139	14	125	140	125	152	139
1886–90 ...	145	17	128	146	125	163	147
1891–95 ...	151	20	131	151	132	169	151
1896–1900 ...	156	31	125	142	124	212	148
1901–05 ...	138	23	115	137	113	162	140
1906–10 ...	117	18	99	124	98	120	128
1911–15 ...	110	19	91	119	91	120	109
1916–20 ...	90	9	81	116	83	75	91
1921–25 ...	76	8	68	94	70	62	77
1926–30 ...	68	6	62	91	60	52	69
1931–35 ...	62	5	57	82	57	47	63
1931... ...	66	5	61	94	59	46	67
1932... ...	65	6	59	88	59	50	65
1933... ...	64	6	58	84	53	49	69
1934... ...	59	5	54	78	56	46	55
1935... ...	57	5	52	68	56	45	60
1936... ...	59	5	54	81	54	44	56
1937... ...	58	5	53	74	54	43	61
1938... ...	53	5	48	68	49	42	52
1939... ...	50	4	46	65	48	40	49

Table IX shows that the decline in infant mortality from 1906–10 to 1931–35 was continuous for every age period distinguished after the first week. The death rate during the first day of life fell from 11·5 per 1,000 live births in 1906–10 to 10·0 in 1926, but increased again when still births began to be registered in 1927 and ranged from 10·7 to 11·1 in 1933–37. In 1938 this rate fell to 10·3 and in 1939 to 10·2. The death rate during the rest of the first week fell from 13·0 in 1906–10 to 10·9 in 1923, increased to 11·8 in 1932–33 and then declined to 10·8 in 1938 and 10·9 in 1939. In the second, third and fourth weeks of life the fall in mortality was likewise arrested for some years after 1923, and the total neo-natal rate at ages under 4 weeks, after declining from 40 in 1906–10 to 32 in 1923, remained about that level until 1933 and then improved again year by year to 28·3 in 1938 and 28·1 (28·3) in 1939.

At each age period between one month and one year the rapid fall in mortality was maintained in 1938 and 1939, the percentage decline registered in 1939 compared with 1931–35 being 20 per cent. at 1–3 months, 18 per cent. at 3–6 months, 33 per cent. at 6–9 months and 49 per cent. at 9–12 months.

Table IX.—Age Distribution of Infant Mortality, 1881-1939 Rates per 1,000 Live Births.

Year	Days		Weeks				Months					Total under one year
	0–1	1–7	0–1	1–2	2–3	3–4	Total under four weeks	Four weeks to 3 mths.	3–6	6–9	9–12	
1881–1885	—	—	—	—	—	—	67		28	44		139
1886–1890	—	—	—	—	—	—	69		30	46		145
1891–1895	—	—	—	—	—	—	74		31	46		151
1896–1900	—	—	—	—	—	—	74		34	48		156
1901–1905	—	—	—	—	—	—	70		28	40		138
1906–1910	11·5	13·0	24·5	5·8	5·7	4·2	40·2	22·8	22·0	17·3	14·8	117·1
1911–1915	11·4	12·7	24·1	5·7	5·3	3·9	39·0	20·2	19·6	15·9	14·1	108·7
1916–1920	11·0	12·4	23·4	5·6	4·7	3·4	37·0	16·5	14·6	12·0	10·8	90·9
1921–1925	10 4	11·3	21·7	5·0	3·9	2·8	33·4	12·8	11·3	9·2	8·3	74·9
1926–1930	10·3	11·5	21·8	4·3	3·2	2·4	31·8	10·9	9·6	8·1	7·5	67·9
1931–1935	10·7	11·7	22·4	3·9	2·9	2·2	31·4	9·9	8·5	6·6	5·7	62·2
1906	11·8	13·2	25·0	6·1	6·2	4·6	41·9	25·7	27·0	20·7	17·2	132·5
1907	11·3	13·1	24·4	6·0	5·9	4·5	40·7	23·3	21·3	17·3	15·1	117·6
1908	11·5	12·8	24·3	5·9	5·8	4·3	40·3	24·2	23·6	17·7	14·6	120·4
1909	11·6	13·2	24·7	5·7	5·3	4·0	39·8	20·4	19·2	15·6	13·8	108·7
1910	11·5	12·5	24·1	5·4	5·1	3·8	38·5	20·0	18·8	15·0	13·2	105·4
1911	11·6	12·7	24·3	6·0	6·0	4·5	40·6	24·7	25·9	20·6	17·4	129·2
1912	11·3	12·9	24·2	5·6	5·0	3·7	38·4	17·7	14·9	12·5	11·4	94·7
1913	11·8	12·7	24·5	5·8	5·4	3·9	39·5	20·3	19·8	15·7	13·6	108·9
1914	11·4	12·7	24·1	5·5	5·0	3·9	38·5	19·3	18·7	15·0	13·0	104·4
1915	10·9	12·5	23·4	5·7	5·0	3·7	37·7	18·6	18·2	16·0	15·2	105·8
1916	10·9	12·3	23·2	5·6	4·9	3·4	36·9	16·9	15·2	11·7	10·3	91·1
1917	11·0	12·4	23·4	5·6	4·8	3·4	37·1	16·9	15·0	11·6	10·6	91·1
1918	11·1	12·1	23·2	5·5	4·6	3·4	36·6	17·1	16·1	14·4	13·7	97·9
1919	12·2	13·7	25·9	6·1	4·9	3·6	40·4	16·4	14·4	11·8	10·3	93·2
1920	10·4	11·5	21·9	5·3	4·6	3·3	35·0	15·5	13·0	11·0	10·0	84·5
1921	10·8	11·6	22·4	5·4	4·5	3·0	35·2	14·7	13·7	9·7	7·8	81·2
1922	10·4	11·6	22·0	5·2	4·1	2·8	33·9	12·4	10·6	9·2	8·6	74·7
1923	10·2	10·9	21·1	4·6	3·6	2·6	31·9	11·4	10·0	8·3	7·6	69·2
1924	10·6	11·2	21·8	4·8	3·8	2·6	33·0	12·4	10·8	9·3	8·8	74·2
1925	10·1	11·1	21·2	4·7	3·7	2·7	32·3	12·5	11·2	9·4	9·0	74·5
1926	10·0	11·3	21·3	4·6	3·6	2·5	31·9	11·6	10·4	8·6	7·7	70·2
1927	10·6	11·6	22·2	4·3	3·4	2·5	32·3	10·7	9·7	8·7	8·2	69·7
1928	10·4	11·2	21·6	4·1	3·0	2·4	31·1	10·7	9·2	7·4	6·8	65·1
1929	10·4	11·9	22·3	4·6	3·3	2·6	32·8	11·6	10·7	9·9	9·4	74·4
1930	10·4	11·6	22·0	3·8	2·9	2·2	30·9	9·6	7·8	6·1	5·5	60·0
1931	10·4	11·7	22·1	4·0	3·1	2·4	31·6	10·9	9·3	7·8	6·8	66·4
1932	10·6	11·8	22·4	3·8	3·0	2·4	31·6	10·8	9·1	7·2	6·3	65·0
1933	11·1	11·8	22·9	4·0	3·1	2·2	32·2	9·9	8·8	6·8	6·0	63·7
1934	10·9	11·7	22·6	3·9	2·8	2·0	31·3	8·8	7·5	5·8	5·1	58·6
1935	10·8	11·3	22·0	3·7	2·7	2·0	30·4	9·1	7.7	5·4	4·3	56·9
1936	10·7	11·2	21·9	3·5	2·7	2·0	30·2	9·3	8·3	6·0	4·9	58·5
1937	10·8	11·2	22·0	3·5	2·5	1·8	29·8	9·4	8·3	5·9	4·3	57·6
1938	10·3	10·8	21·1	3·1	2·3	1·7	28·3	8·2	7·2	5·0	4·0	52·7
1939	10·2	10·9	21·1	3·1	2·2	1·7	28·1	7·9	7·0	4·4	2·9	50·4

Table IX *(contd.)*

Rates in terms of those for 1906–10 taken as 1,000

Year	Days		Weeks				Months					Total under one year
	0–1	1–7	0–1	1–2	2–3	3–4	Total under four weeks	Four weeks to 3 mths.	3–6	6–9	9–12	
1906–1910	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
1911–1915	991	977	984	983	930	929	970	886	891	919	953	928
1916–1920	957	954	955	966	825	810	920	724	664	694	730	776
1921–1925	904	869	886	862	684	667	831	561	514	532	561	640
1926–1930	896	885	890	741	561	571	791	478	436	468	507	580
1931–1935	930	900	914	672	509	524	781	434	386	382	385	531
1926	870	869	869	793	632	595	794	509	473	497	520	599
1927	922	892	906	741	596	595	803	469	441	503	554	595
1928	904	862	882	707	526	571	774	469	418	428	459	556
1929	904	915	910	793	579	619	816	509	486	572	635	635
1930	904	892	898	655	509	524	769	421	355	353	372	512
1931	904	900	902	690	544	571	786	478	423	451	459	567
1932	922	908	914	655	526	571	786	474	414	416	426	555
1933	965	908	935	690	544	524	801	434	400	393	405	544
1934	948	900	922	672	491	476	779	386	341	335	345	500
1935	939	869	898	638	474	476	756	399	350	312	291	486
1936	930	862	894	603	474	476	751	408	377	347	331	500
1937	939	862	898	603	439	429	741	412	377	341	291	492
1938	896	831	861	534	404	405	704	360	327	289	270	450
1939	887	838	861	534	386	405	699	346	318	254	196	430

In Table X the neo-natal deaths are considered in conjunction with still-births, with which they are closely allied, the rates per 1,000 live and still births in each year since registration of still births began being shown. The combined rate thus calculated fell progressively from 72·3 in 1933 to 65·5 in 1938 and 64·8 (65·3) in 1939.

Table X.—Numbers of Stillbirths and Neo-natal Deaths and Rates per 1,000 Live and Stillbirths, 1928-1939

	Stillbirths		Neo-natal deaths (ages 0–4 weeks)		Combined rate per 1,000 live and stillbirths
	Number	Rate	Number	Rate	
1928	27,580	40·1	20,513	29·8	69·9
1929	26,847	40·0	21,136	31·5	71·5
1930	27,577	40·8	20,060	29·7	70·5
1931	26,933	40·9	19,966	30·3	71·2
1932	26,471	41·3	19,388	30·3	71·6
1933	25,084	41·4	18,688	30·9	72·3
1934	25,209	40·5	18,711	30·0	70·5
1935	25,435	40·7	18,192	29·1	69·8
1936	25,045	39·7	18,254	29·0	68·7
1937	24,806	39·0	18,168	28·6	67·6
1938	24,729	38·3	17,572	27·2	65·5
1939	24,309	37·8	17,401	27·0	64·8

Table 13 shows the deaths in each quarter of the year at each age period in the first year, and Table D gives the still birth registrations in each quarter. In the first halves of 1937, 1938 and 1939 stillbirths numbered 12,887, 12,824, 12,657 respectively, and in the second halves 11,919, 11,905, 11,652; neo-natal deaths numbered 9,879, 9,526, 9,445 in the first halves and 8,289, 8,046,

7,956 in the second halves; infant deaths between 4 weeks and one year of age numbered 9,718, 9,065, 8,487 in the first halves and 7,289, 6,087, 5,302 in the second halves. The improvement in 1939 at all stages was evident, therefore, throughout the year and cannot be attributed to effects of the dispersal of expectant mothers and infants from industrial areas which occurred in the latter half.

Distribution of Infant Mortality.—Table XI shows how infant mortality was distributed in 1938 and 1939 throughout the country. For convenience in the interpretation of this and similar tables where the regional subdivision is used, the counties comprising each region are given below.†

For the constitution of Greater London, see pp. 63–65 of the Preliminary Report on the Census of England and Wales, 1931.

Table XI.—Distribution of Infant Mortality, 1938 and 1939.

	1938				1939			
	Deaths per 1,000 live births registered			Mortality per cent. of that in England and Wales	Deaths per 1,000 live births registered			Mortality per cent. of that in England and Wales
	Males	Females	Both sexes	Both sexes	Males	Females	Both sexes	Both sexes
England and Wales ...	59·5	45·5	52·7	100	56·3	44 1	50·4	100
South East	52·9	39·9	46·6	88	46·6	35·5	41·2	82
Greater London	57·1	42·0	49·7	94	49·6	37·1	43·5	86
Remainder of South East	46·7	36·8	41·9	80	42·5	33·4	38·1	76
North	67·0	53·2	60·3	114	66·4	52·1	59·4	118
North I	70·2	55·2	62·9	119	71·6	54·6	63·3	126
North II	65·4	52·8	59·3	113	64·4	53·0	58·9	117
North III	61·3	46·7	54·2	103	61·4	47·5	54·6	108
North IV	69·3	56·2	62·9	119	67·6	53·5	60·7	120
Midland	59·9	44·5	52·4	99	57·5	45·8	51·8	103
Midland I	60·6	45·7	53·4	101	58·5	47·1	53·0	105
Midland II	58·3	41·9	50·3	95	55·4	43·2	49·4	98
East	50·4	38·0	44·3	84	47·2	36·4	41·9	83
South West	56·0	36·7	46·5	88	48·7	36·1	42·6	85
Wales	63·2	50·0	56·7	108	64·6	54·5	59·7	118
Wales I	64·3	50·5	57·5	109	64·5	55·6	60·1	119
Wales II	60·4	48·5	54·6	104	64·9	51·5	58·4	116
County Boroughs* ...	67·1	52·8	60·1	114	64·9	50·7	57·9	115
Other Urban Districts* ...	56·2	42·9	49·8	94	53·8	43·4	48·7	97
Rural Districts*	53·9	40·4	47·3	90	52·7	41·1	47·1	93
Greater London — Administrative Co.	64·6	49·9	57·4	109	54·2	40·6	47·5	94
Greater London — Outer Ring ...	51·2	35·8	43·7	83	46·3	34·5	40·6	81

* Excluding Greater London.

†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 follows :—

South East	*North I*	*Midland I*	*East*	*Wales I*
Bedfordshire	Durham	Gloucestershire	Cambridgeshire	Brecknockshire
Berkshire	Northumberland	Herefordshire	Ely, Isle of	Carmarthenshire
Buckinghamshire		Shropshire	Huntingdonshire	Glamorganshire
Essex	*North II*	Staffordshire	Lincolnshire	Monmouthshire
Hertfordshire	Cumberland	Warwickshire	Parts of Holland	
Kent	Westmorland	Worcestershire	Parts of Kesteven	*Wales II*
London	Yorkshire		Parts of Lindsey	Anglesey
Middlesex	East Riding	*Midland II*	Norfolk	Caernarvonshire
Oxfordshire	North Riding	Derbyshire	Rutlandshire	Cardiganshire
Southampton		Leicestershire	Suffolk, East	Denbighshire
Surrey	*North III*	Northamptonshire	Suffolk, West	Flintshire
Sussex, East	Yorkshire	Nottinghamshire		Merionethshire
Sussex, West	West Riding	Peterborough, Soke of	*South West*	Montgomeryshire
Wight, Isle of	York C.B.		Cornwall	Pembrokeshire
			Devonshire	Radnorshire
	North IV		Dorsetshire	
	Cheshire		Somersetshire	
	Lancashire		Wiltshire	

In 1938 the Northern rate was 29 per cent. above that in the South East, 30 per cent. above that in the South West, and 36 per cent. above that in the East. In 1939 the corresponding excesses were 44, 39 and 42 per cent. respectively. The degree of Northern excess has tended to fall somewhat since 1931 when the figures were 48, 50 and 42 per cent., but it still remains very great. When 1938 and 1939 are compared it appears that the South East, South West and East returned substantially lower rates in the latter year whereas the North and Midlands showed little change, and Wales registered an increase.

The rates for the aggregates of different classes of area were, as usual, highest for the County boroughs and lowest for London's outer ring, where infant mortality was well below the rural rate and was 13·7 per 1,000 live births less than in the Administrative County in 1938 and 6·9 less in 1939. Comparison of 1938 with 1939 shows that London had much lower rates in the latter year and the County boroughs also registered some improvement, whilst the rural districts showed no appreciable change. This may have been a result of the large scale movement of expectant mothers, and of infants with their mothers, which took place from many of the large towns at the outbreak of war.

Table XII shows that between 1911–14 and 1936–39 the excess of county borough over rural infant mortality fell from 39 per cent. to 29 per cent. In the same period the excess for standardized mortality at all ages fell from 46 per cent. to 22 per cent. (Table III).

Table XIII expresses infant mortality at five age periods within the first year of life in each year 1931 to 1939 and in the quinquennium 1931–35 in terms of the corresponding rate in 1926–30 taken as 1,000 distinguishing Greater London and the aggregates of county boroughs, other urban districts and rural districts outside Greater London. The rates per 1,000 live births registered in 1926–30 on which the comparison is based, and the corresponding rates in 1938 and 1939, were as follows :—

		Under 4 weeks	4 weeks to 3 months	3–6 months	6–9 months	9–12 months	Under 1 year
Greater London	1926–30	25·20	9·66	9·75	7·97	6·98	59·56
	1938	22·66	8·34	8·82	5·77	4·16	49·74
	1939	23·24*	7·02	6·94	4·02	2·29	43·51*
County boroughs	1926–30	34·33	12·84	11·94	10·00	9·60	78·72
	1938	30·88	9·88	8·79	5·99	4·61	60·14
	1939	30·27*	9·48	8·91	5·52	3·73	57·92*
Other urban districts	1926–30	33·35	10·38	8·50	7·61	6·97	66·81
	1938	28·96	7·09	5·83	4·37	3·50	49·76
	1939	28·37*	7·51	6·08	4·04	2·71	48·72*
Rural districts	1926–30	31·82	9·34	6·98	5·90	5·33	59·38
	1938	28·78	6·57	4·92	3·59	3·44	47·30
	1939	28·98*	6·81	5·36	3·41	2·52	47·08*

*Corrected rates may be obtained by applying the factors 1·0060 at ages under 4 weeks and 1·0042 at all ages under 1 year.

Table XII.—Infant Mortality Rates in London and in Urban and Rural Aggregates and percentage excess in the County Boroughs compared with the Rural Districts, 1911-14 and 1931-39.

	England and Wales	London A.C.	County boroughs*	Other urban districts*	Rural districts*	Per cent. excess in county boroughs over rural districts
1931	66	65	77	65	58	+33
1932	65	67	75	63	58	+29
1933	64	60	75	62	56	+34
1934	59	67	66	55	53	+25
1935	57	58	66	55	49	+35
1936	59	66	66	55	53	+25
1937	58	60	66	55	50	+32
1938	53	57	60	50	47	+28
1939	50	47	58	49	47	+23
Average rates						
1911–14	*110*	*108*	*125*	*107*	*90*	*+39*
1931–35	*62*	*63*	*72*	*60*	*55*	*+31*
1936–39	*55*	*55*	*63*	*52*	*49*	*+29*

* Excluding Greater London.

Table XIII.—Infant Mortality at Various Stages of Infancy in Different Classes of Area in each year 1931 to 1939 in terms of the corresponding rate in 1926-30 taken as 1,000.

	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*
	Under 4 weeks				4 weeks to 3 months				3–6 months			
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*
1931	1,017	981	989	1,010	1,075	993	1,003	937	1,037	980	946	910
1932	1,028	988	990	984	1,025	1,011	963	1,004	1,017	930	925	983
1933	1,041	1,007	1,003	1,016	869	938	906	927	891	956	905	854
1934	980	983	981	997	1,030	787	710	813	982	716	734	808
1935	982	969	944	928	916	845	827	768	886	794	768	761
1931–35	*1,010*	*985*	*981*	*988*	*984*	*916*	*881*	*893*	*964*	*877*	*855*	*865*
1936	974	955	918	972	953	811	817	906	979	823	819	870
1937	940	934	942	930	1,002	852	811	828	1,023	867	772	765
1938	899	899	868	904	863	770	683	703	905	736	686	705
1939	922	882	851	911	727	738	724	729	712	746	715	768
	6–9 months				9–12 months				Total under 1 year			
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*
1931	902	992	917	973	817	936	925	908	991	978	971	974
1932	915	897	824	925	937	791	795	910	1,000	947	938	974
1933	759	884	821	829	691	832	789	829	910	951	932	948
1934	878	702	615	719	855	644	591	715	960	833	825	893
1935	678	686	640	634	506	595	575	591	859	841	830	824
1931–35	*828*	*834*	*764*	*822*	*762*	*761*	*735*	*796*	*945*	*911*	*899*	*925*
1936	960	730	614	646	792	611	593	674	948	841	821	890
1937	806	739	670	658	589	538	561	704	904	837	829	847
1938	724	599	574	608	596	480	502	645	835	764	745	797
1939	504	552	531	578	328	388	389	473	731	736	729	793

* Excluding Greater London.

Neo-natal mortality showed no substantial change between 1926–30 and 1931–35 in any of the classes of area, but by 1938 there was a 10 per cent. fall in the large towns and rural districts and a 13 per cent. fall in the small towns, followed by a slight increase in 1939 in Greater London and the rural areas. For the next two months of life Greater London mortality showed no consistent improvement up to 1937, but by 1939 the rate had fallen 27 per cent. ; in the other classes of area a decline was in progress from 1932 or 1933 and amounted by 1939 to 26 or 27 per cent. At 3–6 months the same was true, the percentage decline by 1939 ranging for the four groups of areas from 23 to 29 per cent. At 6–9 months progressive improvement occurred in each group reaching 42 to 50 per cent. by 1939. At 9–12 months improvement was still more rapid, the decrease in mortality by 1939 amounting to 67 per cent. in Greater London, 61 per cent. in other towns and 53 per cent. in rural districts. The remarkable fall in the Greater London rates at ages between 1 and 12 months which occurred in 1939 may have been helped to some extent by selective evacuation of delicate infants in the latter part of the year and the special measures for the care of all infants during that period.

Table 13 gives the infant deaths, and Tables XIV (*a*) and (*b*) the corresponding infant mortality rates, in greater detail of age for each region and class of area. Distinctions of sex and legitimacy for each of these areas are available, though not shown in the tables.

Table IV on page 11 gives the infant mortality rate in the two years 1938–39 for each of the 153 great towns grouped according to their populations, the excess or defect compared with the group rate, the standard error and whether the rate was significantly above or below that of the group as a whole. On this basis the metropolitan boroughs with significantly high infant mortality in 1938–39 were Kensington (72) and Paddington (63), and those with significantly low rates were Stoke Newington (37), Bermondsey (41), Lewisham (45), Poplar (46) and Wandsworth (47). In London's outer ring Acton (58), Willesden (53), West Ham (51) and Dagenham (50) had relatively high rates, whereas Southgate attained the low rate of 29 and Hornsey (31), Ilford (35), Walthamstow (35) and Hendon (36), also had significantly low rates. Amongst the large towns with 100,000 or more population Middlesbrough (74), St. Helens (74), Liverpool (72), Salford (72), Sunderland (72), Nottingham (69), Rhondda (69), Huddersfield (68), Birkenhead (67), Kingston-on-Hull (66) and Manchester (65) had infant mortalities significantly above the group figure, whereas Norwich recorded the low rate of 31 and Southend-on-Sea (35), Bristol (42), Bournemouth (46), Leicester (47), Plymouth (47), Sheffield (49), Southampton (50), Cardiff (53), and Stoke-on-Trent (56) also had significantly low rates. Amongst the towns of 50,000 to 100,000 population and the few smaller county boroughs Wigan (86), Merthyr Tydfil (81), Chester (76), Bootle (73), Ashton-under-Lyne (68), Stanley (67), Crosby (65), Keighley (62) and Stockton-on-Tees (59) had high rates. Canterbury (27) and Oxford (29) attained rates below 30 and Hove (33), Hastings (35), Cambridge (35), Cheltenham (38), Gillingham (38), Watford (39), Bath (43), Northampton (44), Reading (45), Ipswich (46) and York (48) also had low rates.

If it is desired to make comparisons with the national rate for 1938–39 of 51·5 instead of with the group rates, any difference from this figure amounting to twice the standard error given in the table may be regarded as statistically significant, but it must be remembered that the national rate comprises also the rural areas and small towns.

Table XIVa.—Infant Mortality at Various Ages, 1938. Rates per 1,000 Live Births registered in the year.

		Total under one year	Under 30 minutes	30 minutes and under 1 day	Total under 1 day	Days						1 day and under 1 week	Weeks				Total under 4 weeks	4 weeks to 3 months	Months		
						1	2	3	4	5	6		0	1	2	3			3–6	6–9	9–12
England and Wales																					
All Infants	M.	59·5	1·5	9·9	11·4	3·8	3·3	2·3	1·3	0·9	0·8	12·4	23·8	3·5	2·6	1·9	31·7	9·7	8·2	5·5	4·4
	F.	45·5	1·4	7·6	9·0	3·0	2·3	1·4	1·1	0·7	0·6	9·3	18·3	2·8	2·1	1·6	24·7	6·6	6·2	4·6	3·5
	P.	52·7	1·5	8·8	10·3	3·4	2·8	1·9	1·2	0·8	0·7	10·8	21·1	3·1	2·3	1·7	28·3	8·1	7·2	5·0	4·0
Legitimate	M.	57·9	1·2	9·8	11·0	3·7	3·3	2·3	1·3	0·9	0·8	12·2	23·2	3·4	2·5	1·9	31·0	9·3	7·9	5·4	4·4
	F.	44·6	1·2	7·5	8·7	3·0	2·3	1·4	1·1	0·7	0·6	9·2	17·9	2·8	2·0	1·5	24·3	6·3	6·0	4·5	3·5
	P.	51·4	1·2	8·6	9·8	3·4	2·8	1·9	1·2	0·8	0·7	10·8	20·6	3·1	2·3	1·7	27·7	7·8	7·0	4·9	4·0
Illegitimate	M.	94·9	8·4	13·4	21·9	5·0	4·0	2·9	1·7	0·9	0·9	15·4	37·3	5·5	3·7	2·4	48·9	18·9	13·7	8·2	5·2
	F.	66·0	6·2	10·5	16·7	3·5	2·3	1·8	1·1	0·9	0·8	10·2	26·9	2·6	2·9	1·8	34·2	11·6	10·9	6·1	3·1
	P.	80·8	7·4	12·0	19·3	4·3	3·1	2·4	1·4	0·9	0·8	12·9	32·2	4·1	3·3	2·1	41·7	15·4	12·3	7·2	4·2
South East		46·6	1·4	7·6	9·0	3·0	2·1	1·4	1·0	0·6	0·6	8·6	17·6	2·4	1·7	1·5	23·2	7·5	7·3	5·0	3·7
Greater London		49·7	1·6	7·6	9·1	2·7	1·9	1·3	1·0	0·5	0·5	8·0	17·1	2·4	1·7	1·4	22·7	8·3	8·8	5·8	4·2
Remainder of South East ...		41·9	1·2	7·7	8·9	3·3	2·4	1·6	0·9	0·6	0·7	9·5	18·4	2·3	1·7	1·5	23·9	6·2	5·1	3·8	2·9
North		60·3	1·5	9·4	10·9	3·9	3·4	2·2	1·4	1·0	0·9	12·7	23·6	3·7	2·9	2·2	32·4	9·3	8·3	5·7	4·6
North I		62·9	1·4	10·2	11·6	3·6	3·6	2·1	1·5	1·1	0·9	12·8	24·4	3·6	3·3	2·5	33·8	8·5	8·9	6·6	5·1
North II		59·3	1·6	8·2	9·8	4·5	3·0	2·6	1·2	1·0	0·7	13·0	22·8	4·1	2·8	2·0	31·7	9·9	8·4	4·9	4·4
North III		54·2	1·2	9·7	10·9	3·9	3·1	2·4	1·6	0·9	0·9	12·7	23·6	3·3	2·7	1·8	31·4	8·2	6·5	4·3	3·9
North IV		62·9	1·6	9·3	10·9	3·8	3·6	2·1	1·4	1·0	0·8	12·7	23·6	3·8	2·8	2·3	32·5	10·2	9·1	6·2	4·9
Midland		52·4	1·6	9·2	10·7	3·2	3·0	2·0	1·3	0·8	0·7	11·0	21·8	3·4	2·3	1·6	29·2	8·2	6·5	4·9	3·6
Midland I		53·4	1·7	9·3	11·0	3·3	2·9	2·2	1·3	0·6	0·6	10·9	22·0	3·3	2·4	1·8	29·4	8·0	7·0	5·2	3·7
Midland II		50·3	1·2	8·9	10·2	3·2	3·2	1·5	1·4	1·1	0·9	11·2	21·4	3·8	2·3	1·3	28·8	8·6	5·5	4·3	3·2
East		44·3	1·4	8·8	10·2	3·2	2·8	2·0	1·2	0·8	0·7	10·6	20·8	2·6	2·1	1·6	27·2	5·8	5·1	3·1	3·2
South West		46·5	1·6	9·9	11·5	3·1	2·8	2·0	1·1	1·0	0·6	10·5	22·0	3·0	2·0	1·2	28·3	6·5	4·3	3·8	3·6
Wales		56·7	1·4	9·5	11·0	4·1	3·3	2·1	1·6	0·9	0·8	12·8	23·8	4·0	2·8	2·0	32·6	8·2	6·8	4·8	4·4
Wales I		57·5	1·3	9·8	11·1	4·1	3·3	1·8	1·6	0·9	0·7	12·4	23·5	4·4	2·7	2·1	32·8	8·0	7·0	5·3	4·5
Wales II		54·6	1·9	8·8	10·7	3·9	3·4	3·0	1·8	0·8	0·9	13·7	24·4	3·0	3·1	1·6	32·0	8·7	6·2	3·6	4·1
County Boroughs*		60·1	1·5	9·3	10·8	3·5	3·1	2·1	1·5	0·9	0·7	11·7	22·5	3·6	2·7	2·0	30·9	9·9	8·8	6·0	4·6
Other Urban Districts*		49·8	1·4	8·9	10·3	3·6	3·0	1·9	1·2	0·8	0·8	11·4	21·7	3·2	2·4	1·7	29·0	7·1	5·8	4·4	3·5
Rural Districts*		47·3	1·5	8·9	10·4	3·5	3·1	2·1	1·1	0·9	0·8	11·6	22·0	3·0	2·1	1·6	28·8	6·6	4·9	3·6	3·4

* Excluding Greater London.

Table XIVb.—Infant Mortality at Various Ages, 1939. Rates per 1,000 Live Births registered in the year.

		Total under one year	Under 30 minutes	30 minutes and under 1 day	Total under 1 day	Days						1 day and under 1 week	Weeks				Total under 4 weeks	4 weeks to 3 months	Months		
						1	2	3	4	5	6		0	1	2	3			3–6	6–9	9–12
England and Wales																					
All Infants	M.	56·3	1·5	9·7	11·2	3·6	3·3	2·4	1·3	0·9	0·7	12·4	23·5	3·4	2·4	1·9	31·2	9·3	7·9	4·9	3·1
	F.	44·1	1·4	7·8	9·3	3·0	2·3	1·6	1·0	0·7	0·7	9·3	18·5	2·9	2·0	1·5	24·8	6·5	6·2	3·9	2·7
	P.	50·4	1·5	8·8	10·2	3·3	2·8	2·0	1·2	0·8	0·7	10·9	21·1	3·1	2·2	1·7	28·1	7·9	7·0	4·4	2·9
Legitimate	M.	54·6	1·2	9·4	10·6	3·6	3·3	2·4	1·3	0·9	0·7	12·2	22·8	3·3	2·3	1·8	30·3	8·9	7·5	4·8	3·1
	F.	42·4	1·2	7·5	8·7	2·9	2·2	1·5	1·0	0·7	0·6	9·0	17·7	2·8	1·9	1·4	23·8	6·2	5·9	3·7	2·7
	P.	48·6	1·2	8·5	9·7	3·2	2·7	2·0	1·2	0·8	0·7	10·6	20·3	3·1	2·1	1·6	27·1	7·6	6·7	4·3	2·9
Illegitimate	M.	96·9	7·5	15·6	23·1	5·5	4·2	3·0	1·7	0·9	1·1	16·5	39·6	4·8	3·9	3·6	51·8	18·8	15·9	7·2	3·3
	F.	82·6	7·6	14·8	22·4	4·6	4·9	2·7	1·3	0·9	1·2	15·4	37·8	4·9	3·4	2·5	48·6	12·5	11·3	6·4	3·9
	P.	89·9	7·6	15·2	22·7	5·0	4·5	2·9	1·5	0·9	1·1	16·0	38·7	4·8	3·6	3·0	50·2	15·7	13·6	6·8	3·5
South East		41·2	1·6	7·7	9·3	2·9	2·1	1·5	0·9	0·7	0·5	8·6	17·9	2·4	1·5	1·4	23·1	6·4	5·9	3·7	2·2
Greater London		43·5	1·7	7·4	9·2	2·8	2·1	1·6	1·0	0·7	0·5	8·7	17·9	2·3	1·5	1·5	23·2	7·0	6·9	4·0	2·3
Remainder of South East ...		38·1	1·4	8·1	9·5	3·0	1·9	1·5	0·9	0·6	0·5	8·3	17·9	2·4	1·5	1·2	23·0	5·6	4·4	3·2	2·0
North		59·4	1·5	9·6	11·1	3·8	3·6	2·4	1·3	1·0	0·8	12·9	24·0	3·8	2·8	2·0	32·6	9·4	8·8	5·1	3·5
North I		63·3	1·9	8·8	10·7	3·7	4·2	2·7	1·2	0·9	0·7	13·4	24·1	3·5	2·8	2·6	33·1	10·8	10·3	5·2	3·9
North II		58·9	1·3	9·2	10·4	3·2	3·6	2·3	1·1	0·7	0·9	11·9	22·4	3·3	1·8	2·1	29·6	10·7	9·8	5·2	3·6
North III		54·6	1·0	9·8	10·8	4·0	3·1	2·2	1·3	0·9	0·7	12·2	23·0	4·0	3·0	1·8	31·9	8·3	6·9	4·6	2·9
North IV		60·7	1·7	9·8	11·5	3·8	3·6	2·5	1·4	1·1	0·9	13·4	24·9	3·9	2·8	1·9	33·5	9·2	9·1	5·3	3·6
Midland		51·8	1·5	8·9	10·4	3·2	2·9	1·9	1·2	0·8	0·8	10·8	21·2	3·4	2·5	1·6	28·6	8·2	7·0	4·7	3·3
Midland I		53·0	1·4	9·2	10·6	3·2	2·7	1·9	1·2	0·8	0·9	10·8	21·4	3·4	2·6	1·5	29·0	8·4	7·3	4·8	3·5
Midland II		49·4	1·6	8·3	9·9	3·1	3·2	1·8	1·2	0·8	0·7	10·9	20·7	3·4	2·2	1·6	27·9	7·8	6·3	4·4	2·9
East		41·9	1·3	7·5	8·8	2·8	2·5	2·1	1·4	0·6	0·6	10·1	18·9	2·8	1·5	1·4	24·6	6·4	4·8	3·5	2·6
South West		42·6	1·2	9·8	11·0	3·2	2·6	2·3	1·2	0·8	0·6	10·6	21·6	2·9	1·7	1·3	27·5	6·0	3·9	3·0	2·3
Wales		59·7	1·0	9·9	10·8	3·9	3·2	2·7	1·6	1·0	1·0	13·4	24·2	3·1	2·7	2·4	32·5	9·9	7·9	5·7	3·7
Wales I		60·1	0·7	10·0	10·7	3·9	2·8	2·6	1·7	0·9	1·0	12·9	23·6	3·3	2·6	2·3	31·8	9·9	8·6	6·1	3·7
Wales II		58·4	1·7	9·6	11·3	4·0	4·1	3·1	1·3	1·2	0·9	14·6	25·9	2·8	3·0	2·7	34·3	9·9	6·0	4·6	3·6
County Boroughs*		57·9	1·4	9·4	10·8	3·5	3·0	2·0	1·3	0·9	0·8	11·4	22·3	3·5	2·5	1·9	30·3	9·5	8·9	5·5	3·7
Other Urban Districts*		48·7	1·3	8·7	10·1	3·2	2·9	2·2	1·2	0·8	0·7	11·1	21·2	3·2	2·3	1·7	28·4	7·5	6·1	4·0	2·7
Rural Districts*		47·1	1·5	9·1	10·6	3·7	3·1	2·3	1·1	0·8	0·7	11·8	22·4	3·2	2·0	1·4	29·0	6·8	5·4	3·4	2·5

* Excluding Greater London.

Infant Mortality by Sex, Legitimacy and Cause.—Infant deaths are analysed in detail of age, sex and legitimacy in Table 13, and the rates per 1,000 registered births in Tables XIVa for 1938 and XIVb for 1939. For the latter year corrected rates based on the live-born infants initially at risk may be obtained by applying the correction factors on page 20 ; the effects are only appreciable for the totals under 4 weeks and under 1 year.

Table XV compares the mortality of male with that of female, of legitimate with that of illegitimate infants and from separate causes at different periods of the first year. Amongst live births males comprise about 105 per cent. of females, whilst for stillborn children the sex ratio was 118 in 1938 and 117 in 1939, compared with 119 in 1937 and 120 in 1936. For stillbirths to mothers under 20 years of age the sex-ratio in 1939 was 101·4, rising to 114·8 for stillbirths to mothers aged 20–29, 119·8 at ages 30–39 and 119·9 at ages 40 and over (Table AA).

For all infant deaths during the first year the sex-ratio was 137 in 1938 and 134 in 1939, but when allowance is made for the excess of male infants born by calculating the ratio between the rates per 1,000 live births of the corresponding sex as in Table XV, the ratios were 131 in 1938 and 128 in 1939. The sex and illegitimacy ratios for the 4 years 1936 to 1939 at successive periods of the first year are compared below :

Period in which death occurred	Male per cent. of female infant death rate				Illegitimate per cent. of legitimate infant death rate			
	1936	1937	1938	1939	1936	1937	1938	1939
First day	128	122	127	120	185	201	197	234
2nd to 7th days	136	128	133	133	114	120	119	151
2nd to 4th weeks	129	120	123	120	147	141	134	168
5th week to 3rd month ...	142	145	147	143	179	193	197	207
4th to 6th month	132	134	132	128	186	187	176	203
7th to 9th month	124	128	120	127	136	110	147	158
10th to 12th month ...	121	126	127	113	108	100	105	121

In each year the relative male excess was greatest amongst infants dying in the second and third months and then declined fairly consistently with advancing age ; it was greater amongst infants dying on the second to seventh days than amongst those who died on the first day or in the rest of the first month, the progression of the sex-ratio with age being therefore bi-modal. Mortality of illegitimate infants was approximately twice that of legitimate infants on the first day and in the second and third months, both in 1937 and 1938, and was about 80 per cent. in excess in the fourth to six months. The excess in mortality of illegitimate infants was much less in the intervening period, however, and declined rapidly towards the end of the first year, a progression which may have some connection with breast feeding and arrangements made for the care of many illegitimate infants after the first month. In 1939 the excess was considerably enhanced at every age period in comparison with the three preceding years.

The principal causes of infant deaths, as indicated by the certificates, are set out in Tables 11 and 12, which compare the deaths and rates for 1938 and 1939 with those of previous years, in Table 15 which gives the rates in 1938 and 1939 for each region by age periods, and in Table 14 (1938 only) which dis-

tinguishes legitimate from illegitimate infants for each cause and class of area by age periods. For explanation of the classification of deaths according to the International List of Causes, reference should be made to pages 47–49.

The death-rate from the common infectious diseases affecting infants, measles, scarlet fever, whooping cough, diphtheria and chicken-pox, which in 1933–36 was between 2 and 3 per 1,000 live births, fell to 1·66 in 1938 and 1·40 in 1939. The tuberculosis and diarrhœa rates also established new low records in 1939, though not in 1938. The rates for syphilis, respiratory diseases, inflammation of the stomach, hernia and intestinal obstruction, congenital debility and convulsions reached new low levels in 1938, and again in 1939.

Table XV.—Infant Mortality by Cause, Sex and Legitimacy, 1938 and 1939.

		Deaths per 1,000 live births registered						Mortality per cent.			
		All infants		Legitimate infants		Illegitimate infants		Male of female infants		Illegitimate of legitimate infants	
		Male	Female	Male	Female	Male	Female	All infants	Illegitimate	Male	Female
	1938										
All Causes.	Under 4 weeks	31·72	24·68	30·96	24·25	48·92	34·22	129	143	158	141
	4 weeks–3 months	9·67	6·55	9·26	6·33	18·90	11·64	148	162	204	184
	3–6 months	8·18	6·22	7·94	6·02	13·71	10·86	132	126	173	180
	6–9 months	5·49	4·56	5·37	4·49	8·23	6·13	120	134	153	137
	9–12 months	4·44	3·49	4·41	3·51	5·19	3·10	127	167	118	88
	Total under 1 year	59·50	45·50	57·93	44·59	94·95	65·96	131	144	164	148
All ages under one year.	Measles (7)	0·68	0·58	0·67	0·59	0·82	0·47	117	174	122	80
	Whooping cough (9)	0·80	0·97	0·80	0·99	0·89	0·62	82	144	111	63
	Tuberculosis, all forms (23–32)	0·70	0·51	0·70	0·51	0·67	0·39	137	172	96	76
	Syphilis (34)	0·23	0·17	0·19	0·16	0·96	0·47	135	204	505	294
	Convulsions (86)	1·42	0·98	1·40	0·99	1·93	0·85	145	227	138	86
	Bronchitis and pneumonia (106–109)	10·64	8·22	10·41	8·09	16·01	11·17	129	143	154	138
	Diarrhœa and enteritis (119)	5·77	3·91	5·46	3·67	12·75	9·31	148	137	234	254
	Developmental and wasting diseases (157–9, 161*a*, *b*)	28·84	22·87	28·37	22·57	39·36	29·41	126	134	139	130
	Congenital defects, atelectasis (157, 161*a*)	*8·81*	*7·04*	*8·77*	*7·07*	*9·49*	*6·05*	*125*	*157*	*108*	*86*
	Congenital debility, icterus (158, 161*b*)	*2·77*	*1·91*	*2·67*	*1·86*	*5·12*	*2·88*	*145*	*178*	*192*	*155*
	Premature birth (159)	*17·27*	*13·93*	*16·93*	*13·64*	*24·76*	*20·49*	*124*	*121*	*146*	*150*
	Other causes	10·42	7·29	9·93	7·02	21·56	13·27	143	162	217	189
	All causes	59·50	45·50	57·93	44·59	94·95	65·96	131	144	164	148
	1939										
All causes.	Under 4 weeks	31·20	24·84	30·30	23·80	51·76	48·56	126	107	171	204
	4 weeks–3 months	9·26	6·50	8·85	6·24	18·77	12·49	142	150	212	200
	3–6 months	7·86	6·15	7·51	5·92	15·89	11·32	128	140	212	191
	6–9 months	4·91	3·86	4·81	3·75	7·19	6·36	127	113	149	170
	9–12 months	3·10	2·74	3·09	2·69	3·25	3·85	113	84	105	143
	Total under 1 year	56·33	44·09	54·57	42·39	96·85	82·59	128	117	177	195
All ages under one year.	Measles (7)	0·15	0·13	0·16	0·13	0·08	0·08	115	100	50	62
	Whooping cough (9)	1·08	1·23	1·09	1·21	0·83	1·65	88	50	76	136
	Tuberculosis, all forms (23–32)	0·57	0·46	0·57	0·46	0·53	0·47	124	113	93	102
	Syphilis (34)	0·19	0·19	0·17	0·17	0·76	0·79	100	96	447	465
	Convulsions (86)	1·35	0·92	1·32	0·90	2·12	1·41	147	150	161	157
	Bronchitis and pneumonia (106–109)	9·64	7·63	9·41	7·45	15·13	11·63	126	130	161	156
	Diarrhœa and enteritis (119)	4·78	3·52	4·49	3·27	11·58	9·12	136	127	258	279
	Developmental and wasting diseases (157–9, 161*a*, *b*)	28·04	22·64	27·35	21·90	44·11	39·53	124	112	161	181
	Congenital defects, atelectasis (157, 161*a*)	*8·62*	*7·22*	*8·48*	*7·16*	*11·88*	*8·73*	*119*	*136*	*140*	*122*
	Congenital debility, icterus (158, 161*b*)	*2·70*	*1·72*	*2·59*	*1·66*	*5·07*	*3·23*	*157*	*157*	*196*	*195*
	Premature birth (159)	*16·72*	*13·69*	*16·27*	*13·08*	*27·16*	*27·58*	*122*	*98*	*167*	*211*
	Other causes	10·53	7·37	10·01	6·90	21·71	17·91	143	121	217	260
	All causes	56·33	44·09	54·57	42·39	96·85	82·59	128	117	177	195

Prematurity was accounted to be the cause of death after 18·28 per 1,000 live births in 1929–33, but recent years have registered a decline to 15·64 in 1938 and 15·25 (15·34) in 1939. Injury at birth, on the other hand, shows a gradually increasing rate, from 2·10 in 1929–31 to 2·59 in 1938 and 2·66 (2·68) in 1939.

When more than one cause was entered on a death certificate the classification in force up to 1939 was carried out in conformity with the order of precedence in the Manual of the International List (1929), which for infants may be summarized as follows: (1) Violent causes; (2) Most infectious diseases (including syphilis, but not influenza, tuberculosis, erysipelas, german measles, varicella or mumps at ages under 3 months); (3) Prematurity; (4) Congenital malformations; (5) Birth injury (160) and Other diseases peculiar to early infancy (161) at ages under 3 months; (6) Other definite causes; (7) Birth injury and other diseases peculiar to infancy at ages 3 months or over; (8) Congenital debility. This had the effect of giving a somewhat undue weight to prematurity when associated with defined diseases, at any rate after the first month, as may be seen by comparing the deaths for 1939 classified by this method (Table 22) with the numbers when classified according to the certifier's preference on the medical certificate of cause of death, that is to say by the new method to be used from 1940 onwards. (Appendix B1, further subdivided by age.)

Premature birth (159)	Under 4 weeks	4 weeks to 3 months	3–6 months	6–12 months	Total under 1 year
By old classification ...	8,786	581	70	6	9,443
By new classification ...	8,587	515	69	8	9,179
Excess or defect ...	+199	+66	+1	−2	+264

The result of following the certifier's preference as to the principal cause of death is to reduce the prematurity rate in the neo-natal period from 14·19 to 13·86, in the second and third months from 0·94 to 0·83 and at all ages under 1 year from 15·25 to 14·82. The rate assigned to birth injury would be increased slightly from 2·66 to 2·70, whilst the congenital debility rate would be unchanged at 1·69.

Table XVI compares the infant mortality rates by cause, and the neo-natal rates from all causes, for the seven large regions in 1931-35 and in each year 1936 to 1939.

In 1938 measles and whooping cough continued to be most fatal in the North, but the average combined rate in 1938-39 was little more than half that in 1931-35, as in other regions. The infantile death rate attributed to tuberculosis has been highest in the Midlands since 1937 and low in Greater London, Wales and the South West. The bronchitis and pneumonia rate was, as usual, highest in the North and Wales, but the decline from 1931–35 to 1938–39 amounted to 29 per cent. in the North, compared with 14 per cent. in the South East excluding Greater London and 26 per cent. in the country as a whole.

Diarrhœa and enteritis, whatever this now connotes in the epidemiological sense, continues to predominate in Greater London, though the excess over the national rate was only 30 per cent. in 1939 compared with 46 per cent in 1931–35.

Congenital malformations registered, as in most years, highest rates in Wales, the North and South-West. The prematurity death rate is usually low in Greater London and the South-East, but in the North the excess over Greater London was 46 per cent. in 1938 and 45 per cent. in 1939, compared with 41 per cent. in 1931–35, whilst in Wales the excess was 35 per cent. in 1938 and 39 per cent. in 1939.

Table XVI.—Comparison of Infant Mortality from the Principal Causes in Geographical Regions—Rates per 100,000 Live Births in 1931-35, 1936, 1937, 1938 and 1939, and per cent. of the England and Wales rate in 1939.

	Rates per 100,000 Live Births					Per cent.	Rates per 100,000 Live Births					Per cent.
	1931–5	1936	1937	1938	1939	1939	1931–5	1936	1937	1938	1939	1939
	ENGLAND AND WALES						MIDLAND REGION					
Measles	90	103	38	63	14	*100*	85	50	52	26	26	*186*
Whooping cough	174	177	141	88	115	*100*	176	199	107	104	123	*107*
Tuberculosis	83	59	64	61	52	*100*	82	58	85	70	65	*125*
Syphilis	40	27	23	20	19	*100*	42	25	19	21	16	*84*
Bronchitis and pneumonia	1,218	1,079	1,118	946	865	*100*	1,210	1,116	1,071	894	898	*104*
Diarrhœa and enteritis	542	532	505	486	416	*100*	508	427	417	427	466	*112*
Congenital malformations	585	608	606	599	593	*100*	600	660	639	642	612	*103*
Premature birth	1,801	1,669	1,699	1,564	1,525	*100*	1,966	1,784	1,812	1,626	1,579	*104*
Injury at birth	226	253	247	259	266	*100*	232	261	249	265	288	*108*
Other violence	119	115	113	113	119	*100*	112	110	118	103	124	*104*
Congenital debility	291	241	225	176	169	*100*	273	244	203	182	170	*101*
Convulsions	193	149	129	121	114	*100*	169	146	113	96	83	*73*
Other causes	855	841	853	772	769	*100*	827	822	845	781	733	*95*
All Causes — Under 1 year	6,217	5,853	5,761	5,268	5,036	*100*	6,282	5,902	5,730	5,237	5,183	*103*
All Causes — Under 1 month	3,141	3,016	2,976	2,829	2,810	*100*	3,273	3,161	3,097	2,921	2,864	*102*
	GREATER LONDON						EAST REGION					
Measles	81	157	8	73	2	*14*	33	49	37	15	7	*50*
Whooping cough	172	180	170	71	116	*101*	146	150	129	81	108	*94*
Tuberculosis	73	59	52	50	40	*77*	98	52	63	59	40	*77*
Syphilis	40	23	20	27	18	*95*	42	11	7	7	14	*74*
Bronchitis and pneumonia	1,088	1,102	1,064	945	709	*82*	815	842	782	653	631	*73*
Diarrhœa and enteritis	790	935	890	872	539	*130*	216	224	236	196	234	*56*
Congenital malformations	520	524	518	530	453	*76*	570	553	615	617	627	*106*
Premature birth	1,444	1,304	1,311	1,248	1,243	*82*	1,687	1,657	1,633	1,488	1,318	*86*
Injury at birth	215	235	225	218	255	*96*	180	228	177	236	245	*92*
Other violence	137	127	142	113	133	*112*	103	67	96	103	101	*85*
Congenital debility	202	151	145	87	85	*50*	288	247	302	229	180	*107*
Convulsions	58	32	32	21	23	*20*	152	142	77	85	72	*63*
Other causes	808	819	809	719	735	*96*	779	676	703	658	615	*80*
All Causes — Under 1 year	5,628	5,648	5,386	4,974	4,351	*86*	5,109	4,918	4,857	4,427	4,192	*83*
All Causes — Under 1 month	2,544	2,455	2,369	2,266	2,324	*83*	2,916	2,939	2,775	2,717	2,463	*88*
	REMAINDER OF SOUTH EAST						SOUTH WEST REGION					
Measles	32	53	11	25	1	*7*	36	43	15	67	—	—
Whooping cough	124	104	107	44	90	*78*	147	137	127	138	82	*71*
Tuberculosis	74	39	53	63	42	*81*	64	54	54	49	48	*92*
Syphilis	24	10	18	6	18	*95*	25	14	25	7	7	*37*
Bronchitis and pneumonia	709	696	672	686	538	*62*	724	746	638	766	586	*68*
Diarrhœa and enteritis	281	265	313	321	258	*62*	214	238	163	226	181	*44*
Congenital malformations	509	563	530	519	521	*88*	620	656	609	509	658	*111*
Premature birth	1,441	1,378	1,376	1,311	1,217	*80*	1,636	1,482	1,600	1,518	1,432	*94*
Injury at birth	211	212	247	228	240	*90*	238	220	272	283	324	*122*
Other violence	127	143	105	115	119	*100*	127	151	112	117	106	*89*
Congenital debility	245	190	162	160	106	*63*	258	238	207	162	184	*109*
Convulsions	91	77	59	62	58	*51*	149	108	83	67	68	*60*
Other causes	695	750	681	651	599	*78*	695	675	706	742	579	*75*
All Causes — Under 1 year	4,563	4,480	4,334	4,191	3,807	*84*	4,933	4,762	4,611	4,651	4,255	*84*
All Causes — Under 1 month	2,600	2,526	2,470	2,390	2,297	*82*	2,934	2,697	2,819	2,825	2,748	*98*
	NORTH REGION						WALES					
Measles	135	148	56	106	18	*129*	83	29	73	29	45	*321*
Whooping cough	199	184	158	99	127	*110*	180	272	148	106	112	*97*
Tuberculosis	96	72	66	64	60	*115*	70	47	56	50	35	*67*
Syphilis	50	38	30	25	24	*126*	30	40	24	13	24	*126*
Bronchitis and pneumonia	1,584	1,292	1,451	1,138	1,113	*129*	1,334	976	1,208	989	1,081	*125*
Diarrhœa and enteritis	625	565	510	461	460	*111*	430	361	355	303	324	*78*
Congenital malformations	623	640	675	643	655	*110*	670	659	576	696	733	*124*
Premature birth	2,043	1,923	1,973	1,818	1,797	*118*	2,052	1,915	1,980	1,688	1,723	*113*
Injury at birth	239	286	265	281	276	*104*	232	232	253	316	212	*80*
Other violence	115	102	103	121	112	*94*	99	113	83	90	125	*105*
Congenital debility	360	296	278	207	219	*130*	358	332	366	295	295	*175*
Convulsions	273	215	205	183	163	*143*	500	369	317	383	428	*375*
Other causes	982	940	999	881	917	*119*	877	836	813	716	830	*108*
All Causes — Under 1 year	7,324	6,701	6,769	6,027	5,941	*118*	6,915	6,181	6,252	5,674	5,967	*118*
All Causes — Under 1 month	3,564	3,430	3,434	3,235	3,262	*116*	3,700	3,503	3,486	3,256	3,245	*115*

Injury at birth showed highest rates in Wales in 1938 and in the South-West in 1939. The risk of death to infants from all other forms of violence was highest in Greater London in 1939, as in 1931–35, though not in 1938.

The unsatisfactory groups of congenital debility and convulsions are rapidly being eliminated by better certification in most areas, the combined rate in Greater London having fallen from 2·6 per 1,000 in 1931–35 to only 1·1 in 1938 and 1939, but in Wales this rate remained at the high level of about 7 per 1,000.

Neo-natal mortality from all causes improved between 1931–35 and 1939 to a greater relative extent in the East, Wales and Midlands than in the other regions.

Mortality at Ages over One Year

Table XVII gives the crude and standardized death-rates at all ages for the sexes separately and combined, and the death-rates per million living at different ages in 5-year groups up to 25, 10-year groups from 25 to 85 and at all ages thereafter, for the years 1938 and 1939. Corresponding rates for the decennium 1921-30, which have been revised as in Table 5 since the 1937 Review, are shown for comparison. Non-civilian males have been excluded from 3rd September onwards, both from the population and from the deaths, in calculating the 1939 rates.

At every age-group for each sex the rates were lower in both years than in 1921–30, except for males at ages 75–85 and for females aged 85 and over in 1939. This applies also when comparison is made with 1937 (Table XXVIII of 1937 Review), except for girls aged 5–10 and for boys aged 10–15 in 1938, whose rates were 1,739 and 1,217 respectively in 1937, and for females aged 85 and over whose rate was higher in 1937. Comparison of 1939 with 1938 shows that the rates continued to fall in 1939 at every age-group under 45, but increased at every age-group over 45 for each sex, the increases at 75 and over amounting to 6 or 7 per cent.

Table XVII.—Mortality from All Causes per Million Population, 1921-30, 1938 and 1939

	Males			Females.			Persons.		
	1921–30.	1938.	1939.*	1921–30.	1938.	1939.	1921–30.	1938.	1939.*
All Ages.									
Crude	12,918	12,466	12,950	11,393	10,834	11,319	12,123	11,618	12,097
Standardized A	11,765	9,780	9,720	9,518	7,483	7,427	10,569	8,549	8,487
Standardized B	12,712	10,549	10,516	10,839	8,606	8,604	11,734	9,527	9,501
0–	25,146	17,075	15,183	20,231	13,338	12,071	22,718	15,240	13,658
5–	2,316	1,917	1,650	2,329	1,787	1,314	2,424	1,853	1,484
10–	1,654	1,261	1,081	1,633	1,087	972	1,643	1,175	1,027
15–	2,618	1,994	1,869	2,484	1,723	1,637	2,551	1,860	1,752
20–	3,405	2,769	2,643	3,020	2,292	2,267	3,205	2,529	2,448
25–	3,856	2,872	2,738	3,453	2,509	2,474	3,639	2,686	2,602
35–	6,342	4,513	4,423	4,853	3,547	3,508	5,544	4,003	3,940
45–	11,592	10,232	10,344	8,608	6,913	7,047	10,029	8,432	8,561
55–	24,620	23,003	24,265	18,319	15,314	15,737	21,310	18,856	19,667
65–	58,241	54,092	55,393	44,886	39,377	40,501	50,846	45,991	47,159
75–	135,438	130,066	139,089	111,560	100,441	106,201	120,949	112,119	118,985
85 and upwards	285,798	263,764	280,761	248,156	236,524	251,100	260,164	245,451	260,602

*. In the calculation of these rates, non-civilian males have been excluded on and after 3rd September, 1939, both from the deaths and the population at risk.

A. English Standard (Population of England and Wales, 1901).

B. International Standard. (A composite population made up of those of a large number of European countries in 1900 or 1901).

The extent of the fall at the various ages can be seen from Table XVIII in which 1937, 1938 and 1939 death-rates are expressed as percentages of those in 1921–30. The standardized rates according to the English standard declined

between 1921–30 and 1939 by 17 per cent. for males and 22 per cent. for females. The fall was relatively greater amongst children under 15 than at any later age; and at each age period under 25 and between 45 and 85 it was greater for females than for males, whereas between 25 and 45 males showed the greater improvement.

Table XVIII.—Mortality at various ages from all causes in 1937, 1938 and 1939, per cent. of that for the same sex and age in 1921-30

	Males			Females			Persons		
	Per cent. of 1921–30			Per cent. of 1921–30			Per cent. of 1921–30		
	1937	1938	1939	1937	1938	1939	1937	1938	1939
All Ages									
Crude	102·2	96·5	100·2	102·7	95·1	99·3	102·4	95·8	99·8
Standardized A	89·2	83·2	82·6	86·2	78·6	78·1	87·7	80·9	80·3
Standardized B	89·2	83·0	82·8	87·3	79·4	79·4	88·2	81·2	81·0
0–	74	68	60	72	66	60	73	67	60
5–	78	76	66	75	77	56	77	76	61
10–	74	76	65	69	67	60	71	72	63
15–	80	76	71	74	69	66	77	73	69
20–	84	81	78	85	76	75	84	79	76
25–	79	74	71	81	73	72	80	74	72
35–	78	71	70	81	73	72	80	72	71
45–	96	88	89	88	80	82	92	84	85
55–	101	93	99	91	84	86	96	88	92
65–	99	93	95	96	88	90	97	90	93
75–	102	96	103	99	90	95	100	93	98
85 and upwards	102	92	98	109	95	101	107	94	100

A English Standard (Population of England and Wales 1901).
B International Standard. (*See* page 33.)

Young Children (1-5).—Table XIX shows that since 1921–30 death-rates have been falling more rapidly for the years of age immediately following infancy than for the first year of life. The standardized rate at ages 1–5 in 1938 was 49 per cent. of that in 1921–30 and 69 per cent. of that in 1931–35, and by 1939 it had fallen further to only 37 per cent. of the 1921–30 rate and 53 per cent. of that in 1931–35. The decline has been relatively greatest in the second year of life, followed in order by the third, fourth, fifth and first years of life. The second year usually shows the highest degree of annual variability and would seem to be the age of greatest susceptibility to disturbing factors. Comparing 1939 with 1937 an improvement of 37 per cent. was registered in the second year of life, of 30 per cent. in the third, of 28 per cent. in the fourth and of 24 per cent. in the fifth.

Table XIX.—Mortality per 1,000 living (both sexes) in each of the first Five Years of Life, 1911-14, 1921-30, 1931-35, 1936, 1937, 1938 and 1939.

Year of Life	1911–14	1921–30	1931–35	1936	1937	1938	1939	1939 per cent. of 1921–30
0–1 ...	118·16	74·96	64·86	61·80	60·56	55·13	52·34	69·8
1–2 ...	34·06	19·70	13·09	10·72	9·72	8·41	6·17	31·3
2–3 ...	13·68	8·44	5·84	4·98	4·47	4·05	3·14	37·2
3–4 ...	8·32	5·18	4·10	3·37	3·32	3·14	2·39	46·1
4–5 ...	6·14	3·88	3·35	3·00	2·83	2·62	2·14	55·1
0–5 Crude	37·27	22·72	18·10	17·03	16·65	15·24	13·66	60·1
0–5 Standard	37·52	23·34	19·05	17·55	16·94	15·36	13·91	59·6
1–5 Crude	15·62	9·40	6·55	5·50	5·11	4·59	3·49	37·1
1–5 Standard	15·54	9·29	6·59	5·51	5·08	4·54	3·46	37·2

Abridged life tables constructed from the death rates of 1938 and 1939 show that out of 10,000 boys and girls born alive the following numbers would be expected to survive to their 5th birthday, compared with the expectation based upon death rates in previous periods (Life Tables 4, 8, 9, 10).

	1871–80	1910–12	1920–22	1930–32	1938	1939
Male ...	7,341	8,263	8,696	9,007	9,224	9,299
Female ...	7,626	8,501	8,918	9,202	9,384	9,436

The distribution throughout the country of mortality at 1–2 and 2–5 years is shown in Table XX, which may be compared with Table XI for infant mortality. Corresponding rates are given also for 1931–35 and 1937, and percentage comparisons made with 1931–35, in each region and density aggregate. In 1938 North IV gave the highest rate at each age, followed by North I and Wales I; but in 1939 Wales I was highest at 1–2, followed by North II, and North I was highest at 2–5, followed by Wales I. In 1938 the death-rate in North IV compared with that in the East was 81 per cent. in excess at 1–2 and 135 per cent. in excess at 2—5. In 1939, Greater London achieved the lowest rate amongst the regions at each age period, the worst rates recorded being approximately double those of Greater London.

Comparing the County boroughs with the Rural districts the percentage excess in the urban death rate at age 1–2 fell from 79 in 1931–35 to 58 in 1937, 56 in 1938 and 28 in 1939, whilst the percentage urban excess at 2–5 fell from 61 in 1931–35 to 45 in 1937, 43 in 1938 and 45 in 1939. A similar decrease occurred in the excess of London County over outer ring death-rates.

When the average rates of 1938 and 1939 are compared with 1931–35, the greatest relative improvement in regional rates at 1–2 years was achieved by North I and North IV and at 2–5 years by Greater London and North III. The county borough rate improved in greater degree than the rural rate, and the London County rate likewise improved more than the outer ring rate, at both age periods.

Table XX.—Mortality in Early Childhood: distribution at ages 1–2 and 2–5 in 1931–35, 1937, 1938 and 1939.

	Rates per 1,000 living (both sexes).				Mortality per cent. of 1931–35		Mortality per cent. of national rate.	
	1931–35.	1937.	1938.	1939.	1938.	1939.	1938.	1939.
	Age 1–2 years (second year of life).							
England and Wales	13·11	9·72	8·41	6·17	64	47	100	100
South-East	10·02	7·00	6·84	4·66	68	47	81	76
Greater London	11·38	7·36	7·27	4·64	64	41	86	75
Remainder of South-East...	7·90	6·47	6·20	4·69	78	59	74	76
North	17·61	12·53	10·52	7·38	60	42	125	120
North I	20·72	13·92	10·48	8·13	51	39	125	132
„ II	16·59	14·04	9·65	8·71	58	53	115	141
„ III	14·68	10·21	9·45	6·73	64	46	112	109
„ IV	18·14	12·88	11·32	7·16	62	39	135	116
Midland	12·42	10·89	8·20	6·38	66	51	98	103
Midland I	12·56	11·67	8·48	6·59	68	52	101	107
„ II	12·15	9·35	7·62	5·97	63	49	91	97
East	8·75	7·64	6·25	5·19	71	59	74	84
South-West	8·26	5·76	6·69	5·59	81	68	80	91
Wales	13·62	10·54	9·26	8·38	68	62	110	136
Wales I	14·96	10·65	9·85	9·39	66	63	117	152
„ II	9·48	10·22	7·56	5·70	80	60	90	92
County Boroughs*	17·08	12·55	10·14	7·16	59	42	121	116
Other Urban Districts* ...	12·20	9·27	8·42	6·42	69	53	100	104
Rural Districts*	9·56	7·96	6·51	5·59	68	58	77	91
Greater London—								
Administrative County ...	13·98	8·91	8·61	5·09	62	36	102	83
Outer Ring	8·71	6·09	6·20	4·32	71	50	74	70
	Ages 2–5 years (third, fourth and fifth years of life).							
England and Wales	4·42	3·54	3·28	2·56	74	58	100	100
South-East	3·56	2·58	2·52	1·85	71	52	77	72
Greater London	3·93	2·63	2·60	1·81	66	46	79	71
Remainder of South-East...	2·98	2·50	2·41	1·91	81	64	73	75
North	5·79	4·58	4·32	3·17	75	55	132	124
North I	6·36	4·89	4·31	3·55	68	56	131	139
„ II	5·43	4·77	3·72	3·14	69	58	113	123
„ III	5·62	3·95	3·74	2·98	67	53	114	116
„ IV	5·72	4·76	4·79	3·13	84	55	146	122
Midland	3·93	3·69	3·08	2·73	78	69	94	107
Midland I	4·01	3·80	2·98	2·77	74	69	91	108
„ II	3·78	3·46	3·26	2·63	86	70	99	103
East	3·20	2·65	2·04	2·10	64	66	62	82
South-West	3·07	2·67	2·64	1·93	86	63	80	75
Wales	4·85	4·03	3·77	3·37	78	69	115	132
Wales I	5·15	3·97	3·93	3·43	76	67	120	134
„ II	3·96	4·20	3·31	3·19	84	81	101	125
County Boroughs*	5·37	4·27	3·87	3·04	72	57	118	119
Other Urban Districts* ...	4·45	3·71	3·41	2 81	77	63	104	110
Rural Districts*	3·34	2·95	2·71	2·09	81	63	83	82
Greater London—								
Administrative County ...	4·47	2·85	2·91	1·86	65	42	89	73
Outer Ring	3·39	2·45	2·36	1·78	70	53	72	70

* Outside Greater London.

The principal **causes of death** at ages 1–5 in 1938, in order of numerical importance, were pneumonia (2,548), tuberculosis (1,001), measles (997), violent causes (963), diphtheria (938) and whooping cough (523), which together accounted for 6,970 out of 10,215 deaths. In 1939 they were pneumonia (1,665), violent causes (955), tuberculosis (915), diphtheria (786) and whooping cough (519), which together accounted for 4,840 out of 7,924 deaths.

Table XXI provides a comparison of death-rates at 1–5 years of age from the more important causes during 1921–30, 1931–35, 1936, 1937, 1938 and 1939; and Table XXII gives the rates for the chief childhood diseases of infective origin in 1911–20 and in each year since 1921. Of the latter diseases in 1938 whooping cough, tuberculosis, bronchitis and pneumonia, and enteritis reached

new low mortality levels. In 1939 every one of the nine causes except cerebro-spinal fever established low records, the rates for measles, scarlet fever, bronchitis and pneumonia being far below any previously recorded. Amongst the more extended list of causes those showing the greatest proportionate decrease in death rate from 1921–30 to 1939 were measles, rickets, tuberculosis of the intestines, convulsions, scarlet fever, bronchitis, gastritis, whooping cough, influenza and broncho-pneumonia. The causes showing only slight improvement were rheumatic fever, tonsillar diseases, ear and mastoid disease, intestinal obstruction, and violent causes; and those registering a rise in death-rate were cerebro-spinal fever, cancer, congenital malformations, epilepsy and appendicitis.

Table XXI.—Deaths from Various Causes per Million living at Ages 1–5 years in 1921–30, 1931–35, 1936, 1937, 1938 and 1939 (both Sexes).

Cause of death.	Death-rate per million						Per cent. of 1921–30
	1921–30.	1931–35.	1936.	1937.	1938.	1939.	1939.
7. Measles	1,095	801	796	293	448	72	7
8. Scarlet fever	142	114	82	65	66	34	24
9. Whooping cough	857	479	413	367	235	229	27
10. Diphtheria	531	468	464	466	422	347	65
11. Influenza	268	159	77	172	61	73	27
18. Cerebro-spinal fever	41	103	71	84	69	53	129
23. Tuberculosis of respiratory system ...	135	74	62	57	47	43	32
24. Tuberculosis of nervous system ...	441	351	276	275	274	261	59
25. Tuberculosis of intestines and peritoneum	156	67	47	47	44	33	21
26–32. Other tuberculous diseases	154	104	80	98	85	67	44
45–53. Cancer and malignant disease ...	34	37	46	35	38	41	121
56. Rheumatic fever	18	20	11	15	12	15	83
63: 1. Rickets	92	52	26	28	22	17	18
79. Meningitis (not meningococcal) ...	187	105	83	88	70	72	39
85. Epilepsy	24	26	26	26	21	26	108
86. Convulsions	178	75	71	53	51	42	24
89. Ear and mastoid diseases	59	68	77	65	67	47	80
105: 2. Laryngitis	51	21	18	14	13	19	37
106. Bronchitis	445	190	126	124	103	108	24
107. Broncho-pneumonia	2,103	1,351	1,016	1,091	876	564	27
108–109. Pneumonia (lobar and unspecified)	532	371	294	309	270	170	32
104, 105: 1, 110–114 Other respiratory diseases ...	80	59	46	40	46	35	44
115: 3. Diseases of tonsils	42	61	52	50	47	35	83
118: 1. Inflammation of the stomach ...	42	21	10	10	9	11	26
119–120. Diarrhœa and enteritis	464	250	178	190	177	146	31
121. Appendicitis	52	64	70	70	64	53	102
122. Hernia, intestinal obstruction	52	53	48	45	47	40	77
130. Acute nephritis	43	28	22	16	19	20	47
157. Congenital malformations	79	88	79	86	82	95	120
181. Burns and scalds	245	181	167	178	161	167	68
183. Accidental drowning	49	37	40	49	56	47	96
Other violence	189	226	233	206	216	207	110
Other causes	519	447	395	402	375	305	59
All causes	9,396	6,551	5,502	5,114	4,593	3,494	37

Table XXIII gives the mean annual death-rates at 1–5 from the six chief causes in 1931–35, and the rates for each year 1936 to 1939, in each region and density aggregate. Between 1931–35 and 1939 the diphtheria rate fell by 67 per cent. in Greater London, compared with 17 per cent. in the county boroughs, 14 per cent. in other towns and 8 per cent. in rural districts. In the South-East outside Greater London and in North II it fell by nearly one-half, and the fall was also considerable in North III and in Wales I. North I rates were high throughout 1936-39, and the other regions have registered little or no improvement since 1931-35. Measles and whooping cough rates declined greatly in all the regions, the former rate reaching in 1939 the unprecedented level of 1 per 100,000 or less in the East and South-East. Pneumonia and bronchitis rates declined most in Greater London, North I, North III, North IV and Midland I, and least in Wales II. Tuberculosis showed the greatest improvement in Midland II and North I and least in Midland I and Wales II.

Table XXII.—Death Rates from Various Infective diseases per Million living at Ages 1–5 years in 1911–20 and each year 1921–1939.

	Measles	Scarlet fever	Whooping cough.	Diphtheria.	Cerebro-spinal fever.	Tuberculosis		Bronchitis and pneu-monia.	Diarrhœa and enteritis.
						Nervous system.	Other.		
1911–20	2,409	289	1,178	830	55	675	847	4,250	1,182
1921 ...	603	198	853	778	37	471	533	3,305	990
1922 ...	1,530	229	1,838	723	40	521	531	4,461	403
1923 ...	1,332	169	745	464	23	475	496	2,700	479
1924 ...	1,155	149	716	438	26	465	492	3,368	424
1925 ...	1,326	172	1,108	473	33	459	465	3,033	466
1926 ...	848	105	749	474	34	426	419	2,784	502
1927 ...	950	90	743	448	53	448	418	3,339	358
1928 ...	1,122	92	572	504	41	378	378	2,250	368
1929 ...	965	102	1,411	533	65	406	388	3,940	419
1930 ...	1,142	116	401	552	63	374	327	1,792	276
1931 ...	923	87	540	427	142	384	283	2,487	271
1932 ...	988	92	602	387	121	382	299	1,929	266
1933 ...	571	129	494	394	105	356	239	1,986	300
1934 ...	1,117	166	446	607	75	339	225	1,761	213
1935 ...	392	94	307	531	68	294	178	1,373	200
1936 ...	796	82	413	464	71	276	189	1,436	178
1937 ...	293	65	367	466	84	275	203	1,523	190
1938 ...	448	66	235	422	69	274	176	1,249	177
1939 ...	72	34	229	347	53	261	143	842	146

Table XXIII.—Mortality per 100,000 living from Various Causes at 1–5 years in Geographical Regions and Density Aggregates, 1931–35, 1936, 1937, 1938 and 1939.

		England and Wales.	Greater London.	County boroughs *	Other urban districts. *	Rural dis-tricts. *	South-east. *	Wales I.	Wales II.
All causes	1931–35	655	579	826	635	484	419	755	527
	1936 ...	550	566	654	496	437	369	537	531
	1937 ...	511	385	639	511	421	351	565	568
	1938 ...	459	382	549	469	367	338	543	435
	1939 ...	349	256	411	374	296	262	495	382
Diphtheria	1931–35	47	55	59	43	25	26	64	48
	1936 ...	46	39	64	42	31	17	46	48
	1937 ...	47	34	62	47	33	20	54	82
	1938 ...	42	34	32	47	26	16	58	33
	1939 ...	35	18	49	37	23	14	47	41
Measles	1931–35	80	88	118	65	34	30	88	38
	1936 ...	80	147	102	42	29	42	16	51
	1937 ...	29	7	53	27	16	14	52	8
	1938 ...	45	53	59	39	20	32	19	11
	1939 ...	7	1	10	10	4	—	31	15
Whooping cough	1931–35	48	50	63	41	31	29	41	29
	1936 ...	41	46	51	36	28	17	46	32
	1937 ...	37	33	46	33	31	28	36	38
	1938 ...	24	16	34	22	15	15	33	27
	1939 ...	23	21	25	24	18	14	30	18
Pneumonia and bronchitis	1931–35	191	145	258	189	132	108	225	129
	1936 ...	144	121	187	131	110	100	136	94
	1937 ...	152	116	209	145	103	82	169	148
	1938 ...	125	96	159	128	90	80	153	122
	1939 ...	84	56	104	95	61	58	124	77
Tuberculosis	1931–35	60	49	72	62	49	55	55	46
	1936 ...	47	40	51	50	40	42	58	35
	1937 ...	48	33	56	51	45	44	48	38
	1938 ...	45	41	51	47	35	42	51	46
	1939 ...	40	35	47	42	32	35	39	36
Violent causes	1931–35	44	35	48	44	49	33	61	45
	1936 ...	44	31	48	45	50	31	63	59
	1937 ...	43	33	43	46	50	36	60	55
	1938 ...	43	25	46	50	47	35	62	52
	1939 ...	42	29	48	43	43	38	54	44

* Outside Greater London.

Table XXIII (*Contd.*)**—Mortality per 100,000 living from Various Causes at 1–5 years in Geographical Regions and Density Aggregates, 1931–35, 1936, 1937, 1938 and 1939.**

		North I.	North II.	North III.	North IV.	Midland I.	Midland II.	East.	South-west.
All causes	1931–35	985	818	784	879	609	582	455	433
	1936 ...	706	689	669	710	488	480	403	376
	1937 ...	716	714	554	684	580	496	390	344
	1938 ...	587	524	519	648	439	438	311	366
	1939 ...	468	459	417	416	375	349	290	286
Diphtheria	1931–35	42	70	68	66	30	27	23	29
	1936 ...	85	90	73	68	34	37	17	35
	1937 ...	90	58	66	76	40	41	17	16
	1938 ...	71	45	50	75	36	42	20	21
	1939 ...	72	38	41	58	33	33	22	35
Measles	1931–35	141	87	84	132	69	57	34	32
	1936 ...	62	97	84	118	52	31	38	33
	1937 ...	40	58	16	50	52	44	20	5
	1938 ...	60	57	56	90	15	17	15	34
	1939 ...	16	21	4	3	19	4	1	3
Whooping cough	1931–35	60	48	53	67	51	39	39	31
	1936 ...	53	19	52	66	37	42	28	19
	1937 ...	38	52	36	51	37	31	33	28
	1938 ...	30	26	17	44	24	16	17	19
	1939 ...	30	28	32	22	28	21	22	17
Pneumonia and bronchitis	1931–35	323	278	239	276	183	177	117	102
	1936 ...	200	207	195	190	139	132	105	88
	1937 ...	239	243	174	220	174	140	90	78
	1938 ...	160	141	142	179	137	112	91	106
	1939 ...	108	160	111	107	83	90	67	53
Tuberculosis	1931–35	87	78	68	66	56	59	57	50
	1936 ...	60	68	57	53	39	33	54	35
	1937 ...	62	66	46	56	56	60	48	35
	1938 ...	54	54	47	51	49	46	26	30
	1939 ...	49	57	49	49	44	30	33	30
Violent causes	1931–35	54	54	51	55	46	43	38	36
	1936 ...	52	56	48	52	41	56	46	43
	1937 ...	48	57	54	51	43	42	37	34
	1938 ...	51	53	60	56	44	44	32	41
	1939 ...	54	47	54	47	45	49	32	40

Children of School Age (5–15).

Deaths at ages 5–15 numbered 9,047 in 1938 (4,801 boys and 4,246 girls), and 7,313 in 1939 (4,010 boys and 3,303 girls). The death-rates per 1,000 living at 5–10 and 10–15 in recent years have been as follows :—

Ages	1931–35	1936	1937	1938	1939
5–10	2·18	1·99	1·87	1·87	1·48
10–15	1·41	1·21	1·18	1·19	1·03

The rates in 1938 showed no appreciable change from 1937, but in 1939 they fell considerably to new low levels, 32 and 27 per cent. below those of 1931–35.

Abridged life tables for 1938 and 1939 show that out of 10,000 boys and girls born alive the following numbers would be expected to survive to their 15th birthday, compared with the expectation based on death-rates of previous periods (Life Tables 4, 8, 9, 10).

	1871–80	1910–12	1920–22	1930–32	1938	1939
Males	6,964	8,046	8,492	8,836	9,079	9,173
Females	7,250	8,277	8,707	9,042	9,250	9,329

The chief causes of death at these ages with the numbers registered in each year, arranged in descending order of importance, were as follows :—

Ages 5–10.				Ages 10–15			
1938.		1939.		1938.		1939.	
Diphtheria	1,380	Diphtheria	921	Tuberculosis ...	505	Violence	476
Violence	743	Violence	799	Violence	487	Tuberculosis ...	462
Tuberculosis ...	468	Tuberculosis ...	424	Rheumatic fever and endocarditis(1) ...	450	Rheumatic fever and endocarditis(1) ...	365
Pneumonia ...	412	Pneumonia ...	248	Diphtheria	353	Diphtheria	255
Rheumatic fever and endocarditis(1)	264	Rheumatic fever and endocarditis(1)	217	Pneumonia ...	222	Pneumonia ...	153
Appendicitis ...	195	Appendicitis ...	163	Appendicitis ...	175	Appendicitis ...	147
Measles	182	Meningitis(2) ...	106	Nephritis	120	Ear and mastoid disease	79
Meningitis(2) ...	175	Diseases of tonsils	89	Osteomyelitis ...	94	Nephritis	78
Ear and mastoid disease	142	Ear and mastoid disease	87	Ear and mastoid disease	88	Meningitis(2) ...	75
Diseases of tonsils	117	Leukæmia	76	Meningitis(2) ...	82	Osteomyelitis ...	72
Other causes ...	1,301	Other causes ...	1,070	Other causes ...	1,132	Other causes ...	968

(1) Nos. 56 and 92 of International List, assuming all endocarditis classed to 92 at these ages to be of rheumatic origin.

(2) Nos. 18 and 79, that is, including meningococcal but excluding tuberculous meningitis.

Each of these causes, except violence, contributed to the improvement in 1939. The first six causes were the same at each age and in each year, with only slight changes of relative position. The death-rates for each sex from these causes are shown in Table XXIV for 1921-30 and each year from 1931 to 1939. Diphtheria rates, which were declining from 1934 to 1936, again improved greatly in 1939. Pneumonia mortality fell sharply in 1939 at both ages to the lowest levels recorded. Rheumatism rates increased in 1938 but declined again in 1939, reaching new low levels at ages 5-10. Appendicitis mortality amongst boys in 1939 was the lowest recorded, as was that of girls aged 10-15 in 1938 and 1939.

Table XXIV.—Death-Rates at Ages 5—10 and 10—15 per Million living from Various Causes, 1921–30 and each year 1931 to 1939.

	1921–30	1931	1932	1933	1934	1935	1936	1937	1938	1939
Ages 5–10										
Males										
Diphtheria	339	311	270	347	587	501	466	410	447	336
Tuberculosis	343	276	239	237	220	198	200	169	157	160
Pneumonia	281	226	225	249	207	164	172	167	149	91
Rheumatic fever and endocarditis	116	108	92	111	102	113	84	78	86	77
Appendicitis	86	92	82	73	84	76	90	81	78	59
Violence	375	380	402	377	348	340	342	359	349	387
All causes	2,516	2,294	2,204	2,273	2,486	2,139	2,117	1,983	1,934	1,650
Females										
Diphtheria	399	329	326	409	638	538	499	487	512	315
Tuberculosis	352	250	247	212	232	194	161	154	168	140
Pneumonia	253	233	199	207	187	150	161	136	137	84
Rheumatic fever and endocarditis	121	121	102	123	132	109	98	81	98	77
Appendicitis	78	60	68	76	69	52	46	68	57	57
Violence	182	210	184	226	195	188	173	173	165	175
All causes	2,329	1,991	1,939	2,123	2,386	1,942	1,857	1,750	1,800	1,314
Ages 10–15										
Males										
Diphtheria	82	79	61	85	116	117	103	98	114	85
Tuberculosis	300	216	216	188	185	152	149	151	149	122
Pneumonia	117	110	99	99	100	77	67	65	79	45
Rheumatic fever and endocarditis	162	152	125	145	161	162	141	103	118	104
Appendicitis	91	73	87	68	73	68	73	71	75	58
Violence	243	210	229	252	210	239	228	228	232	242
All causes	1,654	1,460	1,446	1,486	1,450	1,350	1,287	1,230	1,277	1,081
Females										
Diphtheria	89	97	77	94	155	134	106	122	114	84
Tuberculosis	461	327	278	288	233	232	208	213	178	183
Pneumonia	102	109	94	93	86	79	64	60	64	56
Rheumatic fever and endocarditis	218	207	168	184	244	191	173	131	173	137
Appendicitis	65	57	62	52	54	48	49	52	38	38
Violence	71	77	81	77	75	96	66	91	82	71
All causes	1,633	1,470	1,327	1,378	1,400	1,294	1,132	1,130	1,093	972

Table XXV compares the trends of mortality from 1931–35 to 1939 at ages 5–15 in the regions and density aggregates. The amount of improvement since 1931–35 may be compared with that at ages 1–2 and 2–5 in Table XX. The national rate had declined 15 per cent. by 1938 (26 per cent. at 2–5, 36 per cent. at 1–2), and 29 per cent. by 1939 (42 per cent. at 2–5, 53 per cent. at 1–2). In 1931–35 the four northern regions had the highest death rates, but North II and North III rates fell rapidly until in 1939 they were little different from those of the Midland regions, leaving only Wales I, North I and North IV with substantial excess. The excess of county borough over rural mortality, which amounted to 30 per cent. in 1931–35, was also 30 per cent. in 1938 and 27 per cent. in 1939 ; but the difference between the large and small towns diminished from 13 per cent. excess in 1931–35 to 8 per cent. in 1938 and 1 per cent. in 1939.

Table XXV.—Mortality per 100,000 living at 5–15 years in Geographical Regions and Density Aggregates, 1931–35, 1936, 1937, 1938 and 1939. Rates in 1938 1939 per cent. of those in 1931–35.

	Rates per 100,000 living (both sexes)					Per cent. of 1931–35	
	1931–35	1936	1937	1938	1939	1938	1939
England and Wales	177	157	150	150	125	85	71
Greater London ...	163	134	124	120	99	84	61
Remainder of South East	144	127	124	133	102	92	71
North I	226	193	201	213	157	94	69
,, II	211	196	174	161	135	76	64
,, III	214	175	154	151	132	71	62
,, IV	208	201	183	186	151	89	73
Midland I	166	164	163	156	133	94	84
,, II	153	143	143	151	130	99	85
East	147	115	126	127	97	86	66
South West	138	137	115	122	108	88	78
Wales I	195	147	154	152	159	78	82
,, II	170	152	174	150	123	88	72
County boroughs* ...	200	182	173	172	138	86	69
Other urban districts*	177	158	151	159	136	90	77
Rural districts* ...	154	137	136	132	109	86	71

* Excluding Greater London.

Young Adults (15–25).—Deaths of males at these ages (excluding non-civilians from 3rd September, 1939, onwards) numbered 7,758 in 1938 and 6,980 in 1939 ; and deaths of females numbered 6,537 and 6,352 respectively. The death rates in recent years, per 1,000 living, have been as follows :—

	1931–35	1936	1937	1938	1939
Males	2·81	2·48	2·47	2·36	2·21
Females ...	2·51	2·21	2·20	1·99	1·92
Persons ...	2·66	2·34	2·33	2·18	2·07

After the arrest to the decline, noticed in 1937, the rates fell again considerably in 1938 and 1939, the percentage improvement in the persons rate over 1931–35 being 22 per cent., compared with 26 per cent. at ages 10–15, 32 per cent. at 5–10, 42 per cent. at 2–5 and 53 per cent. at 1–2 years.

The survival of female infants to the ages at which they may become mothers

is a factor with considerable effect upon the rate of replacement of the population, and it is of interest to note the improvement which has occurred in this respect in recent years. During the years 1915–24 3,758,417 female infants were born alive in England and Wales and had they been subject at each successive age to the death rates of 1920–22 (Life table No. 9) the number surviving at ages $14\frac{3}{4}$ to $24\frac{3}{4}$, at the date of the National Register (29th September, 1939) would have been 3,230,901. If they had been subject to the death-rates of 1930–32 (Life Table No. 10) throughout, the number would have been 3,360,529. The number of women of these birthdates actually enumerated in 1939 was 3,289,879, which was 59 thousands better than the expectation about the time of their birth, but 71 thousands less than the number who would have survived at 1930–32 rates. The effects of migration and of mis-statement of age upon these comparisons with the number enumerated cannot be estimated, but were probably not important.

If the girls born in 1915–24 had, from the time of birth, been exposed to the death rates of 1939, the survivors at the National Register date would have numbered 3,477,712, which is 188 thousands more than were actually enumerated and a quarter of a million in excess of the expectation based on the rates current at the time of their birth. The calculated numbers for the two separate birth periods 1915–19 and 1920–24 are shown below.

Years of birth	No. of girls born alive	Age at end of 1939	No. surviving to 29th September, 1939, according to			
			1920–22 rates	1930–32 rates	1939 rates	N.R. enumeration
1920–24 ...	1,988,894	15–20	1,721,527	1,789,129	1,848,867	1,770,818
1915–19 ...	1,769,523	20–25	1,509,374	1,571,400	1,628,845	1,519,061

The principal causes of death at 15–25 common to both sexes with the numbers registered in each year, arranged in descending order of importance, were as follows :—

Males 15–25 (including non-civilians).

1938		1939	
Tuberculosis ...	2,191	Violence	2,129
Violence	1,932	Tuberculosis ...	2,107
Heart diseases ...	560	Heart diseases ...	436
Pneumonia ...	518	Pneumonia ...	273
Nephritis	234	Appendicitis ...	211
Appendicitis ...	218	Nephritis	208
Cancer	185	Epilepsy	187
Epilepsy	151	Cancer	169
Influenza	112	Influenza	131
Rheumatic fever ...	110	Rheumatic fever ...	98
Other causes ...	1,547	Other causes ...	1,406

Females 15–25

1938		1939	
Tuberculosis ...	2,922	Tuberculosis ...	2,920
Heart diseases ...	653	Heart diseases ...	588
Violence	398	Violence	424
Pneumonia ...	261	Pneumonia ...	232
Nephritis	198	Nephritis	177
Cancer	148	Appendicitis ...	125
Rheumatic fever ...	129	Cancer	124
Appendicitis ...	118	Epilepsy	119
Epilepsy	108	Influenza	111
Influenza	88	Rheumatic fever ...	103
Other causes ...	1,514	Other causes ...	1,429

The ten principal causes of death were the same for each sex and in each year, and together accounted for about 80 per cent. of all deaths of males and 77 per cent. of those of females, in 1938 and 1939. Tuberculosis was responsible for 29 per cent. of male and 46 per cent. of female mortality at these ages in 1939, and violent causes for 29 and 7 per cent. respectively. Comparing 1939 with 1938, pneumonia deaths of males fell by nearly one half whereas those of females fell by only 11 per cent. Violence, epilepsy and influenza deaths increased for both sexes, and appendicitis increased amongst females, but all the other principal causes except tuberculosis in females contributed appreciably to the decrease in total deaths.

The regional variations in death-rates from all causes at this age period are so largely affected by the tuberculosis rate, which ranged for example from 0·48 per

1,000 females in the South East (excluding Greater London) to 1·35 in Wales in 1938, that they give little useful information, and reference should be made to the individual causes (e.g. Table XLVII for Tuberculosis).

Adults aged 25–70.—Table 5 shows that in 1926–30, whereas the death-rates of males aged 25–45 and 55–65 continued to fall progressively, the decline in rates at ages 45–55 and 65–75, which had been evident in each quinquennium of this century, was arrested ; but in 1931–35 an improvement was again registered for every age group. No such interruption occurred at any age-group under 75 for females down to 1931–35.

In Table XXVI the trend of mortality between 25 and 70 from 1931 to 1939 is shown in greater detail of age, using 5-year groups. In 1936 improvement was again arrested amongst males aged 50–65, but not for any other of the sex-age groups. The year 1937 was unfavourable at almost all ages and brought the rates for males aged 50—65 still higher, but the retrogression was more than retrieved in 1938. When the rates of 1938 are compared with those of 1931–35 males of each age group under 50 and females of each age group under 60 registered a decrease of 12 per cent. or more, the greatest improvement being for females between 25 and 40. Female rates between 60 and 70 also fell by 8 per cent. but male rates between 50 and 70 fell by 5 per cent. or less.

Table XXVI.—Mortality at Ages 25–70 ; rates per 1,000 living for quinquennial age groups in 1931–35, 1936, 1937, 1938 and 1939.

	Death-rate per 1,000 living					Per cent. of 1931–35		Per cent. of 1938
	1931–35	1936	1937	1938	1939	1938	1939	1939
Males								
25– ...	3·17	2·86	2·89	2·77	2·65	87	84	96
30– ...	3·49	3·10	3·24	2·98	2·83	85	81	95
35– ...	4·60	4·20	4·17	3·84	3·73	83	81	97
40– ...	6·19	5·61	5·91	5·32	5·26	86	85	99
45– ...	9·24	8·49	8·72	8·04	7·99	87	86	99
50– ...	13·12	13·37	13·62	12·59	12·84	96	98	102
55– ...	19·27	19·57	19·75	18·38	19·51	95	101	106
60– ...	28·72	29·59	30·89	28·37	29·74	99	104	105
65–70 ...	45·91	44·90	45·96	43·60	44·46	95	97	102
Females								
25– ...	2·99	2·65	2·68	2·43	2·42	81	81	100
30– ...	3·22	2·81	2·90	2·59	2·52	80	78	97
35– ...	3·88	3·47	3·50	3·13	3·04	81	78	97
40– ...	4·78	4·37	4·43	4·00	4·01	84	84	100
45– ...	6·64	6·20	6·22	5·68	5·75	86	87	101
50– ...	9·34	9·00	9·10	8·23	8·45	88	90	103
55– ...	13·54	12·93	12·87	11·98	12·30	88	91	103
60– ...	20·99	20·52	21·21	19·23	19·72	92	94	103
65–70 ...	33·60	33·38	33·49	30·78	31·72	92	94	103

In 1939 the rates continued to fall at each age under 50 for males and under 40 for females, but at ages between 50 and 70 there were considerable increases over 1938 levels in both sexes, most pronounced amongst males aged 55–65. This occurred also at ages over 70 in both sexes (see Table XXVIII).

Despite the continued improvement at most other ages, the death rates of males between 50 and 65 have shown little change since 1923, the rates in that year at 50–55, 55–60 and 60–65 being 12·91, 19·89 and 29·73 per 100,000 respectively, compared with 13·17, 19·27 and 28·72 in 1931–35 and 13·10, 19·30 and 29·65 in 1936–39. The probabilities for a male of surviving from age 25 to 50 and from 50 to 65 according to life-tables have changed as follows since 1891–1900.

Life-table	Survivors to 50 out of 1,000 at 25	Increment	Survivors to 65 out of 1,000 at 50	Increment
1891–1900	765		626	
1901–10	804	39	656	30
1910–12	826	22	677	21
1920–22	851	25	719	42
1930–32	871	20	734	15
1939	894	23	733	−1

Table XXVII shows the trend of death-rates from the more important causes since 1921–23 at ages 50–55 and 55–65 amongst males. At ages 50–55 the causes which registered large increases from 1921–23 to 1930–32 were the degenerative heart conditions, classed under diseases of the myocardium and coronary arteries; digestive diseases registered a slight increase whilst all the other causes distinguished showed a decline. From 1930–32 to 1939 the rapid increase in deaths from degenerative heart diseases continued, whilst cerebral hæmorrhage and arteriosclerosis, cancer and accidents also showed increases, and all the other causes registered considerable decreases. At ages 55–65 large increases occurred during both intervals for the degenerative heart diseases, and during the first interval for prostatic diseases; smaller increases occurred during the first interval for syphilis, diabetes and digestive diseases and during the second interval for cerebral hæmorrhage and arteriosclerosis, accidents and prostatic diseases, whilst the other causes registered decreases. It is evident that a general improvement in death rates from most causes since 1921 has been masked amongst males of these ages by a large and continuing rise in deaths assigned to degenerative heart disease at ages 50–65. Towards the net increase at ages 50-65 of 3,188 deaths in 1939 compared with the previous year, an increase of 1,541 was contributed by heart diseases, of 473 by influenza, of 533 by accidents, of 507 by cerebral hæmorrhage and arteriosclerosis and of 269 by tuberculosis. In seeking an explanation of the rise in deaths from circulatory degeneration it may be significant that men of this age group in 1939 were aged 25-44 during the war of 1914-18, when many of them were subjected to abnormal stresses.

Table XXVII.—Death Rates of Males aged 50–55 and 55–65, per 100,000 living, from Various Causes in 1921–23, 1930–32, 1938 and 1939.

Cause of death	Annual death rate per 100,000 living				Rate in 1930–32 per cent. of 1921–23	Rate in 1939 per cent. of 1930–32	No. of deaths		
	1921–23	1930–32	1938	1939			1938	1939	Increase or decrease
Ages 50–55									
Tuberculosis	167	156	131	134	93	86	1,483	1,532	+ 49
Syphilis (including sequelæ) *	47	44	34	34	94	77	389	389	0
Cancer	220	209	210	217	95	104	2,370	2,490	+ 120
Diabetes	16	12	12	10	75	83	134	120	− 14
Cerebral vascular lesions and arteriosclerosis	99	72	77	82	73	114	866	940	+ 74
Chronic endocarditis, valvular disease	87	74	55	61	85	82	625	702	+ 77
Diseases of myocardium	38	91	118	126	239	138	1,331	1,449	+ 118
Coronary disease, angina pectoris	10	38	76	94	380	247	857	1,073	+ 216
Other heart disease	41	24	19	19	59	79	215	214	− 1
Influenza	45	37	20	30	82	81	225	345	+ 120
Diseases of respiratory system	207	171	157	147	83	86	1,780	1,690	− 90
Diseases of digestive system	90	97	100	92	108	95	1,134	1,059	− 75
Nephritis	63	61	48	47	97	77	538	534	− 4
Accidents	58	53	50	61	91	115	561	700	+ 139
Other causes	165	169	152	130	103	77	1,730	1,495	− 235
All causes	1,352	1,308	1,259	1,284	97	98	14,238	14,732	+ 494
Ages 55–65									
Tuberculosis	156	135	120	130	87	96	2,335	2,555	+ 220
Syphilis (including sequelæ) *	54	57	49	48	106	84	961	949	− 12
Cancer	482	468	468	464	97	99	9,142	9,115	− 27
Diabetes	31	33	30	32	106	97	595	628	+ 33
Cerebral vascular lesions and arteriosclerosis	286	229	223	244	80	107	4,365	4,798	+ 433
Chronic endocarditis, valvular disease	182	157	99	104	86	66	1,931	2,049	+ 118
Diseases of myocardium	98	246	325	347	251	141	6,356	6,813	+ 457
Coronary disease, angina pectoris	21	79	171	199	376	252	3,343	3,899	+ 556
Other heart disease	98	50	37	37	51	74	731	731	0
Influenza	77	55	26	44	71	80	517	870	+ 353
Diseases of respiratory system	390	249	226	225	64	90	4,420	4,411	− 9
Diseases of digestive system	138	140	137	138	101	99	2,668	2,700	+ 32
Nephritis	112	108	78	72	96	67	1,517	1,415	− 102
Diseases of prostate	21	31	28	32	148	103	550	630	+ 80
Accidents	74	70	62	82	95	117	1,206	1,600	+ 394
Other causes	269	248	221	229	92	92	4,302	4,470	+ 168
All causes	2,489	2,355	2,300	2,427	95	103	44,939	47,633	+ 2,694

* *See* page 74.

Persons over 70.—Persons over 70 years of age numbered 297 per 10,000 total population in 1911, 344 in 1921 and 426 in 1931, and were estimated as forming 520 per 10,000 at the middle of 1939.

The causes of death at ages over 70 are grouped, as in previous years, in Table XXVIII.

Table XXVIII.—Mortality over 70 Years of Age in 1921–30, 1931–35, 1937, 1938 and 1939 from the chief Causes of Death.

	Deaths from each cause per 1,000 total deaths					Mortality per 1,000 living				
	1921–30	1931–35	1937	1938	1939	1921–30	1931–35	1937	1938	1939
MALES										
Influenza (11)	26	21	28	8	15	2·8	2·3	3·1	0·8	1·6
Cancer (45–53)	107	120	121	129	121	11·8	13·0	13·5	13·4	13·2
Heart diseases (90–95) ...	205	320	357	371	381	22·7	34·6	39·7	38·5	41·4
Diseases of blood vessels, including cerebral hæmorrhage (82, 96, 97, 99 and 100)	195	168	158	165	164	21·6	18·2	17·5	17·2	17·8
Bronchitis (106)	110	62	48	40	41	12·1	6·7	5·4	4·1	4·5
Pneumonia (107–109) ...	35	31	31	29	28	3·9	3·4	3·4	3·0	3·0
Chronic nephritis (131 and 132)	29	34	29	27	24	3·2	3·7	3·3	2·8	2·6
Old age (162)	140	82	71	68	69	15·5	8·8	7·9	7·1	7·5
Other causes	153	163	157	163	157	17·2	17·6	17·3	16·9	17·3
All causes	1,000	1,000	1,000	1,000	1,000	110·8	108·2	111·1	103·8	108·9
FEMALES										
Influenza (11)	31	28	37	9	20	3·0	2·6	3·5	0·7	1·8
Cancer (45–53)	105	112	112	122	113	10·2	10·3	10·5	10·4	10·1
Heart diseases (90–95) ...	223	335	367	387	393	21·6	31·0	34·6	33·0	35·2
Diseases of blood vessels, including cerebral hæmorrhage (82, 96, 97, 99 and 100) ...	181	167	161	174	169	17·6	15·4	15·2	14·9	15·1
Bronchitis (106)	117	66	50	37	40	11·4	6·1	4·7	3·2	3·6
Pneumonia (107–109) ...	34	32	31	28	28	3·3	3·0	2·9	2·4	2·5
Chronic nephritis (131 and 132)	23	29	25	22	21	2·2	2·7	2·3	1·9	1·8
Old age (162)	165	104	90	86	89	16·0	9·6	8·5	7·3	8·0
Other causes	121	129	127	135	127	11·7	11·9	12·0	11·5	11·5
All causes	1,000	1,000	1,000	1,000	1,000	97·0	92·5	94·1	85·4	89·6
PERSONS										
Influenza (11)	29	25	33	8	18	3·0	2·4	3·3	0·8	1·7
Cancer (45–53)	106	115	116	125	117	10·8	11·4	11·7	11·6	11·4
Heart diseases (90–95) ...	215	328	363	380	387	22·0	32·5	36·7	35·3	37·8
Diseases of blood vessels, including cerebral hæmorrhage (82, 96, 97, 99 and 100) ...	187	167	160	170	166	19·2	16·5	16·1	15·8	16·2
Bronchitis (106)	114	64	49	38	41	11·7	6·3	5·0	3·6	4·0
Pneumonia (107–109) ...	34	32	31	29	28	3·5	3·1	3·1	2·7	2·7
Chronic nephritis (131 and 132)	26	31	27	24	22	2·6	3·1	2·7	2·2	2·1
Old age (162)	154	94	82	78	80	15·8	9·3	8·3	7·2	7·8
Other causes	135	144	139	148	141	14·0	14·3	14·2	13·7	13·8
All causes	1,000	1,000	1,000	1,000	1,000	102·7	99·0	101·1	92·9	97·5

Among the deaths registered during the year 1938 there were 109 of reputed centenarians, 16 of whom were males and 93 females; and during 1939 there were 112, 22 of whom were males and 90 females. In the preceding three years the numbers were 95, 96 and 100 respectively. Particulars of the ages returned and of the regions concerned are given in Table XXIX.

Table XXIX.—Age at death of centenarians, 1938 and 1939.

	Males								Females									
	100 and over	100	101	102	103	105	106	107	100 and over	100	101	102	103	104	105	106	107	108
Year 1938																		
Greater London ...	3	—	2	—	—	—	—	1	16	4	7	2	2	1	—	—	—	—
Rest of South East	5	2	1	1	—	—	1	—	32	13	11	4	1	1	1	—	—	1
North	4	2	1	—	—	1	—	—	12	6	3	2	—	1	—	—	—	—
Midlands	1	—	—	—	1	—	—	—	12	5	3	1	1	1	—	—	—	1
East	—	—	—	—	—	—	—	—	9	5	1	1	—	2	—	—	—	—
South West ...	2	1	—	—	1	—	—	—	7	—	3	1	2	—	1	—	—	—
Wales	1	—	—	1	—	—	—	—	5	3	1	—	—	—	1	—	—	—
England and Wales	16	5	4	2	2	1	1	1	93	36	29	11	6	6	3	—	—	2
Year 1939																		
Greater London ...	5	2	1	2	—	—	—	—	12	3	5	—	1	2	—	1	—	—
Rest of South East	8	4	2	2	—	—	—	—	31	16	8	2	2	1	1	1	—	—
North	3	2	1	—	—	—	—	—	11	5	4	1	—	—	—	—	1	—
Midlands	3	1	1	1	—	—	—	—	11	4	2	4	—	1	—	—	—	—
East	3	1	1	1	—	—	—	—	4	3	1	—	—	—	—	—	—	—
South West ..	—	—	—	—	—	—	—	—	16	6	3	2	1	3	—	—	—	1
Wales	—	—	—	—	—	—	—	—	5	4	—	—	—	—	—	1	—	—
England and Wales	22	10	6	6	—	—	—	—	90	41	23	9	4	7	1	3	1	1

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 (and Appendix C of 1939) deaths from each cause distinguished are tabulated by month of occurrence and by sex (but not by age), this being the only table which refers to the date of occurrence instead of the date of registration. Table 21 includes the full International List of Causes of Death, as revised in 1929 (Fourth Revision). Certain of the numbered items in it are subdivided, and where this occurs the letters (*a*), (*b*), etc., indicate subdivisions in international use, and numbers (1), (2), etc., subdivisions made without international agreement. This list is used also in Table 6, and selected causes from it in Tables 7–12, 14, 15, 22, 23 and 25. In Table 6 each cause in the detailed list is also accompanied by the group-number, in italics, in which the cause is included in the Intermediate List of Causes of Death. In Table 24 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 1931–39; the relation of this list to the detailed International List is shown at the head of the table.

In 1938 the International List was again revised for use from 1940 onwards, and in order to provide for future use a series of comparable figures for the year 1939 according to the two methods of classification, Appendix B in Part I of the 1939 Review repeats Table 21, but classified according to the Fifth Revision and by the new rules of assignment where more than one cause is stated on the death certificate. When causes are jointly stated the classification of the death to one or other of the appropriate groups of the International List has hitherto been carried out in conformity with rules of selection, whose general principles are laid down in the Registrar-General's " Manual of the International List of Causes

of Death (1929 Revision)"*. The Manual also defines the contents of every heading in the short, intermediate and detailed lists, and should be consulted when it is desired to ascertain the precise significance of any heading in these lists. In accordance with the rules, deaths from violence associated with disease are, with certain exceptions, 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. It follows that deaths are not always classed to the immediate cause, but in some instances to a more remote one leading up to it or to a cause which was regarded by the certifier as merely contributory. These rules of 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, had first to be gained before replacing this code of selective rules by the opinion of the certifier as expressed by the order of statement of the causes on the certificate. In a sample of 9,892 certificates given by medical practitioners, analysed in Table XXXV of the Review for 1935, 43 per cent. named more than one cause of death, but the proportion which, owing to incorrect use of the certificate, could not be classified by means of the order of statement of the causes had fallen below 3 per cent. Since then this small residue, which can only be classified by the use of rules of precedence, has decreased further. For deaths certified by coroners different forms of medical certificate are used, and in the classification of such deaths, mainly due to or contributed to by some form of external violence, the use of such rules cannot be entirely dispensed with.

It was apparent from the sample study of 1935 deaths that the change in system of selecting the essential cause from two or more causes of death, when made, would involve important increases in the numbers of deaths classified to certain groups in the International List and important decreases for other groups. If statistical continuity was to be maintained between the periods before and after the change was made, the extent of the transfer of deaths from every cause to every other had first to be carefully evaluated. For this purpose, during the years 1936–38 a dual tabulation of deaths was prepared according to the International List (Fourth revision) and as determined by (1) the code of selective rules as hitherto used and (2) the order of preference stated on the medical certificate (supplemented by rules in cases where the preference was not clearly stated). During the year 1939 a dual tabulation was made according to (1) the International List (Fourth Revision) and the code of selective rules and (2) the International List (Fifth Revision) and the order of preference stated on the certificate (supplemented by rules where necessary)†. By means of these alternative tabulations the precise effects on statistical continuity of the List revision and change in system of selection, to be carried out in 1940, were measured and the necessary steps taken to allow of correction for the changes. The Review for 1940 (Part I) will contain an appendix table of conversion ratios to be applied to deaths and rates of past years ; and all figures shown in the various tables of that and subsequent Reviews relating to years 1931–39 will be already corrected to conform with years from 1940 onwards.

References are made under some of the cause headings which follow to alternative figures which would result in 1938 and 1939 under the new system of joint

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

† For a full explanation of this new method of selection, which comes into use from 1940, reference should be made to the Registrar-General's " Manual of the International List of Causes of Death (1938 Revision)," pages XXXVI–XLI.

cause classification, as was done in the Reviews for 1936 and 1937*. Apart from such extracts from the dual tabulation and references to Appendix B of 1939, all mortality figures in this Review continue to be based upon the unchanged system of rules. When any use is made of the alternative tabulation for 1939 contained in Appendix B for that year, it must be remembered that the differences between Table 21 and Appendix B arise in part from the International List revision and in part from the change in joint-cause selection. Furthermore, the simple ratios between the deaths in the two tables give only approximate measures of the corrections by which years before and after 1939 can be brought into conformity, since they are based on a single year, whereas the corrections to be given in 1940 Review will be based, for most causes, upon the deaths of four years 1936–39.

Special secondary tabulations according to the associated cause are made for deaths connected with anæsthetics, alcoholism and childbearing, and are included in this Review.

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 tables which relate exclusively to the years 1938 and 1939, Table 6 contains a statement of the number of deaths registered in each year since 1928 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 change in age distribution of the population at the present time as a result of the 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 is seriously misleading in many cases, Table 8 is 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 3). Owing to the clerical labour involved in the preparation of these rates the list of causes in Table 8 is 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 11 and 12 state the mortality during the years since 1928 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 group during 1938 was 163, of which 16 were ascribed to paratyphoid infection ; and in 1939 the numbers were 113 and 22 respectively. In 1933–37 the annual

* Certain causes specified as " indefinite " will be ignored under the new system when mentioned in conjunction with a definite cause, no matter where they are written on the certificates (see paragraphs 2 (*a*), 3 (*a*), 4 (*a*) on pages xxxvi–xxxix of the 1938 Manual). These are infantile convulsions (86), congenital debility (158), old age (162 *a*, *c*), sudden death (199) and ill-defined causes (200). In the alternative figures given in the text of 1936 and 1937 Reviews these exceptions to a literal reading of the certificate were not made, but all such figures for 1936, 1937 and 1938 given in this Review have been subjected to this further correction for the sake of comparability with future years. For some causes (*e.g.*, myocardial disease which is frequently certified as a contributory cause to senility) the effect of this correction is important.

average was 204 deaths of which 18 per cent. were ascribed to paratyphoid, compared with 10 per cent, in 1938 and 19 per cent, in 1939.

The standardized death-rate of 2 per million persons living in 1939 was the lowest recorded and may be compared with the rates of 371 in 1871–75, 113 in 1901–05 and 5 in 1931–35 (Table 9).

The distribution of mortality and notification frequency throughout the country is summarized in Table XXX, and notification rates per million population in the different types of area in the years 1932–39 are compared below :—

	1932	1933	1934	1935	1936	1937	1938	1939
Greater London ...	52	46	26	51	65	96	43	27
County boroughs ...	50	32	24	31	57	45	23	40
Other urban districts	85	43	30	49	69	36	31	41
Rural districts ...	65	61	45	46	51	42	37	30

There has been a tendency in recent years for the rural and small town rates to approach equality with the county borough rate, the average rates in 1932–34 for the three groups in this order being respectively 57, 53, 35 whilst in 1937–39 they were 36, 36, 36.

The percentage of paratyphoid notifications amongst the total cases was 29·3 in 1938 (388 out of 1,322) and 50·4 in 1939 (745 out of 1,479), compared with 44·8 per cent. in 1937 and 29·5 per cent. in 1936. Table XXX shows this percentage for each separate region in 1939.

Table XXX.—Typhoid and Paratyphoid Fevers ; Mortality, Prevalence and Fatality at all ages. 1938 and 1939.

	Deaths per million living		Cases per million living		Deaths per 1,000 cases notified		Para-typhoid per cent. of cases notified 1939
	1938	1939	1938	1939	1938	1939	
England and Wales	4	3	32†	36†	123	76	50
South East ...	4	3	40	31	111	102	40
Greater London	4	3	43	27	104	112	37
Remainder ...	4	3	35	35	123	90	45
North	3	3	25	46	124	65	55
North I	3	4	29	26	109	143	46
,, II... ...	2	4	19	77	120	50	48
,, III ...	1	2	14	42	104	55	71
,, IV ...	4	3	30	48	135	61	51
Midland	2	2	16	30	139	55	53
Midland I ...	1	1	16	27	93	39	72
,, II ...	4	3	16	37	225	76	27
East	4	2	36	34	106	63	60
South West ...	9	4	53	36	162	104	43
Wales	7	2	53	32	138	63	57
Wales I	1	2	34	35	17	65	63
,, II... ...	25	1	103	24	243	59	35
County boroughs*	3	3	23	40	125	66	49
Other urban districts*	4	3	31	41	120	64	58
Rural districts* ...	6	3	37	30	154	93	46
Greater London :—							
Admin. County	3	2	51	27	58	59	36
Outer Ring ...	6	4	36	28	161	154	37

* Excluding Greater London. † Including cases in Port Health Districts.

Table XXXI.—Fatality of Certain Infectious Diseases (Deaths per 1,000 Notified Cases), 1911-39*

Year	1 Enteric (typhoid and para-typhoid) fever	6 Small-pox	8 Scarlet fever	10 Diph-theria	15 Ery-sipelas	16 Polio-myelitis (including polio-encepha-litis)	17 En-cepha-litis leth-argica	18 Cerebro-spinal fever (meningo-coccal menin-gitis)
1911	174	78·0	18·1	103	39	?	?	?
1912	191	73·2	18·6	96	39	?	?	?
1913	182	87·0	16·1	88	35	283	?	1,089
1914	194	61·5	17·2	99	42	348	?	1,257
1915	199	141·3	18·6	107	46	331	?	630
1916	174	113·2	17·8	101	39	270	?	656
1917	205	333·3	15·3	100	43	469	?	663
1918	201	30·8	20·5	106	47	1,004	?	673
1919	147	77·6	14·7	90	42	297	533	727
1920	171	114·1	12·0	81	52	404	539	911
1921	158	15·9	9·5	72	55	314	493	1,007
1922	191	27·7	12·7	78	53	352	742	1,047
1923	140	2·8	11·6	68	50	185	517	934
1924	120	3·5	10·5	60	52	183	279	746
1925	139	1·7	10·8	58	57	370	520	876
1926	133	1·8	8·3	59	55	181	583	926
1927	103	3·2	6·8	52	56	203	713	911
1928	124	4·3	5·7	52	55	306	819	1,061
1929	133	3·6	6·0	55	58	263	999	882
1930	106	2·4	6·7	47	56	212	1,241	938
1931	110	1·6	6·6	53	66	247	1,471	650
1932	101	1·5	6·2	54	68	237	1,463	568
1933	126	3·2	5·6	56	66	253	1,887	556
1934	131	33·5	6·3	59	71	201	1,917	666
1935	99	—	4·8	54	63	229	2,550	699
1936	103	—	4·7	53	60	175	2,550	639
1937	96	—	3·6	48	38	176	3,456	612
1938	123	166·7	3·6	45	26	160	3,351	506
1939	76	—	2·8	46	22	171	4,610	343

* 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 since 1920. The rates for poliomyelitis include polioencephalitis, which was not distinguished in the notification returns until 1919 (*see* also the note to Table XLII of the 1937 Review).

Encephalitis lethargica deaths comprise, in increasing proportions, fatalities from late effects of acute infectious encephalitis which may have been notified many years before, and the ratio to current notifications now has little meaning.

6. **Small-pox.**—In 1938 three deaths were assigned to this cause, none having occurred previously since 1934. Eighteen cases of small-pox were notified (4 in Gravesend M.B. with 2 deaths, 4 in Wigan C.B., 3 in Urmston U.D., 3 in Ripon and Pateley Bridge R.D. with 1 death (assigned to Nidderdale R.D.), 1 in Irlam U.D., 1 in Leighton Buzzard U.D. and 2 in Port Health districts) compared with 2,039, 631, 179, 1, 12, 4 in the six years 1932 to 1937.

In 1939 there were no deaths. One case was notified from Liverpool Port Health District.

7. **Measles.**—Deaths registered from this cause numbered 1,633 in 1938 and 309 in 1939, the standardized rates for males and females respectively being 68 and 61 per million in 1938 and 12 for each sex in 1939. The death-rate amongst children under 15 years of age was 180 per million in 1938 and 35 in 1939, compared with 354, 201, 390, 143, 297, 114 in the six years 1932 to 1937 (Table 9). The 1939 rate amongst children was, therefore, less than one third of the lowest rate previously recorded.

Measles is usually certified in conjunction with some respiratory or other complication over which it is given high preference by the selective rules, but sometimes the certifier regards the measles as merely a contributory cause. Classification in accordance with the certifier's choice of the essential cause would reduce the deaths in 1938 from 1,633 to 1,524 and those in 1939 from 309 to 303.

Table XXXII shows the distribution throughout the country of the death-rates at ages under 5, and also of the proportion of all deaths occurring at ages under 2. In 1938 the North recorded a rate of 80 per 100,000 at 0–5, compared with 47 in the South-East and 18 in the Midlands, but in 1939 the respective rates were 10, 1 and 17. The county borough rate was, as usual, about 3 times the rural district rate in each year; and the proportion of deaths at ages under 2 was higher in urban than rural areas.

Table XXXII.—Measles and Whooping Cough; Mortality at ages under five years, and Proportion of Deaths occurring in the First One or Two Years of Life, 1938 and 1939.

	Measles				Whooping cough			
	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	
	1938	1939	1938	1939	1938	1939	1938	1939
England and Wales ...	49	9	57	52	38	43	49	56
South East	47	1	54	60	26	38	49	60
Greater London	58	1	59	71	29	43	54	60
Remainder	31	0	41	33	21	30	41	60
North	80	10	61	55	47	48	44	55
North I	69	17	66	47	50	54	51	55
North II	63	27	58	65	41	51	47	56
North III	64	7	63	53	29	54	54	54
North IV	99	5	59	54	58	41	39	56
Midland	18	17	53	49	41	47	55	55
Midland I	18	22	49	47	47	49	56	52
Midland II	19	6	62	73	28	44	52	60
East	15	2	58	75	30	40	49	55
South West	41	2	49	—	45	30	64	53
Wales	20	31	49	56	48	45	45	49
Wales I	22	36	55	56	49	50	45	49
Wales II	13	16	30	56	45	29	48	50
County boroughs*	66	13	60	51	53	48	48	57
Other urban districts* ...	41	12	53	56	33	41	44	52
Rural districts*	24	4	49	39	29	37	54	58
Greater London :—								
Administrative County ...	87	2	67	75	41	58	55	69
Outer Ring	35	1	46	67	19	32	52	48

* Excluding Greater London.

The measles death-rates per million living at each year of age under 5 in recent years are shown below :—

Age	1921–30	1932	1933	1934	1935	1936	1937	1938	1939
0– ...	1,313	1,112	637	1,219	507	1,090	402	661	149
1– ...	2,537	2,411	1,329	2,609	949	1,834	659	944	123
2– ...	997	838	512	1,011	328	721	242	420	91
3– ...	492	403	288	558	188	371	153	247	30
4–5 ...	297	293	172	378	136	277	110	163	40

Expressing the 1938 death rates as percentages of 1921–30 rates, the indices were 50, 37, 42, 50, 55 in the five years of life; and for 1939 they were 11, 5, 9, 6, 13. Mortality in the second year of life in 1939 was, for the first time, less than at 0–1 years.

Table XXXIII.—Scarlet Fever: Mortality at Ages under 15 years, Prevalence and Fatality at All Ages, 1938 and 1939.

	Deaths per million living at 0–15		Cases per 100,000 living at all ages		Deaths per 1,000 cases notified at all ages		Deaths at 0–5 per 100 at all ages	
	1938	1939	1938	1939	1938	1939	1938	1939
England and Wales ...	31	17	241†	189†	3·6	2·8	44	39
South East	22	8	200	158	3·0	1·7	34	32
Greater London	19	8	218	169	2·4	1·1	39	25
Remainder	27	9	172	143	4·2	2·6	29	36
North	45	22	287	213	4·4	3·4	52	39
North I	65	27	362	184	5·6	5·5	53	50
North II	46	23	289	202	5·1	4·2	32	55
North III	38	25	246	196	4·0	3·7	56	44
North IV	41	18	284	236	3·8	2·6	55	24
Midland	29	26	251	228	3·5	3·1	40	39
Midland I	27	21	231	229	3·4	2·4	38	44
Midland II	33	35	289	227	3·7	4·3	42	33
East	2	7	143	126	1·5	2·5	25	33
South West	22	5	145	142	3·3	1·3	30	25
Wales	35	31	358	219	3·3	4·0	38	55
Wales I	36	36	423	237	2·9	4·2	36	56
Wales II	34	19	188	172	5·5	3·3	43	50
County boroughs*	37	16	279	211	3·8	2·6	49	38
Other urban districts* ...	36	24	247	187	3·8	3·7	42	43
Rural districts*	25	18	189	178	4·3	3·2	36	38
Greater London :—								
Administrative County ...	23	9	205	153	3·2	1·6	37	11
Outer Ring	16	6	229	182	1·8	0·8	42	43

* Excluding Greater London. † Including cases in Port Health Districts.

8. **Scarlet Fever.**—Deaths numbered 359 in 1938 and 216 in 1939, and the death-rates at ages under 15 were 31 and 17 per million, compared with 73 in 1921–30, 57 in 1931–35, 43 in 1936 and 31 in 1937 (Table 9). The 1939 rate amongst children was 45 per cent. below the previous lowest level reached in 1937–1938.

Classification in accordance with the certifier's preference rather than by the selective rules when another disease was associated with scarlet fever reduces the deaths to 311 in 1938 and 181 in 1939.

Table XXXI shows that the fatality ratio of deaths to notified cases was 3·6 per 1,000 in 1938 and 2·8 in 1939, compared with averages of 17·7 in 1911–15, 11·0 in 1921–25 and 5·9 in 1931–35.

Table XXXIII gives the distribution throughout the country of the death-rate at ages under 15, the notification rate per 100,000 at all ages, the fatality ratio and the proportion of deaths under 5 years of age to those at all ages.

The Northern regions returned the highest death-rates in 1938, and Wales I and Midland II in 1939. The notification rate was highest in Wales I, and the fatality ratio was greatest in North I, both in 1938 and 1939.

The death-rate per million living at different age periods under 20 in recent years have been as follows :—

Age	1921–25	1926–30	1931–35	1936	1937	1938	1939
0– ...	154	87	98	71	54	55	29
5– ...	93	59	60	49	31	31	17
10– ...	30	19	19	14	9	9	7
15–20 ...	15	8	10	7	6	6	6

9. **Whooping Cough.**—Deaths numbered 1,122 in 1938 and 1,273 in 1939, and the death-rates at ages under 15 were 126 and 145 per million, compared with 435 in 1921–30, 239 in 1931–35, 228 in 1936 and 195 in 1937. The 1938 rate amongst children was the lowest recorded and that in 1939 ranked next.

Classification in accordance with the certifier's preference rather than by the selective rules when another disease was associated with whooping cough reduce the deaths to 1,052 in 1938 and 1,229 in 1939.

Deaths of males and females numbered 496 and 626 respectively in 1938 ; and 566 and 707 in 1939. An excess for females, as shown in Table 6, is a constant feature ; and the ratio of deaths of females to those of males changes with advancing age, as may be seen from the percentage ratios below :—

Period	0–3 *months*	3–6 *months*	6–12 *months*	1–2 *years*	2–3 *years*	3–4 *years*	4–5 *years*	5–10 *years*	10 *years and over*
1911–20 ...	117	102	113	131	146	153	154	144	180
1931–35 ...	118	110	116	131	153	175	150	145	220
1936–39 ...	111	103	108	137	146	129	143		

The death-rates from whooping cough per million living at each year of age under 5 in recent years have been :—

Age	1921–30	1932	1933	1934	1935	1936	1937	1938	1939
0–	2,861	2,372	1,773	1,627	1,434	1,874	1,482	926	1,197
1–	2,039	1,474	1,135	1,080	775	1,020	867	567	552
2–	764	512	481	397	256	361	315	170	170
3–	381	284	234	218	146	179	187	138	109
4–5	199	131	138	123	80	103	89	54	69

Expressing 1939 rates as percentages of those in 1921–30, the indices for the 5 years of life were 42, 27, 22, 29, 35, the greatest improvement being in the 3rd year of life.

Table XXXII shows the distribution throughout the country of the death-rate at ages under 5 and of the proportion of deaths under 1 year of age. When the rates at 0–5 years are expressed in terms of the national rate taken as 100 it is apparent that the relation with urbanization persists despite the falling death-rate.

	1911–20 Male	1911–20 Female	1931–35 Persons	1936 Persons	1937 Persons	1938 Persons	1939 Persons
London A.C.	119	115	131	148	158	108	137
County boroughs ...	118	116	126	120	113	139	112
Other urban districts ...	92	95	88	89	90	87	95
Rural districts	75	76	76	77	85	76	86

10. **Diphtheria.**—Deaths numbered 2,931 in 1938 and 2,174 (including 3 of non-civilians) in 1939. The deaths of males were less than those of females (1,432, 1,499) in 1938, as in every year from 1911 with the exceptions of 1922 and 1931 ; but in 1939 there was a considerable male excess (1,125, 1,049). The standardized death rate of females in 1939 (77 per million) was the lowest recorded, but the male rate (82) was equalled in 1923 and lower rates recorded in 1924 (75) and 1932 (77).

Classification in accordance with the certifier's preference rather than by the selective rules when another disease was associated with diphtheria reduces the deaths to 2,861 in 1938 and 2,133 in 1939.

The trend of diphtheria mortality since 1856 can be seen from the death-rates at ages under 15 from diphtheria and croup in Table 9. 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, when a decline again set in to 309 in 1921–25.

The apparent decrease of 65 per cent. in the rate at all ages under 15 between 1891–1900 and 1921–25 was due in part to the declining proportion of children under 5 resulting from the falling birth rate. When the rates at 0–5, 5–10 and 10–15 are examined separately, it is seen that the improvement during this period was twice as rapid at ages 0–5 as at 10–15.

	0–5	5–10	10–15	Under 15
Rates per million 1891–1900	1,719	756	128	894
Rates per million 1911–1920	711	522	104	447
Rates per million 1921–1925	484	365	85	309
1921–25 per cent. of 1891–1900	28	48	66	35

Since 1922 the diphtheria rate amongst children under 15 has fluctuated above and below 300 for periods of 3 to 5 years at a time :—

Rate below 300 per million ... ... 1923–27 ; 1931–33 ; 1939.

Rate above 300 per million ... ... 1928–30 ; 1934–38.

In 1932 it reached the low level of 228, but rose to 402 by 1934 and then declined to 310 in 1937 and 1938 and 231 in 1939.

It is important to follow the trend of death rates at separate years of age under 5, and at the school ages 5–10 and 10–15, and these were given for each year 1901 to 1934 in Table XL of the Review for 1934, and for each year 1921 to 1937 in Table XLIV of the Review for 1937. In Table XXXIV of this Review the rates are shown for each quinquennium from 1906–10 to 1926–30 and each year 1931 to 1939, and are also expressed as percentages of the rate at 5–10 years.

Table XXXIV.—Diphtheria and Croup Mortality according to Age. 1906 to 1939.

Years	Ages								
	0–	1–	2–	3–	4–	5–	10–	15–	25 and over
Deaths per 100,000 (live births at 0–1, estimated population at other ages)									
1906–10	30	84	90	106	103	52	8	1	1
1911–15	25	69	76	91	91	51	10	1	0
1916–20	24	67	79	93	95	53	11	2	0
1921–25	19	50	54	62	63	37	8	1	0
1926–30	19	44	47	52	57	37	9	1	1
1931	16	32	38	51	49	32	9	1	1
1932	12	25	35	44	51	30	7	1	0
1933	12	23	37	43	55	38	9	1	0
1934	12	35	51	80	75	61	13	2	1
1935	12	29	47	63	71	52	13	2	1
1936	14	21	45	53	66	48	10	1	0
1937	13	23	42	54	67	45	11	1	0
1938	12	19	38	54	59	48	11	1	0
1939	8	15	34	47	44	33	8	1	0
Rates per cent. of corresponding rate at 5–10 years.									
1906–10	—	162	173	204	198	100	15	2	1
1911–15	—	135	149	178	178	100	20	2	1
1916–20	—	126	149	175	179	100	21	4	1
1921–25	—	135	146	168	170	100	22	3	1
1926–30	—	119	127	141	154	100	24	3	1
1931–35	—	69	98	133	143	100	24	2	1
1936–39	—	45	91	120	136	100	23	2	0

In the second year of life the rate fell to new low levels both in 1938 and 1939, that in 1939 being about one third of the 1926–30 rate ; in the third and fifth years of life the 1939 rates were the lowest recorded, being about three quarters of the corresponding rates in 1926–30 ; in the fourth year of life no consistent improvement has occurred since 1923, and this is true also at 5–10. At 10–15 there has been no sustained improvement since 1906–10.

The ratios at the foot of Table XXXIV show that whereas 30 years ago the risk of death from diphtheria in the second and third years of life was more than 1½ times that at 5–10 years, the ratio has declined to less than half in the second year and about nine tenths in the third. The risk is still maximal between 3 and 5 years, but the excess over that at the school ages has diminished progressively. At 5–10 diphtheria is now by far the most important cause of death, as shown on page 40.

Table XXXV shows the regional distribution of the death-rate under 15, and of the notification rate at all ages. The fatality ratios suggest that diphtheria is still notified more freely in some sections of the population than in others.

Table XXXV.—Diphtheria Mortality at Ages under 15 Years, Prevalence and Fatality at All Ages. 1938 and 1939.

	Deaths per million living 0–15		Cases per 100,000 living at all ages		Deaths per 1,000 cases notified	
	1938	1939	1938	1939	1938	1939
England and Wales	310	231	158	115	45	46
South-East	193	115	111	69	38	36
Great London	219	127	142	77	33	34
Remainder	154	98	65	58	52	41
North	468	355	227	165	48	50
North I	611	460	281	207	59	59
North II	256	272	120	108	52	61
North III	334	249	198	141	39	41
North IV	530	389	247	175	47	50
Midland	316	230	152	110	51	49
Midland I	290	226	140	102	52	52
Midland II	368	239	176	126	49	45
East	161	136	80	82	49	41
South-West	129	186	63	69	47	61
Wales	325	279	214	192	38	36
Wales I	304	287	221	209	35	34
Wales II	386	256	197	150	47	44
County boroughs*	374	297	197	141	44	49
Other urban districts* ...	351	269	162	129	50	47
Rural districts*	230	155	100	88	56	45
Greater London :—						
Administrative County ...	251	139	190	98	27	26
Outer Ring	192	119	100	60	44	44

* Excluding Greater London.

Table XXXVI.—Diphtheria prevalence and fatality rates in Certain Large Towns and Regions. 1926–30 and 1931 to 1939.

		Notified cases per 100,000 living.										Deaths per 1,000 notified cases.									
		1926–30 average	1931	1932	1933	1934	1935	1936	1937	1938	1939	1926–30	1931	1932	1933	1934	1935	1936	1937	1938	1939
England and Wales		152	126	108	118	170	160	142	149	158	115	53	53	54	56	59	54	53	48	45	46
South-East :—	London Admin. County	283	195	188	225	281	225	172	193	190	98	34	31	38	37	40	29	32	27	27	26
	Croydon C.B.	173	90	48	91	181	128	76	121	117	85	60	(24)	96	78	57	39	(43)	51	56	81
	Portsmouth C.B. ...	330	151	97	77	136	169	97	121	118	56	53	35	(8)	(46)	86	92	(33)	42	49	(44)
	Southampton C.B. ...	199	122	119	161	419	444	196	151	69	59	60	60	(9)	(31)	28	47	34	37	(48)	(76)
	West Ham C.B. ...	282	120	105	182	291	285	176	194	183	74	37	31	40	105	61	51	32	36	41	(11)
	Remainder of South-East	144	102	65	74	124	108	77	75	76	58	53	50	51	56	59	53	52	46	48	41
North I :—	Newcastle-on-Tyne C.B.	84	42	55	33	137	236	243	171	145	88	48	(51)	(32)	(96)	61	48	50	44	54	44
	Sunderland C.B. ...	90	90	61	39	82	181	222	156	213	188	58	65	(44)	(41)	78	96	73	73	44	92
	Remainder of North I ...	104	65	49	81	172	259	267	292	311	229	67	63	42	51	69	67	61	65	60	57
North II :—	Kingston-upon-Hull C.B.	257	361	534	473	333	300	347	263	216	174	40	82	78	60	60	34	110	69	63	49
	Remainder of North II	74	69	42	63	151	111	98	92	88	88	64	69	83	96	109	96	68	76	43	68
North III :—	Bradford C.B. ...	117	82	106	129	288	318	307	301	219	124	83	(36)	45	39	52	62	58	55	38	34
	Leeds C.B.	124	203	183	216	455	278	166	191	191	88	52	88	54	83	70	44	43	47	35	47
	Sheffield C.B.	161	80	79	189	272	338	390	315	280	213	42	(14)	(15)	20	30	42	43	26	20	22
	Remainder of North III	91	115	136	150	234	208	155	158	178	138	71	90	75	78	79	67	66	56	48	48
North IV :—	Birkenhead C.B. ...	103	152	172	241	472	288	197	419	288	215	62	102	39	41	38	33	58	41	26	57
	Bolton C.B.	58	25	24	60	54	57	39	130	284	96	99	(45)	(71)	(56)	116	(50)	(59)	104	46	69
	Liverpool C.B.	263	375	384	340	338	314	264	293	297	188	58	59	56	60	61	55	62	61	60	63
	Manchester C.B. ...	149	95	140	134	169	174	222	256	217	147	71	82	76	85	65	46	55	47	35	35
	Salford C.B.	239	257	329	350	414	329	289	263	271	243	42	53	30	30	30	51	50	23	20	26
	Remainder of North IV	104	98	91	96	155	155	184	185	238	176	67	68	77	69	74	66	56	55	49	50
Midland I :—	Birmingham C.B. ...	230	178	117	83	156	165	160	202	165	108	38	35	30	38	53	50	39	39	40	44
	Bristol C.B.	233	207	134	157	182	153	107	76	155	147	43	37	41	34	23	17	34	32	34	40
	Coventry C.B.	188	114	64	81	108	132	142	124	100	125	101	57	(27)	74	65	52	58	(28)	(19)	43
	Stoke-on-Trent C.B. ...	95	75	59	85	104	144	141	176	185	89	46	81	(31)	(30)	(21)	33	47	67	64	58
	Remainder of Midland I	116	101	64	61	116	137	120	137	126	93	66	57	62	55	63	67	60	58	62	59
Midland II :—	Leicester C.B.	131	47	32	140	192	166	104	174	266	196	55	(53)	(92)	38	43	(19)	(26)	44	47	45
	Nottingham C.B. ...	291	99	51	56	76	107	144	83	91	48	68	(15)	(66)	(38)	(28)	47	34	(30)	(12)	(23)
	Remainder of Midland II	115	80	59	58	72	90	91	122	176	128	64	58	65	54	56	73	74	52	52	46
East :—		96	86	78	69	66	68	53	63	80	82	58	67	64	65	72	58	53	42	49	41
South-West :—	Plymouth C.B.	230	191	212	165	186	238	221	129	169	194	61	46	45	53	45	48	88	66	42	60
	Remainder of South-West	89	82	66	63	70	72	53	41	51	55	59	51	52	61	55	50	66	62	49	62
Wales I :—	Cardiff C.B.	237	264	221	215	235	158	155	267	197	193	40	41	20	40	40	54	50	34	(18)	32
	Swansea C.B.	214	289	190	172	200	220	194	271	205	150	41	23	(29)	(32)	(24)	(22)	44	55	42	(33)
	Remainder of Wales I ...	169	163	136	144	215	163	143	189	227	218	64	57	62	72	82	67	50	34	37	34
Wales II :—		126	229	165	153	165	132	176	227	197	150	59	51	56	59	57	50	44	57	47	44

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.

Table XXXVI shows the prevalence and fatality indices for 1926–30 and each year 1931 to 1939 in London, each county borough having a population of 150,000 or more in 1931 and in the residue of each region surrounding these towns. The rates for separate years 1926 to 1930 were given in Table XLII of the Review for 1934.

At one time diphtheria was incompletely notified in the intervals between epidemics and over-notified during epidemics in some areas, but this source of local variation has probably become less important in recent years. If there is any persistent administrative cause of this kind for the differences in rates between certain towns, it should produce a similarity between the rankings of the 25 towns in Table XXXVI according to their 1926–30 and 1935–38 notification rates, for in each of these periods the England and Wales rate was 152, and the interval between the periods was sufficient to have allowed any local epidemics to subside. In the table below the towns are arranged in descending order of their 1926–30 rates and the rates and ranking in this period and in 1935–38 are compared.

	Notifications per 100,000 living		Order of ranking		Deaths per 1,000 notified	
	1926–30	1935–38	1926–30	1935–38	1926–30	1935–38
Portsmouth	330	126	1	21	53	59
Nottingham	291	106	2	25	68	43
London	283	195	3	13	34	29
West Ham	282	210	4	10	37	41
Liverpool	263	292	5	3	58	60
Kingston-on-Hull ...	257	281	6	6	40	71
Salford	239	288	7	4	42	37
Cardiff...	237	194	8	14	40	37
Bristol...	233	123	9	23	43	28
Birmingham	230	173	10	18	38	42
Plymouth	230	189	10	16	61	61
Swansea	214	223	12	7	41	41
Southampton ...	199	214	13	9	60	43
Coventry	188	124	14	22	101	40
Croydon	173	110	15	24	60	48
Sheffield	161	331	16	1	42	34
Manchester	149	217	17	8	71	46
Leicester	131	177	18	17	55	37
Leeds	124	206	19	11	52	42
Bradford	117	286	20	5	83	55
Birkenhead	103	297	21	2	62	38
Stoke-on-Trent ...	95	162	22	19	46	54
Sunderland	90	193	23	15	58	70
Newcastle-on-Tyne ...	84	199	24	12	48	49
Bolton...	58	127	25	20	99	62
England and Wales...	152	152			53	50

Grouping the towns into 8 with high notification rates, 9 with medium rates and 8 with low rates in 1926–30, the average notifications per 100,000 and deaths per 1,000 notifications in that period, and for the *same towns* in 1935–38 were :—

1926–30 position	Averages in 1926–30			Averages in 1935–38		
	Rank	Notification	Fatality	Rank	Notification	Fatality
High notification rates (8 towns)	4½	273	47	12	212	47
Medium notification rates (9 towns)	13	197	57	14	189	43
Low notification rates (8 towns)	21½	100	63	13	206	51

This shows that the fact that a town had a high or low notification rate in 1926–30 had in general no influence upon its rate in the later period 1935–38. Although there appear to be consistent differences between certain towns such as Liverpool and Manchester, which at first sight suggest administrative peculiarities, such an explanation may be proved false by the fatality rates. It seems that the effects of local administrative peculiarities on the rates of recent years in Table XXXVI must be negligible in comparison with the real effects of epidemic variations.

This is confirmed by reversing the process, arranging the towns in order of their 1935–38 notification rates, grouping them into high, medium and low as before, and comparing the average rates and ranking of the *same towns* in 1926–30 :—

1935–38 position	Averages in 1935–38			Averages in 1926–30		
	Rank	Notification	Fatality	Rank	Notification	Fatality
High notification rates (8 towns)	4½	277	48	13	188	55
Medium notification rates (9 towns)	13	197	45	14	184	49
Low notification rates (8 towns)	21½	131	47	12	200	64

It appears from the first grouping arrangement above that towns with high notification rates in 1926–30 tended to have low fatality ratios in the same period and *vice versa*; but when the average notification rates of the groups had become equalised in 1935–38 this difference in fatality ratio almost disappeared. The second grouping arrangement shows, however, that in 1935–38 there was no longer any negative correlation between contemporaneous notification and fatality rates. The same change is apparent when the secular trend of the national rates is examined. From 1923 to 1930 the national notification rate rose steadily from 105 to 184 whilst the fatality index declined from 68 to 47 ; and the notification rate then fell to 108 in 1932 whilst the fatality index rose to 54. From 1933 to 1936, however, an opposing trend gave place to a parallel one, and in recent years there has been no consistent relation between the indices.

The above facts suggest that up to about 1932 notification tended to be less complete in inter-epidemic than in epidemic periods, with a consequent higher fatality index, as evidenced by the average of 63 for the 8 towns with low notification in 1926–30 compared with 47 for the 8 towns with high notification. After 1932 this tendency seems to have become less important, and in

recent years it has probably given place to an over-notification at all times, in urban areas at least, diphtheria being often notified in doubtful cases as a means of securing hospital diagnosis and treatment without delay. Since the machinery for reporting to the Registrar-General the subsequent cancellations of notifications has operated very inadequately in most areas, the notification statistics now probably overstate the real incidence whilst the fatality indices understate the real fatality.

An alternative explanation of the disappearance of the correlation between notification and fatality indices might be that whereas in 1926–30 the more virulent types of diphtheria infection tended to predominate over the milder forms when prevalence in an area was low, in 1935–38 they were sharing equally with the milder types in local epidemic fluctuations ; but of this there is no certain evidence.

In 1939 there was a decrease in the national notification rate to 115, compared with the average of 152 in the 4 years preceding. This was shared by all the 25 towns in Table XXXVI except Coventry and Plymouth, which showed small increases.

11. **Influenza.**—Deaths numbered 4,847 in 1938 and 9,035 (including 2 of non-civilians) in 1939. The standardized death rate of 86 per million living in 1938 was the lowest recorded ; and the rate of 148 in 1939 was lower than in any year except 1911, 1912, 1930, 1934–36 and 1938 (Tables XXXVII and 9). Rates exceeding 400 have been recorded in 1918, 1919, 1922, 1924, 1927, 1929 and 1933 during the present century.

Table XXXVII.—Influenza Mortality per million Population during the first 3 and last 9 months of each year, 1921–39.

	Annual death rates		January-March (crude rate)	April-December (crude rate)
	Crude	Standardized		
1921... ...	237	213	356	198
1922... ...	563	503	1,854	133
1923... ...	220	188	240	214
1924... ...	490	415	1,322	213
1925... ...	327	272	783	175
1926... ...	229	191	298	206
1927... ...	567	466	1,827	147
1928... ...	196	160	332	152
1929... ...	734	580	2,450	173
1930... ...	126	100	225	94
1931... ...	360	284	958	167
1932... ...	327	251	926	133
1933... ...	567	432	1,995	97
1934... ...	139	106	271	96
1935... ...	182	135	285	148
1936... ...	148	109	288	102
1937... ...	454	318	1,556	94
1938... ...	118	86	204	89
1939... ...	219	148	620	87

Influenza is sometimes certified as a contributory rather than a primary cause of death and was so certified for 1,061 deaths in 1939, a heart disease being the principal cause in 556 instances, bronchitis or asthma in 141, pneumonia in 97, cerebral vascular disease or arteriosclerosis in 94 and diabetes in 34. Classifica-

tion of multiple causes in accordance with the certifier's choice of the essential cause rather than by the selective rules would reduce the deaths assigned to influenza to 4,446 in 1938 and 8,020 in 1939.

Mortality during the latter nine months of the year is not so variable from year to year as that in the first quarter, as may be seen from the crude death-rates in Table XXXVII. In 1936–39 the April–December rate ranged only between 102 and 87, whilst the January–March rate ranged between 1,556 and 204.

The distribution of influenza mortality and of the notified prevalence of acute pneumonia (primary or influenzal) throughout the country is shown in Table XXXVIII. In both years mortality tended to be highest in the rural districts and lowest in the county boroughs. This relation with urbanization, which contrasts with the behaviour of the epidemic diseases of childhood, has been evident in 23 out of the 29 years, 1911–39, for which comparison is possible. Pneumonia notification rates, on the other hand, were highest in the county boroughs and lowest in the rural districts; but the notification of primary pneumonia is known to be far from complete; and it is uncertain to what extent the difference between urban and rural rates denotes a real difference in prevalence.

Table XXXVIII.—Influenza, Mortality; Acute primary and influenzal Pneumonia, Notified prevalence. Encephalitis Lethargica, Mortality and Notified Incidence of new cases, 1938 and 1939.

	Influenza		Pneumonia		Encephalitis lethargica			
	Deaths per million living		Notifications per million living		Deaths per million living		Notified new cases per million living	
	1938	1939	1938	1939	1938	1939	1938	1939
England and Wales	118	219	1,096†	1,026†	16	18	5†	4†
South-East	92	187	748	732	10	10	3	3
Greater London ...	71	177	850	864	10	11	2	2
Remainder ...	124	201	594	547	11	8	4	3
North	115	221	1,400	1,327	23	26	7	5
North I ...	145	158	1,626	1,446	21	31	7	4
,, II	154	200	885	905	13	18	6	6
,, III	84	198	1,519	1,500	16	22	5	4
,, IV	112	261	1,360	1,278	29	28	8	5
Midland	147	207	1,459	1,196	17	18	5	5
Midland I ...	171	209	1,575	1,254	18	17	6	7
,, II ...	102	202	1,234	1,082	14	21	2	2
East	107	266	746	747	14	14	7	2
South-West ...	147	284	789	760	11	14	2	3
Wales	180	336	959	1,071	15	23	6	6
Wales I	167	317	972	1,194	13	18	6	6
,, II	212	384	924	756	19	36	4	7
County boroughs* ...	111	199	1,521	1,392	20	23	8	5
Other urban districts*	135	238	1,007	919	18	18	4	4
Rural districts* ...	154	268	783	763	11	15	4	4
Greater London { Admin. Co.	67	180	981	994	10	13	1	4
Greater London { Outer Ring	75	174	735	757	9	10	2	1

* Excluding Greater London. † Including Port Health Districts.

Of the regions, North I, III, IV and Midland I recorded the highest pneumonia notification rates in each year; but Greater London in 1938 and North I in 1939 registered the lowest influenza death-rates of those years, Wales II having the highest mortality in each year.

13. **Dysentery.**—Deaths classified to this group of diseases numbered 138 in 1938 and 111 in 1939, compared with 139 in 1937 and 87 in 1936.

Table XXXIX.—Dysentery: Deaths and Notified Cases, 1921–1939.

	No. of notified cases (all forms of dysentery).	No. of deaths registered.					Ratio of notifications to deaths (all forms).
		Amœbic dysentery.	Bacillary dysentery.	Unspecified or other dysentery.	Total not specified as amœbic.	All forms.	
1921	1,223*	11	17	233	250	261	4·7
1922	789*	10	21	185	206	216	3·7
1923	484*	13	12	124	136	149	3·2
1924	388*	8	13	109	122	130	3·0
1925	345*	11	13	111	124	135	2·6
1926	565	14	11	117	128	142	4·0
1927	465	13	6	76	82	95	4·9
1928	728	13	37	105	142	155	4·7
1929	584	14	20	64	84	98	6·0
1930	565	6	42	49	91	97	5·8
1931	836	10	47	59	106	116	7·2
1932	924	3	53	77	130	133	6·9
1933	783	6	44	42	86	92	8·5
1934	763	9	44	50	94	103	7·4
1935	1,177	10	67	39	106	116	10·1
1936	1,333	6	52	29	81	87	15·3
1937	4,167	10	71	58	129	139	30·0
1938	4,170	11	80	47	127	138	30·2
1939	1,941	13	69	29	98	111	17·5

* The numbers of notified cases for the years 1921 to 1925 are not strictly comparable as they do not include non-civilians, figures for these not being available. All the other figures in the table are inclusive of non-civilians.

The deaths assigned to each subhead of dysentery in the International List, and the total notified cases, in each year from 1921 to 1939 are given in Table XXXIX. The deaths from dysentery not distinguished as amœbic averaged 168 annually in 1921–25, 105 in 1926–30, 104 in 1931–34, and numbered 106, 81, 129, 127 and 98 in successive years from 1935 to 1939. The notified cases, which purport to comprise all forms, protozoal and bacillary including the Sonne type, averaged 646 annually in 1921–25, 581 in 1926–30 and 827 in 1931–34, but then increased to 1,177, 1,333, 4,167, 4,170 in successive years 1935 to 1938 and decreased again to 1,941 in 1939. Most of the excess in 1937–38 occurred in the 4th quarter of 1937 and 1st quarter of 1938 (see Table XLVIII of the Review for 1937). After 1925 the ratio of notified cases to deaths rose from about 3, to about 7 in 1929–34, and then increased rapidly to 30 in 1937–38, falling again to 17·5 in 1939. The annual deaths have shown no consistent change during the last 17 years, however, so the recent changes in the ratio must be attributed to a temporary increased prevalence of the mild forms of the disease, probably combined with an increasing recognition of them.

15. **Erysipelas.**—Deaths numbered 429 in 1938 and 318 in 1939, compared with 581 in 1937 and 987 in 1936. The standardized death-rates of males and females were 9 and 6 per million respectively in 1938, and 6 and 5 in 1939. These rates attained their previous lowest level of 15 and 14 in 1923, and then increased slowly to 25 and 20 in 1930–31, but in 1933 the rates rose sharply to 30 and 25, and again in 1934 to the high levels of 34 and 27, this being followed by a progressive fall to the very low figures of 1939.

The notification rate rose from 32 per 100,000 in 1923 to 45 in 1929–30, fell to 36 in 1932, again reached the high level of 51 in 1934, averaged 40 in 1935–38

and declined further to 34 in 1939 (Table 26). The changes in the ratio of deaths per 1,000 notifications since 1923 are shown below :—

	Deaths (*mean annual)	Notifications (*mean annual)	Deaths per 1,000 notifications
1923–27 ...	755*	13,907*	54
1928–32 ...	991*	16,433*	60
1933 ...	1,191	17,997	66
1934 ...	1,458	20,643	71
1935 ...	1,060	16,926	63
1936 ...	987	16,487	60
1937 ...	581	15,166	38
1938 ...	429	16,671	26
1939 ...	318	14,141	22

In 1938 and 1939 the fatality index fell to lower levels than in any year since the record began in 1911 (Table XXXI), probably as a result of the introduction of new methods of chemotherapy.

16. **Acute Poliomyelitis.**—Deaths, including those from acute polioencephalitis, numbered 254 in 1938 and 142 in 1939, compared with 152 in 1937 and 102 in 1936. The standardized death-rates in the two years were 9 and 6 per million respectively for males and 8 and 4 per million for females, the 1938 rates being the highest recorded.

The death-rate at ages under 15 was 17† per million in 1938, the highest rates previously recorded being 16 in 1911 and 1926, 15 in 1913 and 14 in 1918. In 1939 this rate fell again to 11 per million.

Notifications numbered 1,585 (1,489 of poliomyelitis and 96 of polioencephalitis) in 1938, and 831 (744 and 87) in 1939, compared with 863 (768 and 95) in 1937. The increased incidence in 1938 was of poliomyelitis cases alone, whereas deaths were enhanced for each form of the disease, poliomyelitis having 94, 172, 94 and polioencephalitis 58, 82, 48 in the years 1937, 1938, 1939 respectively. From the percentage distributions of deaths according to age in Table XL it appears that no age-group was predominantly affected in the 1938 epidemic.

Table XL.—Acute Poliomyelitis and Polioencephalitis deaths at various ages per cent. of all ages, 1926-1939.

Year	Rate per million at 0–15	No. of deaths (all ages)	Percentage at different ages							
			0–	1–	5–	10–	15–	25–	45 & up	All ages
1926–30 ...	12	888	8	32	17	11	18	9	5	100
1931	7	98	21	28	9	12	18	10	2	100
1932	13	178	6	27	20	15	16	11	5	100
1933	13	202	6	26	16	15	17	15	5	100
1934	9	135	4	21	19	16	15	15	10	100
1935	10	145	3	30	17	17	15	12	7	100
1936	7	102	4	26	13	21	17	12	8	100
1937	8	152	3	18	15	13	22	17	12	100
1938	17	254	3	20	20	17	17	19	4	100
1939	11	142	8	20	21	16	18	14	4	100

† This rate is printed in error as 11 in Table 9 of both the 1938 and 1939 Reviews.

17. **Encephalitis Lethargica.**—Deaths numbered 650 in 1938 and 733 (including 2 of non-civilians) in 1939, giving standardized death-rates of 12 and 14 per million compared with 15 in 1937 and 14 in 1936 (Table 9). On many death certificates this disease is mentioned as a contributory rather than a principal cause of death and the high preference given to it by the selective rules causes the deaths assigned to this heading to exceed considerably the numbers properly attributable to it. Classification according to the certifier's choice of the essential cause would reduce the deaths to 516 in 1938 and 572 in 1939, the bulk of the transfers being to diseases of the heart and respiratory system. Of the deaths remaining under this heading in 1939 when so classified 223 were said to be due to sequelæ of encephalitis lethargica, 37 were described as acute and the remaining 312 were unspecified (Appendices B1 and B2). Notifications of acute encephalitis lethargica numbered 194 in 1938 and 159 in 1939, a decline having occurred in the notified incidence in every one of the last fifteen years.

Table XXXVIII shows that both mortality and incidence of new cases were low in Greater London and higher in the county boroughs than in rural areas.

18. **Cerebro-spinal Fever** (Meningococcal Meningitis).—Deaths numbered 652 in 1938 and 514 (including 13 of non-civilians) in 1939. The standardized death rates of males were 25 and 19 per million, and of females 19 and 14 per million respectively in the two years. The trend since 1911–14 of the death rates at different ages is shown in Table XLI.

Table XLI.—Cerebro-spinal Fever. Mortality at Various Ages per Million Living 1911–39.

Year.	Males.					Females.				
	All ages.*	0–5	5–15	15–25	25* and up.	All ages.*	0–5	5–15	15–25	25* and up
1911–14	11·8	64·2	11·8	5·8	1·9	9·7	55·0	8·9	4·1	1·5
1915–17	69·9	148·8	45·4	135·3	35·2	31·7	123·0	36·5	24·8	10·4
1918–20	28·5	89·4	23·6	43·9	9·8	16·1	68·7	18·9	12·1	3·7
1921–25	11·6	59·6	11·1	7·3	2·3	9·2	48·4	9·1	5·5	1·5
1926–30	18·4	97·3	15·8	11·8	3·5	13·2	72·7	12·4	6·1	2·3
1931	54·7	218·7	51·2	54·1	17·5	37·2	172·6	45·8	17·4	9·3
1932	46·4	209·6	36·0	42·6	13·6	31·8	153·0	31·5	16·3	9·5
1933	35·2	172·9	26·7	28·5	8·8	27·3	139·5	27·6	12·9	6·4
1934	28·5	135·3	23·8	22·0	7·8	19·8	107·3	17·9	7·7	4·7
1935	23·4	118·8	18·5	14·2	6·6	18·6	104·6	16·0	8·6	3·3
1936	25·6	133·5	17·0	17·7	6·8	18·4	106·0	16·4	7·3	3·0
1937	26·8	140·8	15·5	21·8	6·7	21·5	131·9	11·9	9·4	4·3
1938	25·5	125·5	15·4	18·5	8·9	18·6	104·0	17·4	7·0	3·5
1939	18·8	91·8	11·2	16·5	5·7	14·3	78·4	10·7	5·8	4·1

* Standardized rates.

Notifications numbered 1,288 in 1938 and 1,500 in 1939, compared with 674, 2,216, 2,136, 1,695, 1,094, 883, 994 and 1,140 in the eight years from 1930 to 1937 (Table 28). The fatality ratio was 51 per 100 notified cases in 1938 compared with 94, 65, 57, 56, 67, 70, 64 and 61 in the eight years preceding, but in 1939 it fell to 34. The impression given by the death-rates in Table XLI that 1939 was a year of low prevalence is false, the fall in mortality in 1939 being undoubtedly attributable to the application of sulphonamide therapy. Prevalence as measured by notifications has been increasing each year since 1935, but despite this the death rates at ages under 5 and at 15–25 began to decline in 1938, and the improvement became greater in 1939 and spread to all age groups except females over 25.

The recent trends of prevalence and fatality in Greater London and the Density aggregates are compared below.

	Notified cases per million living				Deaths per 100 cases notified			
	1936	1937	1938	1939	1936	1937	1938	1939
Greater London ...	22	31	34	33	61	55	43	27
County boroughs*	40	42	45	43	60	55	45	33
Other urban districts*	18	21	26	39	61	69	59	36
Rural districts* ...	11	11	14	23	104	96	75	39

* Excluding Greater London.

Table XLII.—Cerebro-spinal Fever ; Mortality, Prevalence and Fatality, 1938 and 1939.

	Deaths per million living		Cases per million living		Deaths per 100 cases notified	
	1938	1939	1938	1939	1938	1939
England and Wales ...	16	12	31†	36†	51	33
South-East	13	9	28	28	46	31
Greater London ...	14	9	34	33	43	27
Remainder	11	8	19	20	54	40
North	20	13	37	35	55	37
North I	17	9	29	32	59	27
,, II	21	9	29	25	73	38
,, III	19	8	23	16	82	50
,, IV	22	17	49	48	46	36
Midland	17	13	37	36	47	36
Midland I	18	13	41	37	45	35
,, II	15	12	29	33	53	37
East	8	8	11	18	67	44
South-West	9	8	15	21	56	38
Wales	17	35	33	123	50	28
Wales I	21	42	45	154	47	27
,, II	4	16	1	44	300	35
County boroughs* ...	20	14	45	43	45	33
Other urban districts*	15	14	26	39	59	36
Rural districts* ...	11	9	14	23	75	39
Greater London { Admin. Co.	15	9	47	47	32	19
Greater London { Outer Ring	14	9	22	22	64	40

* Excluding Greater London. † Including Port Health Districts.

Prevalence, as indicated by notifications, increased significantly first in Greater London in 1937, and later in the small towns and rural areas, with little change in the county boroughs. The fatality ratio was about 60 per cent. in all urban areas in 1936 and fell in London and the large towns to 55 in 1937 and about 45 in 1938 without improving in the small towns. During this period notification was evidently becoming more complete in the rural areas. In 1939 there was in each type of area a considerable decline in fatality. Table XLII compares 1938 and 1939 rates for each region and shows that the increase in notified prevalence in 1939 was appreciable only in Wales, the East, South West and Midland II, which are regions with few large towns. It seems probable

that, except perhaps in Wales (where the number of notifications increased from 82 to 307), these apparent increases in 1939 were mainly due to a more complete notification resulting from more effective means of treatment becoming available. All the regional groups registered great improvements in the fatality ratio, the 1939 figures ranging from 19 per cent. in London County to 50 in North III.

23–32. **Tuberculosis.**—The deaths classified to tuberculous affections in the aggregate numbered 26,176 in 1938 and 26,276 (including 26 of non-civilians) in 1939, compared with 28,529 in 1937. There was, therefore, a decrease of 2,353 in 1938, followed by an increase of 100 in 1939. Deaths of males in the three years 1937, 1938, 1939 numbered 16,246, 15,124, 15,326 and of females 12,283, 11,052, 10,950.

The standardized death-rate declined from 657 per million in each year 1936 and 1937 to 602 in 1938 and 595 in 1939. Table 9 shows that, with the exception of 1927, 1929 and 1937, each year since 1918 (when the rate was 1,539) has registered a fall in this rate. The standardized rates in successive triennial periods from 1919–21 to 1937–39, and the decreases compared with the preceding triennium, have been :—

	1919–21	1922–24	1925–27	1928–30	1931–33	1934–36	1937–39
Rate ...	1,156	1,065	970	904	828	695	618
Decrease...	324	91	95	66	76	133	77

Table XLIII gives the death-rates for each sex and at different ages in 1931–35 and in separate years since.

Table XLIII.—Mortality from Tuberculosis (All Forms) per Million Population, 1931–35, 1936, 1937, 1938 and 1939.

	Males					Females					Persons		
	1931–35	1936	1937	1938	1939	1931–35	1936	1937	1938	1939	1931–35	1938	1939
All Ages { Crude ...	945	825	824	764	777	680	570	576	516	508	807	635	636
All Ages { Standard :	879	744	739	685	685	695	578	584	528	514	782	602	595
0–	710	520	553	520	465	589	476	482	456	395	650	489	431
5–	234	198	168	156	160	227	160	153	167	140	231	161	150
10–	190	148	149	147	122	270	207	212	176	183	230	162	152
15–	673	494	502	494	518	1,015	807	798	746	744	843	619	632
20–	1,143	946	888	861	849	1,295	1,164	1,174	1,052	1,053	1,220	956	955
25–	1,099	922	926	845	830	1,026	848	888	817	783	1,062	831	806
35–	1,258	1,053	1,071	939	958	726	594	597	511	524	970	713	728
45–	1,490	1,353	1,321	1,235	1,258	544	458	451	390	406	982	777	798
55–	1,295	1,281	1,288	1,195	1,302	466	417	415	368	365	856	749	797
65–	830	790	808	751	786	388	356	371	306	306	586	506	521
75 and over ...	358	398	371	349	329	247	252	244	241	219	290	283	261

Comparing 1937 with 1931–35, there was a pronounced improvement amongst males of every age group under 55 and amongst females of every age group under 65 ; and in 1938 further decreases occurred for every sex-age group except girls aged 5–10. In 1939 the only groups with appreciably lower rates than the preceding year were children under 5, girls aged 5–10, boys aged 10–15, males aged 20–35, females aged 25–35, and both sexes aged 75 and over, whilst the rates increased substantially amongst males aged 15–20 and between 35 and 75 and females between 35 and 55.

The trend of death-rates by sex and age over a longer period of time is shown in Table XLIV, where 1922–24 rates are first expressed per cent. of the corresponding rates in 1912–14, followed by 1932–34 rates per cent. of those in 1922–24, and 1938 and 1939 rates per cent. of those in 1932–34.

Table XLIV.—Mortality from Tuberculosis (All Forms) in 1922–24 and 1932–34 per cent. of 10 years previously, and in 1938 and 1939 per cent. of 1932–34.

	1922–24 per cent. of 1912–14		1932–34 per cent. of 1922–24		1938 per cent. of 1932–34		1939 per cent. of 1932–34	
	Males	Females	Males	Females	Males	Females	Males	Females
All Ages { Crude ...	78	81	77	72	81	76	82	75
All Ages { Standardized	77	81	74	73	78	76	78	74
0–	57	57	61	62	72	76	64	66
5–	65	68	62	59	67	73	69	61
10–	75	77	58	50	75	66	62	69
15–	91	105	78	80	74	73	74	73
20–	104	110	74	86	74	81	73	80
25–	85	91	72	80	77	80	75	76
35–	79	75	72	70	76	70	77	71
45–	73	68	86	68	83	72	84	75
55–	68	71	86	67	92	80	101	79
65–	75	78	79	66	92	79	96	78
75 and over ...	69	80	89	68	97	100	91	91

Using the mean rates as measures of the mortality at the central points 1913, 1923 and 1933 respectively, and supposing that the percentage change in death rate from one year to the next was constant during an interval, the *annual* percentage changes represented by the figures in Table XLIV were as follows :—

	Males			Females		
	1913 to 1923	1923 to 1933	1933 to 1939	1913 to 1923	1923 to 1933	1933 to 1939
All ages ...	*–2·5*	*–2·6*	*–3·3*	*–2·1*	*–3·2*	*–4·7*
0 –	–5·5	–4·8	–7·2	–5·5	–4·7	–6·7
5 –	–4·2	–4·7	–6·0	–3·8	–5·1	–7·9
10 –	–2·8	–5·3	–7·7	–2·6	–6·7	–6·0
15 –	–0·9	–2·5	–4·9	+0·5	–2·2	–5·1
20 –	+0·4	–3·0	–5·1	+0·9	–1·5	–3·6
25 –	–1·6	–3·2	–4·7	–0·9	–2·2	–4·5
35 –	–2·3	–3·2	–4·3	–2·8	–3·5	–5·5
45 –	–3·1	–1·5	–2·9	–3·8	–3·8	–4·7
55 –	–3·8	–1·5	+0·2	–3·4	–3·9	–3·9
65 –	–2·8	–2·3	–0·7	–2·5	–4·1	–4·1
75 and over ...	–3·6	–1·2	–1·6	–2·2	–3·8	–1·6

The crude death rate at all ages for males declined by 2½ per cent. annually during the periods between 1913 and 1933, and in more recent years by nearly 3½ per cent. annually, whilst for females the rate of fall increased from 2 per cent. annually in the first period to over 4½ per cent. in the third. For children under 5 the rate of fall since 1933 was about 7 per cent. annually compared with about 5 per cent. previously, and at ages 5–15 it was between 6 and 8 per cent. compared with 3 or 4 during the first period. At 15–20 there were no substantial changes between 1913 and 1923, but the next decade showed an annual fall of over 2 per cent. for each sex, increasing to 5 per cent. since 1933. At 20–25 a

rise in mortality rate occurred between 1913 and 1923, giving place in the next 10 years to an annual fall of about 3 per cent. for males and 1½ per cent. for females, and in recent years to more rapid improvement amounting to 5 and 3½ per cent. respectively per annum.

At ages 25–35 also, mortality fell by only 1½ per cent. annually for males and 1 per cent. for females between 1913 and 1923, but this improved to 3 and 2 per cent. in the next period, and to 4½ per cent. for each sex since 1933. At 35–55 the rate of fall in death rates continues to be more rapid amongst females than males. At 55–65 the decline in male mortality has been arrested since 1933 and at 65–75 there has been little improvement, although the rate of fall in female mortality has continued unchecked.

The percentage changes in the standardized rate at all ages in successive periods since 1851–60 are shown in Table XLV ; the decennial rate of fall ranged from 10 to 21 per cent. between 1871–80 and 1911–20, but has increased since to about 30 per cent.

Table XLV.—Standardized Mortality from Tuberculosis, Respiratory and Non-Respiratory, and Mortality at Ages 0–5, 5–10 and 10–15 from Non-respiratory Tuberculosis, per million living, 1851–1939. Percentage change during each decade.

	All forms All ages (standardized)		Respiratory All ages (standardized)		Non-respiratory				
					0–5	5–10	10–15	All ages (standardized)	
	Males	Females	Males	Females	Persons	Persons	Persons	Males	Females
	Death rates per million living								
1851–60	3,477	3,483	2,694	2,854	4,470	640	319	783	629
1861–70	3,357	3,177	2,612	2,578	4,496	528	270	745	599
1871–80	3,080	2,701	2,359	2,119	4,460	505	257	721	582
1881–90	2,656	2,251	1,966	1,672	3,959	555	307	690	579
1891–1900... ...	2,285	1,780	1,633	1,226	3,517	518	301	652	554
1901–10	1,891	1,424	1,358	951	2,556	501	303	533	473
1911–20	1,705	1,210	1,306	868	1,544	444	303	399	342
1921–30	1,110	887	869	677	836	265	182	241	210
1931	976	772	780	601	651	211	148	196	171
1932	913	727	718	562	656	195	135	195	165
1933	901	707	729	559	563	183	118	172	148
1934	832	657	669	512	528	183	120	163	145
1935	774	610	627	486	432	160	103	147	124
1931–35	879	695	704	544	568	187	125	175	151
1936	744	578	601	457	429	159	99	143	121
1937	739	584	595	459	454	139	106	144	125
1938	685	528	550	410	432	138	94	135	118
1939	685	514	556	404	382	130	91	129	110
	Percentage change from previous decade								
1861–70	– 3	– 9	– 3	–10	+ 1	–17	–15	– 5	– 5
1871–80	– 8	–15	–10	–18	– 1	– 4	– 5	– 3	– 3
1881–90	–14	–17	–17	–21	–11	+10	+19	– 4	– 1
1891–1900... ...	–14	–21	–17	–27	–11	– 7	– 2	– 5	– 4
1901–10	–17	–20	–17	–22	–27	– 3	+ 1	–18	–15
1911–20	–10	–15	– 4	– 9	–40	–11	0	–25	–28
1921–30	–35	–27	–33	–22	–46	–40	–40	–40	–39
1932–39	–29	–31	–27	–29	–42	–39	–41	–36	–37

In Table L of the Review for 1935 were given, at separate age groups, the rates per million living from tuberculosis of all forms in decennial periods from 1851–60 to 1901–10 and in quinquennial periods from 1911–15 to 1931–35, and Table XLIII of this Review continues the series for years 1936, 1937, 1938 and 1939. Comparison of the 1939 rates with those of 1851–60 shows that the mortality of children under 5 has fallen to less than one-thirteenth of the rate in the middle of last century (boys from 6,323 to 465, girls from 5,232 to 395). At ages 5–10 the rates have fallen to about one-eighth, and at 10–15 to about one-ninth of the 1851–60 levels. At ages between 15 and 35 they have fallen to about one-fifth. Between 35 and 75 the relative decline has been much greater amongst females than males, the ratios of 1939 to 1851–60 rates at successive age groups 35–, 45–, 55–, 65–75 being about one-eighth, one-eighth, one-seventh and one-sixth respectively for females compared with about one-fourth, one-third, one-third and one-third for males.

There have been periods of arrest in this decline of mortality, apart from that of 1914–18 when a retrogression occurred at most ages. Mortality was almost stationary for boys aged 10–15 from 1896 to 1913, for males aged 15–20 from 1902 to 1911 and from 1924 to 1931, for girls aged 10–15 from 1898 to 1911, for females aged 15–20 from 1901 to 1912 and 1926 to 1931, and for females aged 20–25 from 1903 to 1908 and 1923 to 1929.

Respiratory Tuberculosis.—Deaths from tuberculosis of the respiratory system numbered 21,930 in 1938 and 22,199 (including 20 of non-civilians) in 1939, compared with 23,970 in 1937 and 23,801 in 1936. These numbers represent 4·6 and 4·4 per cent. respectively of all deaths, compared with 6·5 and 5·9 in 1928–29. The trend of the standardized death-rates with the percentage decline in successive periods since 1851–60, is shown in Table XLV, from which it appears that the decennial rate of fall since 1911–20 has averaged about 30 per cent. amongst males and 25 per cent. amongst females for respiratory tuberculosis compared with about 38 per cent. in each sex for the non-respiratory forms.

The death-rates at separate ages in 1938 and 1939 are given in Table XLVII, and the trend of rates since 1851–60 for young adults at ages 15–20, 20–25 and 25–35 is compared in Table XLVI with that of the equivalent average death-rate at all ages under 65. (For rates at other ages from 1851–60 to 1931–35, see Table L of the Review for 1935).

During the 60 years between 1851–60 and 1911–20 phthisis mortality at 15–20 declined by 67 per cent. for males and 68 per cent. for females ; at 20–25 it fell by 67 and 69 per cent. and at 25–35 by 58 and 71 per cent. for males and females respectively. The corresponding decline in the equivalent average rates under 65 was 53 per cent. for males and 64 per cent. for females. The more recent progress at 5 year intervals is shown below by expressing the rates in terms of 1921–25 taken as 100.

	Males.				Females.			
	15–20	20–25	25–35	*E.A.R.*	15–20	20–25	25–35	*E.A.R.*
1921–25 ...	100	100	100	100	100	100	100	100
1926–30 ...	92	80	86	89	92	94	92	87
1931–35 ...	77	75	72	78	79	86	80	74
1937–39 ...	56	57	56	65	58	73	65	57

The mortality of young adult females aged 20–35 has not fallen in the last 15 years so rapidly as that of males of the same age or females of other ages, but has nevertheless decreased by about 30 per cent.

Table XLVI.—Phthisis Mortality Rates per 100,000 living at ages 15–20, 20–25, 25–35 and Equivalent Average Rates at all ages under 65 ; 1851–1939.

	Males				Females			
	15–20	20–25	25–35	0–65 Equivalent average rates*	15–20	20–25	25–35	0–65 Equivalent average rates*
1851–60 ...	240	405	403	304	352	430	458	263
1861–70 ...	220	389	411	300	312	397	439	277
1871–80 ...	168	311	371	279	241	315	356	231
1881–90 ...	129	234	304	237	181	233	280	184
1891–1900...	99	189	237	201	129	159	192	137
1901–10 ...	76	152	197	169	99	123	147	107
1911–20 ...	80	135	168	143	114	134	134	94
1921 ...	71	136	139	115	114	141	121	80
1922 ...	67	146	143	117	106	143	117	78
1923 ...	63	133	140	108	130	129	117	74
1924 ...	62	133	136	109	107	136	115	74
1925 ...	64	117	135	109	107	134	112	72
1921–25 ...	*66*	*133*	*139*	*112*	*109*	*137*	*117*	*76*
1926 ...	59	109	126	101	97	131	107	66
1927 ...	61	108	123	102	103	130	112	69
1928 ...	62	105	118	98	101	126	106	64
1929 ...	63	107	119	104	100	134	109	66
1930 ...	61	101	112	95	98	123	105	63
1926–30 ...	*61*	*106*	*119*	*100*	*100*	*129*	*108*	*66*
1931 ...	61	108	111	96	98	123	103	63
1932 ...	54	105	101	89	92	121	95	58
1933 ...	50	106	105	90	88	120	97	58
1934 ...	46	95	94	83	81	113	91	53
1935 ...	40	87	89	78	72	110	85	50
1931–35 ...	*51*	*100*	*100*	*87*	*86*	*118*	*94*	*56*
1936 ...	36	81	84	76	68	107	78	47
1937 ...	37	78	83	76	67	106	82	47
1938 ...	35	75	77	70	62	96	75	42
1939 ...	38	74	75	72	61	97	72	42

* Rates in the population redistributed to contain equal numbers at each age.

The distribution of phthisis mortality in 1938 and 1939 by regions and by class of area as well as by sex and age is shown in Table XLVII. The relation to urbanization is brought out by the contrast between the standardized rates for males, in the county boroughs on the one hand (69 and 72 per 100,000 in the two years respectively) and in the rural districts on the other (37 and 34). For females the contrast is not quite so pronounced, the rates in each year being 49 for county boroughs and 33 for rural areas. Wales shows high rates for young adult females, about 70 per cent. in excess of the national level at 15–25 and 50 per cent. in excess at 25–35.

Table XLVII.—Tuberculosis of Respiratory System : Mortality per 100,000 Living at different Ages in different Areas, 1938 and 1939.

	England and Wales	Greater London	London Administrative County	South-East excluding Greater London	North	Midland	East	South-West	Wales	County boroughs*	Other urban districts*	Rural districts*
MALES. 1938												
All Ages—												
Crude	65	71	85	56	69	63	48	54	75	83	56	43
Standardized	55	59	69	47	58	54	42	46	66	69	49	37
0–	7	8	10	7	7	7	3	2	2	9	5	4
5–	4	4	6	3	4	2	4	2	6	4	3	3
15–	54	55	60	35	58	58	39	49	77	65	53	37
25–	77	78	82	71	77	72	69	82	96	93	70	58
35–	87	90	103	86	89	85	81	58	99	106	81	59
45–	117	126	154	99	126	115	79	95	130	156	97	73
55–	113	131	180	88	130	109	58	81	117	161	83	68
65–	68	85	118	55	70	69	44	54	78	89	57	43
75 and over	29	40	57	32	24	27	22	20	31	33	29	17
MALES. 1939												
All Ages—												
Crude	67	78	100	52	71	67	50	52	70	86	57	40
Standardized	56	63	78	44	60	56	43	43	61	72	49	34
0–	6	9	10	4	6	6	5	1	5	9	4	1
5–	3	2	1	1	4	4	2	1	2	4	3	1
15–	54	57	64	36	62	51	35	40	75	66	53	32
25–	75	78	96	64	80	73	74	62	93	97	68	50
35–	89	99	134	79	88	94	67	80	89	111	78	60
45–	119	130	162	95	130	126	88	97	101	161	98	70
55–	123	150	191	94	130	128	87	69	125	166	99	65
65 and over	61	102	130	38	62	53	33	48	64	76	42	36
FEMALES. 1938												
All Ages—												
Crude	42	40	45	34	44	45	34	39	60	51	40	34
Standardized	41	37	41	32	43	44	33	38	62	49	39	33
0–	5	8	14	4	4	4	2	3	2	5	3	1
5–	6	5	4	4	8	5	3	7	7	8	6	3
15–	78	68	69	48	86	88	62	74	135	98	72	64
25–	75	70	80	64	78	77	61	60	111	87	72	63
35–	47	40	44	47	46	53	40	50	62	57	46	39
45–	35	33	37	29	36	41	29	36	44	43	33	28
55–	32	30	37	33	32	33	33	31	40	39	30	28
65–	25	30	36	21	24	26	19	29	33	26	23	24
75 and over	17	21	27	16	15	10	18	21	20	15	17	13
FEMALES. 1939												
All Ages—												
Crude	42	42	45	32	44	43	37	37	60	51	38	34
Standardized	40	38	40	31	44	41	36	34	61	49	37	33
0–	4	5	5	4	5	3	2	1	6	6	3	2
5–	6	6	6	2	7	5	4	3	9	7	5	4
15–	77	66	66	51	91	77	69	51	129	96	74	60
25–	72	70	72	55	76	72	64	61	109	86	66	58
35–	48	50	51	41	45	52	46	51	63	56	42	42
45–	37	34	39	34	36	42	26	33	48	45	32	32
55–	32	32	34	29	32	33	38	35	32	37	28	30
65 and over	22	27	32	18	20	18	19	33	33	24	19	21

* Excluding Greater London.

Effects of Multiple Cause certification on Tuberculosis death rates.—When tuberculosis is entered on a death certificate together with some other cause,

precedence is given to the latter if it be one of the acute infections, cancer or other of the diseases set out under Rule 6 (Manual of International List, p. xxx), but over most other causes tuberculosis is preferred in classification, regardless of the order of statement of the causes on the certificate. When respiratory tuberculosis is associated with tuberculosis of some other organ the death is classed to the former, and when tuberculosis of more than one site other than the lung is mentioned, the assignment is to No. 32, Disseminated tuberculosis. Classification of multiple cause deaths according to the certifier's choice as to which was the more essential cause rather than by the operation of these rules would reduce the deaths classed to tuberculosis of all forms and of the respiratory form by about 3 per cent. as the following comparison for 1936, 1937 and 1938 demonstrates. Deaths classed to tuberculosis of the skin and subcutaneous tissues would be reduced by about 19 per cent. and those classed to disseminated tuberculosis by about 35 per cent. whereas deaths classed to tuberculosis of the intestines and peritoneum and of the skeletal, genito-urinary and lymphatic systems would be increased considerably owing to transfer from the disseminated group.

	Deaths classed to the disease in 1936–38						
	By selective rules (Table 6)			By certifier's order of preference*			Per cent. change
	1936	1937	1938	1936	1937	1938	1936–38
Tuberculosis, all forms ...	28,268	28,529	26,176	27,445	27,732	25,517	— 3
Respiratory system... ...	23,801	23,970	21,930	22,993	23,193	21,260	— 3
Central nervous system ...	1,792	1,796	1,744	1,857	1,847	1,791	+ 3
Intestines, peritoneum ...	682	676	595	802	804	740	+20
Vertebral column	388	384	319	437	441	369	+14
Other bones and joints ...	221	185	175	262	225	226	+23
Skin, subcutaneous tissues	44	62	41	37	46	36	—19
Lymphatic system	61	53	45	69	70	44	+15
Genito-urinary system ...	292	272	264	363	345	324	+25
Other organs	28	45	41	32	44	36	— 2
Disseminated tuberculosis	959	1,086	1,022	593	717	691	—35

* These figures for 1936 and 1937 differ from those given in the Review for 1937 in two respects :—

(1) the rule for tuberculosis of more than one site other than lung here gives place to the certifier's preference where one site is preferred over the other as cause of death, resulting in large transfers from the disseminated group to some of the other groups, and

(2) no transfers are made to " indefinite causes " (see note on page 49).

The classification in force from 1940 onwards, besides following the certifier's order of preference, will be slightly affected also by changes in the content of the groups made in the course of the 5th Revision of the International List, such as the transfer to respiratory tuberculosis of deaths from hæmoptysis of unknown cause and deaths certified as due to " fibroid phthisis." The effect of this is to increase the annual totals for respiratory tuberculosis and all forms of tuberculosis by about 20.

Appendix B.1 of Part I (1939) embodies all these changes, and the numbers there tabulated for 1939 are comparable with the 1936–38 figures, after correction as above, and with those which will appear in all tables for years 1940

onwards. By aggregating the corrected deaths in the four years 1936–39 conversion ratios for application to years before 1936 will be given in the Review for 1940 and all serial tables of deaths and rates will be corrected in respect of years back to 1931.

The procedure outlined above for tuberculosis exemplifies the method whereby the present classification will be brought into line with that in force from 1940 so that statistical continuity will be maintained (see also page 48).

34.—**Syphilis.**—Deaths assigned to this group numbered 1,263 in 1938 (883 of males and 380 of females), and 1,254 in 1939 (866 of males including 4 non-civilians, 388 of females). In the nine years 1931–39 the deaths classed to congenital syphilis were 412, 365, 296, 261, 239, 220, 196, 174 and 166 ; and those classed to acquired or unspecified syphilis were 1,034, 938, 1,025, 973, 1,003, 983, 1,047, 1,089 and 1,088 (including 4 non-civilians).

Standardized mortality of males declined from 77 per million in 1871–80 to 58 in 1901–10, increased to 74 in 1917 and 1920, fell again to 39 in 1925, rose to 50 in 1928 and has again fallen to 34 in 1937–38 and 32 in 1939. Female mortality followed a similar course, from 70 in 1871–80 to 45 in 1901–10, rising to 56 in 1920 and falling to 25 in 1925, followed by a temporary increase to 29 in 1927 and subsequent fall to 15 in 1938 and 16 in 1939. The rates for syphilis, tabes dorsalis, general paralysis of the insane and aneurysm from 1911 to 1928 were set out in the Review for 1928 (Table XLIX) and this series is continued in Table XLVIII, which gives the rates for 1911–20, 1921–25 and each year 1926 to 1939. Since no significance can be attached to the mention of or omission of mention of syphilis on certificates of death from the last 3 causes, such deaths are all classed to these causes and not to syphilis itself. The combined rate from the 4 causes has declined since 1911–20 by 54 per cent. for males and by 47 per cent. for females.

Table XLVIII.—Standardized Mortality per million living from Syphilis and Diseases of Syphilitic Origin, 1911–39.

	1911–20	1921–25	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939
MALES																
34. Syphilis	68	49	43	45	50	45	45	45	39	39	36	37	35	34	34	32
80. Tabes dorsalis	29	26	26	26	25	29	22	20	23	21	17	19	17	16	15	14
83. General paralysis of insane	86	60	51	54	49	42	40	40	35	31	32	28	25	22	24	23
96. Aneurysm	42	35	32	36	37	37	38	38	36	35	36	36	37	35	36	35
Total	225	170	152	161	161	153	145	143	133	126	121	120	114	107	109	104
FEMALES																
34. Syphilis	48	34	26	29	28	26	25	24	23	21	18	16	16	16	15	16
80. Tabes dorsalis	5	5	4	5	4	5	4	4	5	4	3	4	3	3	3	3
83. General paralysis of insane	17	12	11	11	10	10	8	10	9	9	8	9	8	8	7	7
96. Aneurysm	9	8	9	9	9	10	10	10	11	13	13	14	16	16	17	16
Total	79	59	50	54	51	51	47	48	48	47	42	43	43	43	42	42

Syphilitic diseases, when associated on a death certificate with some other cause of death, are given high preference in statistical classification, being preferred to most diseases except acute infections and cancer (Rule 6, Manual of International List, 1929). Classification according to the certifier's choice of essential cause would reduce the total deaths in 1936–39 classed to the first 3 groups in Table XLVIII from 10,672 to 9,314 or by 13 per cent., " syphilis " being reduced by 10 per cent., tabes dorsalis by 22 and general paralysis by 10 per cent. The new comprehensive group of syphilitic diseases in the revised classification (Appendix B, 1939) will include these and aneurysm of the aorta, but not other aneurysm.

The gradual increase in female mortality from aneurysm since 1921–25 contrasts with the favourable trend for the other syphilitic diseases.

36. **Purulent infection, Septicæmia.**—Deaths classed to this group of generalized septic infections numbered 494 in 1938 and 460 (including 2 of non-civilians) in 1939. The crude annual death rate ranged from 13 to 18 per million during the period 1911–28, reached 22 in 1929–30 and in the nine years 1931–39 has been 19, 17, 19, 20, 17, 14, 11, 12 and 11 per million.

39(pt). **Weil's Disease.**—The deaths attributed to this disease and its various synonyms numbered 11 in 1938 and 16 in 1939, compared with 17 in 1937. The sex and age distribution of the 87 deaths which have been registered during the last 9 years is shown below :—

Ages	1931–35		1936		1937		1938		1939	
	M	F	M	F	M	F	M	F	M	F
0–	—	1	—	—	1	—	—	—	—	—
15–	4	3	—	—	1	—	—	1	—	—
25–	5	—	4	—	4	—	—	—	3	—
35–	4	—	—	1	2	1	—	—	3	—
45–	7	—	2	—	4	1	4	—	5	—
55–	6	—	1	1	2	—	5	—	3	—
65 and over ...	3	1	—	—	1	—	1	—	1	1
All ages	29	5	7	2	15	2	10	1	15	1

44 (1 and 2).—**Vaccinia and Sequelæ of Vaccination.**—In 1938 five deaths were assigned to the heading of vaccinia, namely of a male aged 1 month certified as " acute bronchitis, generalized vaccinia," of a male aged 14 certified as " acute encephalomyelitis " with vaccination as contributory cause, of a male aged 16 certified as " post-vaccinal encephalitis," of a male aged 18 certified as " encephalitis " which was ascertained by enquiry to have followed vaccination, and of a female aged 1 month certified as " post-vaccinal encephalomyelitis." Three deaths following vaccination against smallpox were classed to the group " other sequelæ of vaccination," of a male aged 5 months certified as " infantile convulsions, reaction to vaccination," but without evidence of causal connection (death having occurred after a fortnight), and of females aged 4 weeks and 5 months from septicæmia following local infections after vaccination. Two other deaths were classed to this group which did not follow vaccination against small pox, interpreting the title of the group in its widest sense to include the administration of vaccines or sera for the prevention (not treatment) of diseases other than smallpox. One of these deaths was of a male aged 27 attributed to " anaphylaxis following T.A.B. inoculation ; persistent thymus and fatty degeneration of heart," and the other was of a female aged 29 from " anaphylactic shock following anti-tetanic serum " given after injuries caused by a motor accident.

Deaths of a male aged 4 months and of females aged 1 week, 4 months and 5 months, from morbid conditions becoming manifest after vaccination but without evidence of any causal association with it, were assigned to congenital malformation of the heart, atelectasis, measles and broncho-pneumonia respectively, vaccination being mentioned on the death certificate in the third of these cases.

In 1939 one death was assigned to " vaccinia," namely of a male aged 20 certified as " broncho-pneumonia following vaccinal encephalitis." Two deaths following vaccination against smallpox were classed to " other sequelæ of vaccination," of a male aged 4 months certified as " septicæmia " which was ascertained by enquiry to have followed vaccination, and of a male aged 31 certified as " myocardial failure from vaccinia " but subsequently found to have resulted from a pustular infection appearing after vaccination and not identifiable as vaccinia.

Three other deaths were classed to this group which did not follow vaccination against smallpox, namely of a male aged 13 attributed to anaphylaxis after inoculation against scarlet fever and to an enlarged thymus, of a male (non-civilian) aged 39 attributed to " status lymphaticus due to anaphylactic shock produced by inoculation," and of a male aged 40 from streptococcal infection following an injection of anti-tetanus serum.

The death of a male aged 17 from acute hæmorrhagic encephalitis, which became manifest 3 months after vaccination without any clinical or post-mortem evidence of causal association with it, was assigned to encephalitis. Vaccination was not mentioned on the certificate either in this case or in the septicæmia case above.

44 (6 : 1). **" Pink Disease "**—The conditions of infancy and early childhood described as pink disease, erythrœdema, erythrœdema polyneuritica, dermato-neuritis, dermato-polyneuritis and acrodynia were included from 1931 onwards in this group by a decision of the International Conference of 1929, although the ætiology was at that time, and still is, obscure. Deaths so classed in successive years increased steadily from 1923 to 1936, the numbers being 1, 4, 8, 20, 20, 21, 28, 33, 33, 43, 54, 59, 60 and 88. In 1937 they numbered 73, in 1938 81 and in 1939 69. The sex and age distribution in each year is shown in Table XLIX.

Table XLIX.—Deaths from Pink Disease and its Synonyms, by Sex and Age. 1923–1939.

	Males				Females			
	0–	1–	5–	All ages	0–	1–	5–	All ages
1923 ...	—	—	—	—	—	1	—	1
1924 ...	—	1	—	1	—	3	—	3
1925 ...	3	—	—	3	1	4	—	5
1926 ...	6	4	1	11	5	4	—	9
1927 ...	3	3	—	6	8	6	—	14
1928 ...	5	8	—	13	4	4	—	8
1929 ...	11	5	—	16	8	4	—	12
1930 ...	14	5	—	19	8	6	—	14
1931 ...	7	6	1	14	13	6	—	19
1932 ...	15	10	2	27	5	11	—	16
1933 ...	18	11	—	29	14	11	—	25
1934 ...	23	10	—	33	18	8	—	26
1935 ...	21	13	—	34	18	7	1	26
1936 ...	23	14	—	37	24	26	1	51
1937 ...	15	11	—	26	28	19	—	47
1938 ...	24	18	—	42	24	15	—	39
1939 ...	18	9	—	27	24	16	2	42

45—53. **Cancer.**—The deaths classed to cancer (which includes all forms of neoplasm regarded as malignant for the purposes of the International List of 1929) during 1938 numbered 68,605—32,692 of males and 35,913 of females. In 1939 the number was 69,001 including 32,821 of civilian males, 20 of non-civilian males and 36,160 of females. For both sexes these numbers are the highest recorded.

Of the 1938 deaths 61,203 were assigned to carcinoma, 2,783 to sarcoma and 4,619 to " Cancer " not otherwise defined. Of the 1939 deaths (excluding the non-civilians) 61,806, 2,699 and 4,476 respectively were assigned to these groups. The sarcoma group formed 40 per 1,000 of all cancer deaths in the two years, compared with 41 in 1937. The undefined group forms a diminishing proportion of the total, 66 per 1,000 in the two years compared with 76 in 1937.

Table L.—Mortality from Cancer by Sex and Age per million living, distinguishing that due to Cancer of the Breast and Genital Organs. 1938 and 1939.

	All sites			Breast and genital organs		Other sites	
	Males	Females	Persons	Males	Females	Males	Females
1938							
All ages { Crude... ...	1,652	1,676	1,665	126	655	1,526	1,021
All ages { Standardized	1,066	961	1,005	—	—	—	—
0–	41	35	38	1	3	40	33
5–	22	21	22	—	2	22	19
15–	56	45	51	4	8	52	37
25–	138	156	147	14	67	125	90
35–	469	708	595	22	399	447	309
45–	1,625	2,023	1,841	44	1,135	1,581	888
55–	4,680	4,075	4,353	241	1,761	4,438	2,314
65–	10,206	7,408	8,665	950	2,334	9,256	5,073
75 and over... ...	14,995	11,987	13,150	1,798	3,250	13,196	8,738
1939							
All ages { Crude ...	1,667	1,677	1,672	127	655	1,540	1,022
All ages { Standardized	1,051	943	989	—	—	—	—
0–	42	43	43	2	1	40	42
5–	20	16	18	1	1	19	15
15–	53	38	45	5	8	48	30
25–	142	159	151	15	61	127	98
35–	456	709	590	18	416	438	293
45–	1,656	2,011	1,848	45	1,096	1,611	915
55–	4,644	3,970	4,281	253	1,696	4,391	2,274
65–	9,717	7,215	8,334	855	2,288	8,862	4,927
75 and over... ...	15,146	11,750	13,043	1,855	3,370	13,291	8,380

The standardized death rates for males were 1,066 per million in 1938 and 1,051 in 1939, and for females 961 and 943 respectively. The male rate consistently increased to 1,023 in 1925, was temporarily lower in 1926–27, but then continued to rise to 1,052 in 1932. In 1933–34 it fell below 1,050 but in the last

5 years the rates have been 1,058, 1,068, 1,071, 1,066, 1,051. Table XLI of the Review for 1927, which gives the standardized rates for each sex from 1851 to 1927, shows that the female rate averaged 971 in 1911–15 and 978 in 1921–25. In 1925–29 it reached its highest quinquennial average of 994, followed by a decline to 969 in 1931–35. The rates of the last 4 years, 969, 951, 961 and 943 give a still lower average of 956 and suggest that the standardized rate for females has passed its maximal level and is now tending to decrease. This is not yet the case for males, whose average rate was 1,045 in 1931–35 and 1,064 in 1936–39. The male rate first exceeded that for females in 1924, and since that date the excess has been maintained, increasing to 120 in 1937, 105 in 1938 and 108 in 1939.

Table 9 shows that the standardized rate based on the 1901 population of both sexes, which averaged 998 in 1926–30 and 1,000 in 1931–35, rose to its highest level of 1,010 in 1936, the rates being then 1,002 in 1937, 1,005 in 1938 and 989 in 1939. The crude death-rate has continued to increase steadily, year by year, being 1,437 per million living in 1929, 1,665 in 1938 and 1,672 in 1939 (Table 7). The necessity for taking into account the differing age distributions of populations when comparing cancer death-rates has been stressed frequently (see Review for 1937, p. 107). Valid comparisons of cancer death-rates can only be made for separate age groups, or after standardization on the same standard population if broad groups are being compared.

The mortality from cancer as a whole in 1938 and 1939 is shown by sex and age in Table L for England and Wales. At ages 25 to 55 the female rates exceed the male rates, but from 55 years onwards males have the greater mortality. This female excess in middle age, relatively greatest at 35–45, arises from the special frequency at this period of cancer of the uterus and of the female breast, so the table also distinguishes the rates at each age from cancer of the breast and genital organs and from cancer of all other sites.

Table LI.—Cancer Mortality in 1911–20, 1921–30, 1937, 1938 and 1939 by Sex and Age per cent. of that in 1901–10.

	Males					Females				
	1911–20	1921–30	1937	1938	1939	1911–20	1921–30	1937	1938	1939
All ages—										
Crude ...	128	167	211	214	216	114	135	159	163	163
Standardized	114	128	137	136	134	102	104	101	102	100
0–	96	100	117	117	113	100	111	121	137	132
15–	107	112	141	137	129	103	106	127	136	115
25–	101	106	147	127	130	92	94	91	92	94
35–	102	101	112	113	110	93	90	82	84	84
45–	108	105	104	105	107	98	92	88	87	87
55–	114	121	121	120	119	99	96	90	92	90
65–	120	143	153	153	145	107	116	112	111	108
75 and over ...	124	162	190	190	192	116	143	150	152	149

Table LI shows the trend of cancer mortality at different ages by expressing the rates in 1911–20, 1921–30, 1937, 1938 and 1939 as percentages of the corresponding rate in 1901–10. The crude death-rate at all ages for males is more than double that in 1901–10, but the standardized rate shows only 36 per cent. excess in 1938 and 34 per cent. in 1939, compared with 37 in 1937. The crude rate for females is 63 per cent. above 1901–10, but the standardized rate, after rising by 4 per cent. in 1921–30, has returned to the 1901–10 level. The standardized figures are not affected as are the crude rates by the rapidly increasing proportion of elderly persons in the population but they suffer from a disadvantage in being based upon a standard population which no longer resembles the present population in age distribution and which gives insufficient weight to mortality at ages after 65. The equivalent average death-rates (E.D.R.) for each sex at ages under 65, that is to say the rates which would occur in populations consisting of equal numbers at each year of age up to 65*, together with the rates at 65–75 and 75 upwards, provide a somewhat better indication of the true trend of cancer mortality.

Expressing these rates also as percentages of the corresponding rate for 1901–10, the year-by-year trend of mortality from 1928 to 1939 is shewn below.

	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939
Males												
E.D.R. ...	116	113	112	114	116	114	115	116	116	117	116	116
65–	149	149	152	153	155	148	151	153	152	153	153	145
75 up	172	181	178	173	179	183	180	185	193	190	190	192
Females												
E.D.R. ...	94	92	92	92	92	92	92	90	90	89	90	89
65–	118	122	117	114	112	114	114	113	113	112	111	108
75 up	152	156	157	149	148	148	149	147	154	150	152	149

For males the E.D.R. at ages under 65 reached its highest level in 1937 but fell back in 1938 ; the rate at 65–75 which was almost stationary in 1935–38 also declined considerably in 1939, but the rate at 75 and over did not change appreciably from 1936 to 1939. For females the E.D.R. after remaining stationary from 1929 to 1934, has since tended to decline, and the rate at 65–75 has also fallen since 1934 ; the rate at 75 and over has shown no consistent change in recent years. The year-by-year trend in more detail of age from 1927 to 1937 was shown in the Review for 1937 (page 109) and is continued for years 1938 and 1939 in Table LI of the present Review.

* These are readily calculated by finding the arithmetic mean of the death-rates at the 13 quinquennial age groups between 0 and 65 (see pages 3 and 4).

Table LII.—Mortality per Million living by Sex and Age from Sarcoma, Carcinoma and " Cancer " undefined. 1931–35, 1938 and 1939.

	Sarcoma			Carcinoma			Cancer undefined		
	1931–35	1938	1939	1931–35	1938	1939	1931–35	1938	1939
MALES									
All ages—									
Crude	78	77	74	1,296	1,460	1,482	136	114	111
Standardized	63	60	57	889	932	923	93	73	70
0–	24	24	21	2	3	3	1	2	3
15–	30	31	31	13	20	18	3	5	4
25–	36	38	35	76	90	98	7	10	9
35–	63	65	53	344	378	370	33	26	34
45–	125	95	119	1,369	1,420	1,429	134	110	108
55–	202	196	175	4,080	4,157	4,179	411	327	289
65–	269	262	222	8,913	9,214	8,839	962	731	659
75 and over	284	265	270	12,533	13,737	13,824	1,388	992	1,045
FEMALES									
All ages—									
Crude	58	58	58	1,364	1,508	1,513	136	110	106
Standardized	44	43	42	842	855	841	83	63	60
0–	19	20	20	2	3	2	1	3	3
15–	21	23	19	15	19	16	3	4	2
25–	24	21	28	120	124	122	11	11	10
35–	41	47	39	635	619	632	55	42	38
45–	88	78	82	1,820	1,812	1,795	173	133	135
55–	137	127	124	3,618	3,694	3,609	352	254	237
65–	181	170	158	6,682	6,749	6,579	682	488	478
75 and over	199	191	186	10,410	10,955	10,811	1,094	841	746

The mortality attributed to sarcoma, carcinoma and cancer undefined at various ages is distinguished in Table LII, with comparative rates in 1931–35. Since the undefined group is decreasing, owing to greater precision in certification, it is necessary to allow for this before comparing sarcoma and carcinoma rates with past years. Assuming the excess of undefined cancers in 1931–35 and 1938 over the rates in 1939 to have been distributed between sarcoma and carcinoma in the same proportions as the defined deaths at each age, and expressing the corrected rates in 1938 and 1939 as percentages of those in 1931–35, the trend has been as follows :—

	Sarcoma						Carcinoma					
	Males			Females			Males			Females		
	1931–35	1938	1939	1931–35	1938	1939	1931–35	1938	1939	1931–35	1938	1939
All ages (standardized) ...	100	92	88	100	96	93	100	103	101	100	99	97
0–	100	105	95	100	118	118	100	—	—	100	—	—
15–	100	110	107	100	109	86	100	154	138	100	133	107
25–	100	109	100	100	88	117	100	121	131	100	103	101
35–	100	102	84	100	112	93	100	108	108	100	96	97
45–	100	75	94	100	87	91	100	102	103	100	98	97
55–	100	95	84	100	91	88	100	100	100	100	99	97
65–	100	95	80	100	91	85	100	101	96	100	98	96
75 up	100	91	93	100	94	90	100	106	107	100	103	101

Sarcoma rates have declined in recent years at ages over 35 for both sexes ; carcinoma rates have increased for males except at ages 55–75 but have decreased for females at all ages between 35 and 75. Details of sarcoma and carcinoma deaths according to site are given in Tables LV and LVI.

Cancer distribution in different parts of England and Wales is shown in Table LIII for 1938 and Table LIV for 1939. The standardized rate for each sex

is higher in the large towns than in the rural districts, the small towns being intermediate ; and this urban excess is much greater for males, 35 and 24 per cent. in 1938 and 1939, respectively, than for females, 9 and 8 per cent. Greater London and the North show, as usual, the highest standardized rates for males.

Table LIII.—Cancer (All Sites) : Mortality per 100,000 Living in different Areas at different Ages, 1938, and per cent. of that in England and Wales at 0–65, 65–, 75 and over, 1931–35 and 1936–38.

	England and Wales	Greater London	London Admin. County	South East excluding Greater London	North	Midland	East	South West	Wales	County boroughs outside Greater London	Other urban districts outside Greater London	Rural districts outside Greater London
	Mortality per 100,000 living, 1938											
MALES												
All ages (crude)	165	168	191	172	166	151	180	172	161	174	160	156
All ages (standardized) ...	107	115	126	97	114	100	99	91	106	119	101	88
0–	4	4	2	7	3	3	8	2	3	5	4	3
5–	2	2	2	2	3	2	4	2	1	3	2	2
15–...	6	5	6	6	5	6	5	8	6	5	6	6
25–...	14	14	15	12	16	13	16	11	12	16	12	13
35–...	47	52	57	41	48	45	48	36	48	52	44	36
45–...	163	182	202	136	174	145	143	148	171	183	153	120
55–...	468	513	594	421	501	425	410	383	503	530	436	371
65–...	1,021	1,067	1,155	920	1,111	1,004	898	885	1,019	1,166	988	838
75 and up	1,500	1,647	1,680	1,489	1,584	1,386	1,511	1,279	1,316	1,567	1,446	1,388
FEMALES												
All ages (crude)	168	157	169	184	166	158	184	203	162	166	173	174
All ages (standardized) ...	96	92	97	90	103	95	93	95	101	100	97	92
0–	4	3	1	5	4	4	—	2	4	3	4	4
5–	2	2	2	1	3	2	1	4	2	3	1	2
15–...	5	4	3	5	5	4	6	2	5	4	5	5
25–...	16	17	17	14	15	16	17	20	12	17	14	16
35–...	71	68	71	62	76	71	72	68	79	76	71	64
45–...	202	188	201	187	214	211	197	202	209	210	210	193
55–...	408	386	411	374	439	396	401	403	449	429	417	378
65–...	741	711	738	695	803	728	664	721	803	781	742	708
75 and up	1,199	1,184	1,248	1,209	1,279	1,127	1,200	1,144	1,155	1,215	1,201	1,190
	Equivalent Average Mortality at ages under 65, per cent. of that in England and Wales.											
MALES												
1931–35	100	108	121	89	107	97	84	86	97	112	95	81
1936–38	100	110	122	88	106	95	84	86	102	111	94	80
FEMALES												
1931–35	100	99	102	94	104	99	98	95	105	105	99	94
1936–38	100	96	100	92	106	99	101	97	108	106	101	93
	Mortality at ages 65–75, per cent. of that in England and Wales.											
MALES												
1931–35	100	106	114	91	106	99	93	92	94	110	99	85
1936–38	100	106	116	91	109	97	91	87	94	112	97	84
FEMALES												
1931–35	100	97	101	94	107	97	100	94	107	103	101	97
1936–38	100	98	103	93	107	99	93	95	108	105	101	94
	Mortality at ages 75 and over, per cent. of that in England and Wales.											
MALES												
1931–35	100	109	113	102	98	94	102	100	91	99	98	96
1936–38	100	111	116	97	101	95	98	93	96	102	97	94
FEMALES												
1931–35	100	101	103	101	102	98	103	96	92	99	102	97
1936–38	100	98	106	101	104	97	99	97	99	101	101	99

Table LIV.—Cancer (All Sites) : Mortality per 100,000 living in different Areas at different Ages, 1939.

	England and Wales	Greater London	London Admin. County	South East excluding Greater London	North	Midland	East	South West	Wales	County boroughs outside Greater London	Other urban districts outside Greater London	Rural districts outside Greater London
MALES												
All ages Crude	167	170	195	170	166	156	185	178	158	174	162	159
Standardized	105	112	118	96	106	103	102	95	98	113	99	91
0–	4	4	6	4	4	4	3	4	9	4	4	5
5–	2	2	1	3	1	1	3	3	3	2	2	2
15–	5	4	4	5	5	5	8	8	5	5	5	6
25–	14	16	16	13	15	13	16	11	12	16	13	12
35–	46	50	48	36	51	46	34	41	38	52	43	36
45–	166	181	207	140	175	165	146	137	164	190	151	131
55–	464	493	562	426	499	447	409	375	453	516	446	380
65 and up	1,109	1,207	1,208	1,068	1,086	1,107	1,187	1,085	1,010	1,165	1,058	1,030
FEMALES												
All ages Crude	168	165	176	177	165	158	191	195	160	168	167	172
Standardized	94	96	97	88	97	94	99	92	96	98	93	91
0–	4	8	10	4	3	4	2	4	6	2	5	3
5–	2	1	1	2	2	2	2	1	2	2	2	1
15–	4	5	6	5	4	3	1	3	3	3	4	4
25–	16	17	21	14	17	15	11	16	15	16	16	15
35–	71	74	74	60	75	69	72	62	77	73	70	66
45–	201	199	198	193	204	196	208	208	217	209	202	189
55–	397	399	396	367	407	405	414	379	402	419	385	378
65 and up	861	868	879	799	889	857	940	848	847	888	839	850

Table LIII also expresses the equivalent average mortality at ages under 65 and the death rates at 65–75 and 75 upwards, in terms of the corresponding rate for England and Wales taken as 100, for the two periods 1931–35 and 1936–38. Comparing the index for London County with that for the other large towns and the latter with the rural district index, the differences are as follows :

	London A.C. in excess or defect of County boroughs			County boroughs in excess or defect of Rural districts		
	Under 65	65 –	75 *& up*	*Under* 65	65 –	75 *& up*
Males.						
1931–35	+ 9	+ 4	+14	+31	+25	+ 3
1936–38	+11	+ 4	+14	+31	+28	+ 8
Females.						
1931–35	– 3	– 2	+ 4	+11	+ 6	+ 2
1936–38	– 6	– 2	+ 5	+13	+11	+ 2

The chief factors responsible for these differences, which are very consistent in the two periods, are presumably (1) differing completeness of diagnosis and certification of cancer, (2) effects of urban occupations and environment on cancer incidence, and (3) differing promptness of treatment of cancer of certain sites, the last being probably of least statistical importance. The first of these would tend to enhance the London rates for cancer of certain sites such as the lung, even in comparison with the county boroughs, and to depress the rural rates for cancer generally in comparison with both London and the county boroughs, although there may be over-certification of cancer of some sites in certain rural areas. The second group of factors probably tends to enhance urban rates relatively to rural rates, especially at the younger ages and amongst males. The third factor would tend to lower urban rates relatively to rural rates, particularly at the younger ages.

The observed differences suggest, with these considerations in mind, that for males certification may account for most of the excess in London rates compared with the county boroughs and for part of the excess in the county boroughs compared with the rural areas, but that a residual urban excess of the order of 20 per cent. in male mortality before 75 probably arises from the urban conditions themselves. The differences for females suggest that differences in certification are less important than for males and that more universal application of early treatment of cancer of accessible sites may perhaps account for the lower London rate at ages under 75 and for some reduction in the real county borough excess compared with rural areas. If that is so an excess of 10 or 15 per cent. in female mortality before 75 may be due to the urban conditions themselves. Comparison of London county with the outer ring of Greater London, which is not complicated by differences in certification or treatment, leads to a similar conclusion ; at ages 65–75 for example the outer ring index in 1931–35 and 1936–38 were, for males, 96 and 95, or 18 and 21 respectively below London county ; and for females 93 and 93, or 8 and 10 below London county.

Comparing the regions one with another the male index in 1936–38 ranges at ages under 65 from 106 in the North to 86 in the South West and 84 in the East, and at 65–75 from 109 in the North to 87 in the South West, again due probably to occupational and environmental factors. At ages over 75 the regional range for males is not so great. For females under 75 Wales gives the highest index (108), followed by the North (106, 107), whilst the South East outside Greater London gives the lowest (92, 93).

Cancer cannot be regarded, however, as a disease of uniform ætiology, and the differences brought out in Table LIII for all sites combined are resultants of very diverse effects of diagnosis, environment, occupation and treatment on mortality from cancer of various sites (see Review for 1937, pp. 171-189 and Decennial Supplement for 1931, Occupational Mortality, pp. 33–49).

Cancer by Site.—The parts of the body affected by fatal cancer in 1938 and 1939 are shown in Tables LV–LVIII in greater detail than that provided by the international classification. Additional distinction is made for the first time in these tables of the duodenum (hitherto included in " small intestine "), of kidney from suprarenal, and of " other nervous system " (i.e. spinal cord, cauda equina, nerves and sympathetic system) from " others " of No. 53. Fuller details with regard to cancer of the uterus and of the skin than those tabulated are also available. The distribution of deaths according to the nature of the growth under the headings carcinoma, sarcoma and cancer not otherwise defined is shown in Tables LV and LVI, and according to age in Tables LVII and LVIII. Continuing the 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 recognised, 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, and the continued rapid fall in the death rate assigned to cancer of the liver by transference to other sites justifies the inclusion, in the notes to certifying medical practitioners which accompany the book of death certificates, of the request that "the seat of primary occurrence should be returned in all cases where known."

Tables LV and LVI show that the percentage of cancers with nature undefined is, amongst the organs distinguished, highest for the brain and nervous system, suprarenal, kidney, liver and duodenum. The percentage of all cancers defined as sarcoma ranges from about 77 for the bones, 66 for the brain and 50 for the kidney to 1 per cent. or less for the digestive tract and female breast.

The facts as to cancer mortality distribution by sex and age are summarized for each of the more important sites in Table LIX, which compares standardized rates in 1938 and 1939 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 the ages at which cancer chiefly occurs, as well as the tendency to female excess for the same reason, has been allowed for by standardization (using for each sex the 1901 population of persons by ages) so that all the rates quoted may be compared with one another.

The sites showing increases in standardized death rate from 1931–35 to 1939, arranged in order of the percentage increases, are, for males, the lung (78 per cent.), testis (14), bones (12), pancreas, mesentery and peritoneum (11), prostate (7), kidney and suprarenal, bladder (3), intestines (2), rectum (1); and, for females, the lung (47), bladder (14), pharynx (13), ovary (11), pancreas (10), larynx, kidney (7). Whether the continued rapid increase in lung cancer is entirely or only partially due to more frequent resort to radiological diagnosis remains uncertain. The rate of increase is more rapid in males than females, so that whereas about 1920 the rate for males was double that for females it was in 1937–39 more than four times as great. The increases for testis and bones in males and for pharynx and larynx in females can scarcely be attributed to diagnosis; but improved diagnosis or transfer to the primary site from the liver, for which organ the rate has fallen by more than 10 per million for each sex since 1931–35, might account for the other increases. Mortality from cancer of the mouth and throat, œsophagus and skin has fallen considerably for males in recent years, and this is true also of the uterus in females; but the rate for cancer of the female breast, which was increasing up to 1931–35, has changed little since. The rates for cancer of the stomach and gall bladder are now showing a tendency to fall.

Table LV.—Forms of Fatal Cancer of each Site—1938.

		MALES						FEMALES					
		Number of deaths			Percentage of all cancers			Number of deaths			Percentage of all cancers		
		Carcinoma	Sarcoma	"Cancer" not otherwise defined	Carcinoma	Sarcoma	"Cancer" not otherwise defined	Carcinoma	Sarcoma	"Cancer" not otherwise defined	Carcinoma	Sarcoma	"Cancer" not otherwise defined
ALL SITES		28,901	1,531	2,260	88	5	7	32,302	1,252	2,359	90	3	7
45	Lip	242	—	6	98	—	2	28	1	—	97	3	—
	Tongue	850	1	68	93	0	7	124	—	8	94	—	6
	Mouth	301	1	21	93	0	7	38	—	1	97	—	3
	Tonsil	215	22	11	87	9	4	36	4	8	75	8	17
	Jaw	272	63	26	75	18	7	125	35	14	72	20	8
	Pharynx	372	9	20	93	2	5	99	5	6	90	5	5
	Others	202	2	7	96	1	3	38	5	3	83	11	6
	TOTAL	2,454	98	159	90	4	6	488	50	40	84	9	7
46	Œsophagus	1,514	—	107	93	—	7	648	2	64	91	0	9
	Stomach	6,757	8	404	94	0	6	5,607	7	312	95	0	5
	Duodenum	37	—	3	93	—	7	24	—	6	80	—	20
	Other small intestine	47	8	3	81	14	5	48	6	6	80	10	10
	Cæcum	287	1	24	92	0	8	401	1	16	96	0	4
	Hepatic flexure	65	—	—	100	—	—	65	—	1	99	—	1
	Splenic flexure	90	—	1	99	—	1	97	—	4	96	—	4
	Sigmoid flexure	753	2	37	95	0	5	774	2	41	95	0	5
	Large intestine (colon)	2,683	2	141	95	0	5	3,480	5	170	95	0	5
	Rectum (excluding anus)	3,349	1	189	95	0	5	2,133	3	110	95	0	5
	Liver	899	10	112	88	1	11	990	8	132	87	1	12
	Gall bladder	261	1	29	90	0	10	552	1	42	93	0	7
	Pancreas	968	2	63	94	0	6	971	1	56	95	0	5
	Anus	27	—	—	100	—	—	14	—	1	93	—	7
	Others	247	80	45	66	22	12	386	65	82	73	12	15
	TOTAL	17,984	115	1,158	93	1	6	16,190	101	1,043	93	1	6
47	Larynx	870	5	43	94	1	5	246	1	23	91	0	9
	Lung	3,048	91	262	89	3	8	829	40	80	88	4	8
	Others	137	49	75	52	19	29	66	19	36	54	16	30
	TOTAL	4,055	145	380	89	3	8	1,141	60	139	86	4	10
48	Uterus	—	—	—	—	—	—	4,186	59	274	93	1	6
49	Ovary & Fall: tube	—	—	—	—	—	—	1,602	34	189	88	2	10
	Vulva and vagina	—	—	—	—	—	—	464	6	8	97	1	2
	Others	—	—	—	—	—	—	1	—	—	100	—	—
	TOTAL	—	—	—	—	—	—	2,067	40	197	90	2	8
50	Breast	53	1	6	88	2	10	6,766	33	419	94	0	6
51	Kidney	165	189	39	42	48	10	—	—	—	—	—	—
	Suprarenal	11	3	4	61	17	22	—	—	—	—	—	—
	Bladder, urethra, ureter	1,021	18	72	92	2	6	—	—	—	—	—	—
	Prostate	1,821	16	218	88	1	11	—	—	—	—	—	—
	Testis	86	54	11	57	36	7	—	—	—	—	—	—
	Penis	160	1	9	94	1	5	—	—	—	—	—	—
	Scrotum	57	1	2	95	2	3	—	—	—	—	—	—
	TOTAL	3,321	282	355	84	7	9	—	—	—	—	—	—
52	Skin	598	52	24	88	8	4	415	95	18	79	18	3
53	Brain, meninges	21	125	59	10	61	29	10	125	39	6	72	22
	Other nervous system	4	5	8	24	29	47	6	11	2	32	58	10
	Thyroid	64	1	7	89	1	10	189	7	18	89	3	8
	Kidney	—	—	—	—	—	—	113	140	38	39	48	13
	Suprarenal	—	—	—	—	—	—	14	4	2	70	20	10
	Bladder, urethra, ureter	—	—	—	—	—	—	421	7	25	93	2	5
	Bones (jaw excepted)	92	388	23	18	77	5	72	304	27	18	75	7
	Others	255	319	81	39	49	12	224	216	78	43	42	15
	TOTAL	436	838	178	30	58	12	1,049	814	229	50	39	11

Table LVI.—Forms of Fatal Cancer of each Site—1939.

		MALES						FEMALES					
		Number of deaths			Percentage of all cancers			Number of deaths			Percentage of all cancers		
		Carcinoma	Sarcoma	"Cancer" not otherwise defined	Carcinoma	Sarcoma	"Cancer" not otherwise defined	Carcinoma	Sarcoma	"Cancer" not otherwise defined	Carcinoma	Sarcoma	"Cancer" not otherwise defined
ALL SITES		29,180	1,456	2,185	89	4	7	32,626	1,243	2,291	91	3	6
45	Lip	248	—	6	98	—	2	24	—	—	100	—	—
	Tongue	798	1	54	94	0	6	121	—	7	95	—	5
	Mouth	244	1	13	95	0	5	36	—	3	92	—	8
	Tonsil	178	19	18	83	9	8	29	11	3	67	26	7
	Jaw	281	52	38	76	14	10	136	50	2	72	27	1
	Pharynx	359	19	24	89	5	6	110	9	10	85	7	8
	Others	177	6	2	96	3	1	30	1	3	88	3	9
	Total	2,285	98	155	90	4	6	486	71	28	83	12	5
46	Œsophagus	1,496	2	92	94	0	6	678	—	51	93	—	7
	Stomach	6,852	4	413	94	0	6	5,679	8	296	95	0	5
	Duodenum ...	45	—	2	96	—	4	15	1	4	75	5	20
	Other small intestine	41	6	5	79	10	11	53	11	8	74	15	11
	Cæcum	286	1	13	96	0	4	392	1	28	93	0	7
	Hepatic flexure ...	32	—	2	94	—	6	57	—	3	95	—	5
	Splenic flexure ...	89	—	5	95	—	5	91	—	2	98	—	2
	Sigmoid flexure ...	706	1	40	95	0	5	729	3	38	95	0	5
	Large intestine (colon)	2,852	2	170	94	0	6	3,706	2	184	95	0	5
	Rectum (excluding anus)	3,395	1	169	95	0	5	2,033	4	119	94	0	6
	Liver	883	13	115	88	1	11	954	8	116	88	1	11
	Gall bladder ...	238	—	21	92	—	8	531	—	42	93	—	7
	Pancreas	1,071	4	59	95	0	5	975	1	69	93	0	7
	Anus	21	—	—	100	—	—	13	1	—	93	7	—
	Others	181	67	38	64	23	13	329	77	57	71	17	12
	Total	18,188	101	1,144	93	1	6	16,235	117	1,017	92	2	6
47	Larynx	907	7	56	94	0	6	275	1	21	93	0	7
	Lung	3,220	72	252	91	2	7	918	24	87	90	2	8
	Others	125	39	80	51	16	33	73	18	39	56	14	30
	Total	4,252	118	388	89	2	8	1,266	43	147	87	3	10
48	Uterus	—	—	—	—	—	—	4,185	67	252	93	1	6
49	Ovary & Fall: tube	—	—	—	—	—	—	1,577	21	172	89	1	10
	Vulva and vagina ...	—	—	—	—	—	—	417	7	12	96	1	3
	Others	—	—	—	—	—	—	1	—	—	100	—	—
	Total	—	—	—	—	—	—	1,995	28	184	91	1	8
50	Breast	53	—	6	90	—	10	6,930	32	448	94	0	6
51	Kidney	144	185	39	39	50	11	—	—	—	—	—	—
	Suprarenal	18	7	7	56	22	22	—	—	—	—	—	—
	Bladder, urethra, ureter	1,005	2	77	93	0	7	—	—	—	—	—	—
	Prostate	1,864	8	162	92	0	8	—	—	—	—	—	—
	Testis	100	56	18	58	32	10	—	—	—	—	—	—
	Penis	164	—	8	95	—	5	—	—	—	—	—	—
	Scrotum	56	—	1	98	—	2	—	—	—	—	—	—
	Total	3,351	258	312	85	7	8	—	—	—	—	—	—
52	Skin	587	50	13	90	8	2	395	71	7	84	15	1
53	Brain, meninges ...	22	126	53	11	63	26	17	119	35	10	70	20
	Other nervous system	5	4	7	31	25	44	1	8	4	8	61	31
	Thyroid	62	2	7	87	3	10	184	7	18	88	3	9
	Kidney	—	—	—	—	—	—	116	164	32	37	53	10
	Suprarenal	—	—	—	—	—	—	14	3	4	67	14	19
	Bladder, urethra, ureter	—	—	—	—	—	—	501	3	35	93	0	7
	Bones (jaw excepted)	79	394	21	16	80	4	76	278	13	21	76	3
	Others	296	305	79	43	45	12	225	232	67	43	44	13
	Total	464	831	167	32	57	11	1,134	814	208	52	38	10

Table LVII.—Sites and Forms of Fatal Cancer by Sex and Age, 1938.

		All ages	0–	5–	15–	25–	35–	40–	45–	50–	55–	60–	65–	70–	75–	80–	85–
		DEATHS OF MALES															
All Sites		32,692	59	67	185	461	512	821	1,449	2,370	3,821	5,321	6,261	5,487	3,699	1,637	542
Carcinoma		28,901	3	9	67	299	388	687	1,263	2,073	3,372	4,749	5,639	4,967	3,382	1,501	502
Sarcoma		1,531	51	54	102	128	92	93	95	129	186	196	185	116	68	29	7
Cancer, N.S.		2,260	5	4	16	34	32	41	91	168	263	376	437	404	249	107	33
45	Lip	248	—	—	—	1	—	1	6	6	17	31	38	41	50	34	23
	Tongue	919	—	—	1	1	2	5	17	32	104	177	225	182	117	48	8
	Mouth	323	—	—	—	1	1	1	5	10	21	58	84	80	35	14	13
	Tonsil	248	—	2	—	4	5	4	8	10	27	49	47	46	34	7	5
	Jaw	361	4	—	3	5	2	11	10	24	50	55	60	63	51	18	5
	Pharynx	401	—	1	1	4	3	9	7	20	39	79	93	87	40	14	4
	Others (1)	211	—	2	1	1	1	6	5	11	23	31	44	45	23	13	5
	Total	2,711	4	5	6	17	14	37	58	113	281	480	591	544	350	148	63
46	Œsophagus	1,621	—	—	1	4	8	19	32	86	174	298	397	301	190	90	21
	Stomach	7,169	—	—	10	67	129	177	406	604	942	1,251	1,374	1,143	738	264	64
	Duodenum ...	40	—	—	—	—	—	1	2	6	6	4	7	7	4	3	—
	Other small intestine	58	—	1	2	5	3	5	3	3	5	9	13	6	1	2	—
	Cæcum	312	—	—	1	5	7	7	13	22	33	44	73	47	37	18	5
	Hepatic flexure ...	65	—	—	—	1	1	2	2	5	6	8	12	12	10	5	1
	Splenic flexure ...	91	—	—	2	2	1	3	3	5	8	8	26	13	11	8	1
	Sigmoid flexure ...	792	—	1	5	4	10	19	29	43	82	122	152	148	116	53	8
	Large intestine (colon)	2,826	—	1	8	18	31	57	85	155	257	415	546	553	427	209	64
	Rectum (excluding anus)	3,539	—	—	9	46	31	61	98	187	363	615	764	668	428	207	62
	Liver	1,021	3	1	2	11	14	17	31	77	115	147	204	200	131	46	22
	Gall bladder ...	291	—	—	3	1	2	2	10	20	34	35	47	58	45	30	4
	Pancreas	1,033	—	—	2	15	15	32	50	84	121	182	178	171	113	56	14
	Anus	27	—	—	—	—	—	—	—	2	2	3	8	4	4	2	2
	Others (2)	372	2	5	6	13	11	10	12	24	36	54	63	59	49	22	6
	Total	19,257	5	9	51	192	263	412	776	1,323	2,184	3,195	3,864	3,390	2,304	1,015	274
47	Larynx (3)	918	—	—	—	2	4	10	26	66	117	160	224	155	104	36	14
	Lung (4)	3,401	3	2	18	85	96	202	357	508	657	597	453	254	120	41	8
	Others (5)	261	—	1	2	14	5	11	17	26	40	44	48	36	10	7	—
	Total	4,580	3	3	20	101	105	223	400	600	814	801	725	445	234	84	22
50	Breast	60	—	—	—	—	1	3	3	6	3	11	9	11	7	4	2
51	Kidney	393	21	7	4	12	12	19	27	47	50	71	62	30	21	9	1
	Suprarenal	18	3	—	—	1	1	—	—	4	2	2	3	1	—	1	—
	Bladder, urethra, ureter	1,111	1	—	1	6	3	22	50	65	118	191	219	223	131	60	21
	Prostate	2,055	—	1	2	1	2	12	13	47	130	268	442	518	391	167	61
	Testis	151	1	—	11	43	22	15	6	6	9	4	14	13	3	3	1
	Penis	170	—	—	—	1	2	2	7	10	12	20	31	32	30	15	8
	Scrotum	60	1	—	—	—	3	1	1	4	6	8	12	11	9	2	2
	Total	3,958	27	8	18	64	45	71	104	183	327	564	783	828	585	257	94
52	Skin	674	—	2	4	8	5	13	10	24	40	60	94	115	137	92	70
53	Brain, meninges ...	205	4	12	10	18	20	13	27	31	33	19	10	7	1	—	—
	Other nervous system (6)	17	—	—	2	1	2	2	—	1	—	3	2	2	1	1	—
	Thyroid	72	—	—	1	2	3	—	4	9	9	13	9	13	6	1	2
	Bones (jaw excepted)	503	3	18	56	29	21	21	24	40	63	63	69	56	24	11	5
	Others (7) and unspecified	655	13	10	17	29	33	26	43	40	67	112	105	76	50	24	10
	Total	1,452	20	40	86	79	79	62	98	121	172	210	195	154	82	37	17

(1) Includes Palate, cheek (internal surface), salivary glands, gums.
(2) Includes Intestine undefined, peritoneum, omentum, mesentery.
(3) Includes Trachea.
(4) Includes Bronchus and pleura.
(5) Mediastinum.
(6) Spinal cord, cauda equina, nerves and sympathetic system.
(7) Includes Lymphatic glands, abdomen, eye, muscle, etc.

Table LVII.—Sites and Forms of Fatal Cancer by Sex and Age, 1938 (*contd.*).

		All ages	0–	5–	15–	25–	35–	40–	45–	50–	55–	60–	65–	70–	75–	80–	85–
		DEATHS OF FEMALES															
	All Sites	35,913	49	63	148	544	808	1,450	2,340	3,294	4,223	5,095	5,300	5,144	4,078	2,230	1,147
	Carcinoma	32,302	3	8	62	431	688	1,287	2,092	2,954	3,798	4,650	4,819	4,697	3,730	2,036	1,047
	Sarcoma	1,252	43	46	74	74	75	74	92	125	139	151	141	99	58	35	26
	Cancer, N.S.	2,359	3	9	12	39	45	89	156	215	286	294	340	348	290	159	74
45	Lip	29	—	—	—	—	—	—	2	2	1	2	3	—	7	7	5
	Tongue	132	—	—	—	5	4	2	2	15	18	22	15	24	8	10	7
	Mouth	39	—	—	—	—	1	2	—	6	3	5	3	7	9	—	3
	Tonsil	48	—	—	—	3	—	1	5	2	7	5	8	7	6	2	2
	Jaw	174	—	—	1	1	2	10	10	15	18	25	26	34	16	11	5
	Pharynx	110	1	—	—	2	4	3	12	13	15	21	13	13	9	3	1
	Others (1)	46	—	1	—	1	—	1	3	2	2	7	4	11	7	4	3
	Total	578	1	1	1	12	11	19	34	55	64	87	72	96	62	37	26
46	Œsophagus	714	1	—	1	6	7	18	34	54	77	130	100	117	105	39	25
	Stomach	5,926	—	—	8	49	73	150	246	373	584	821	1,069	1,049	886	425	193
	Duodenum	30	—	—	—	1	—	—	3	—	3	6	2	4	6	1	4
	Other small intestine	60	—	—	1	—	—	4	5	3	4	6	17	9	7	2	2
	Cæcum	418	—	—	2	6	8	6	23	21	32	50	67	64	76	42	21
	Hepatic flexure	66	—	—	—	1	—	—	2	2	8	10	16	6	9	6	6
	Splenic flexure	101	—	—	—	1	1	3	7	7	12	8	15	18	22	2	5
	Sigmoid flexure	817	—	—	1	12	24	29	28	61	90	109	149	124	105	56	29
	Large intestine (colon)	3,655	—	—	6	42	35	72	123	202	304	478	555	731	622	335	150
	Rectum (excluding anus)	2,246	—	1	9	40	41	76	99	195	231	302	340	372	278	193	69
	Liver	1,130	2	3	4	4	11	29	37	67	106	161	165	214	176	108	43
	Gall bladder	595	—	—	—	1	4	5	20	33	66	97	95	117	97	39	21
	Pancreas	1,028	—	—	2	10	9	16	37	82	110	176	173	168	141	71	33
	Anus	15	—	—	—	—	—	—	—	2	—	1	3	1	6	2	—
	Others (2)	533	2	7	3	10	9	11	21	35	62	84	82	78	77	31	21
	Total	17,334	5	11	37	183	222	419	685	1,137	1,689	2,439	2,848	3,072	2,613	1,352	622
47	Larynx (3)	270	—	—	—	4	7	7	15	26	50	47	42	37	17	14	4
	Lung (4)	949	—	1	8	19	39	42	76	85	136	166	162	108	77	24	6
	Others (5)	121	1	1	1	5	2	4	6	11	18	19	22	16	9	4	2
	Total	1,340	1	2	9	28	48	53	97	122	204	232	226	161	103	42	12
48	Uterus	4,519	2	1	1	75	158	292	468	615	703	674	596	477	262	138	57
49	Ovary & Fall : tube	1,825	1	4	18	54	69	118	221	261	285	252	231	169	88	40	14
	Vulva and vagina	478	1	—	2	5	8	12	19	40	35	58	85	81	68	47	17
	Others	1	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—
	Total	2,304	2	4	20	59	77	130	240	301	320	311	316	250	156	87	31
50	Breast	7,218	—	1	5	98	193	423	673	864	995	1,024	906	746	626	418	246
52	Skin	528	1	—	8	9	11	17	26	26	26	34	57	78	76	62	97
53	Brain, meninges	174	4	9	8	20	23	19	20	25	14	17	9	4	1	1	—
	Other nervous system (6)	19	—	1	2	—	2	2	4	3	—	1	—	3	—	1	—
	Thyroid	214	—	—	1	4	4	5	14	17	20	32	32	35	27	16	7
	Kidney	291	13	7	3	5	6	16	18	19	33	39	49	42	23	11	7
	Suprarenal	20	2	3	2	—	4	—	2	1	2	3	—	1	—	—	—
	Bladder, urethra etc.	453	—	—	1	3	3	8	10	31	47	82	80	83	62	31	12
	Bones (jaw excepted)	403	6	14	32	30	21	22	24	35	45	49	49	35	22	12	7
	Others (7) and unspecified	518	12	9	18	18	25	25	25	43	61	71	60	61	45	22	23
	Total	2,092	37	43	67	80	88	97	117	174	222	294	279	264	180	94	56

(1) Includes Palate, cheek (internal surface), salivary glands, gums.
(2) Includes Intestine undefined, peritoneum, omentum, mesentery.
(3) Includes Trachea.
(4) Includes Bronchus and pleura.
(5) Mediastinum.
(6) Spinal cord, cauda equina, nerves and sympathetic system.
(7) Includes Lymphatic glands, abdomen, eye, muscle, etc.

Table LVIII.—Sites and Forms of Fatal Cancer by Sex and Age, 1939.

		All ages	0–	5–	15–	25–	35–	40–	45–	50–	55–	60–	65–	70–	75–	80–	85–
		DEATHS OF MALES															
	All Sites	32,821	62	59	166	473	503	801	1,430	2,490	3,788	5,327	6,067	5,539	3,863	1,690	563
	Carcinoma	29,180	9	6	56	326	399	658	1,225	2,158	3,389	4,815	5,535	5,019	3,505	1,563	517
	Sarcoma	1,456	45	47	98	116	64	87	119	163	170	173	140	125	77	27	5
	Cancer, N.S.	2,185	8	6	12	31	40	56	86	169	229	339	392	395	281	100	41
45	Lip	254	—	—	—	—	1	3	4	8	15	21	46	50	49	41	16
	Tongue	853	—	—	—	—	2	5	10	41	82	157	188	172	135	48	13
	Mouth	258	—	—	—	—	—	1	1	10	24	47	65	51	36	15	8
	Tonsil	215	—	—	1	—	1	2	7	11	19	48	44	41	29	10	2
	Jaw	371	—	2	2	8	3	7	9	20	34	56	70	72	53	22	13
	Pharynx	402	—	2	7	7	6	4	8	20	32	76	83	82	42	26	7
	Others (1)	185	—	—	1	—	—	2	2	6	12	40	38	39	25	16	4
	Total	2,538	—	4	11	15	13	24	41	116	218	445	534	507	369	178	63
46	Œsophagus	1,590	—	—	2	7	8	13	30	72	181	306	348	299	215	85	24
	Stomach	7,269	—	—	9	67	117	187	387	638	917	1,216	1,421	1,214	747	274	75
	Duodenum	47	—	—	—	1	1	—	4	4	8	7	4	7	8	3	—
	Other small intestine	52	—	—	—	3	2	3	2	5	6	9	8	7	5	2	—
	Cæcum	300	—	—	2	9	3	5	13	12	24	49	57	62	37	24	3
	Hepatic flexure	34	—	—	—	—	1	1	—	1	3	3	6	11	7	1	—
	Splenic flexure	94	—	—	—	—	—	1	6	7	13	15	16	12	14	6	4
	Sigmoid flexure	747	—	—	1	8	9	15	22	42	68	121	158	147	112	39	5
	Large intestine (colon)	3,024	1	—	6	33	31	56	88	157	286	449	557	614	448	225	73
	Rectum excg. anus	3,565	—	—	8	43	40	54	98	198	385	601	711	663	495	192	77
	Liver	1,011	—	1	3	12	8	30	34	84	103	192	169	171	124	59	21
	Gall bladder	259	1	—	—	1	5	4	9	15	25	41	54	54	25	20	5
	Pancreas	1,134	—	1	—	6	7	28	52	110	147	170	225	190	130	53	15
	Anus	21	—	—	—	—	1	—	1	1	4	3	—	6	3	2	—
	Others (2)	286	8	5	7	9	7	8	13	17	22	33	60	35	36	23	3
	Total	19,433	10	7	38	199	240	405	759	1,363	2,192	3,215	3,794	3,492	2,406	1,008	305
47	Larynx (3)	970	—	—	1	7	7	12	25	55	127	184	204	187	105	40	16
	Lung (4)	3,544	—	1	8	89	125	214	357	531	671	608	509	262	123	39	7
	Others (5)	244	1	1	4	9	10	10	21	27	37	37	41	31	12	3	—
	Total	4,758	1	2	13	105	142	236	403	613	835	829	754	480	240	82	23
50	Breast	59	—	—	1	1	—	—	5	3	8	9	6	13	8	4	1
51	Kidney	368	20	3	3	11	5	18	37	47	47	63	52	32	23	5	2
	Suprarenal	32	5	2	—	3	2	2	4	5	3	4	1	1	—	—	—
	Bladder, urethra, ureter	1,084	2	—	—	4	8	12	37	82	117	187	210	189	137	69	30
	Prostate	2,034	—	1	2	—	2	9	16	48	129	275	416	490	409	195	42
	Testis	174	3	1	12	46	26	10	5	10	9	14	15	13	4	6	—
	Penis	172	—	—	—	4	1	3	5	6	14	29	25	21	34	22	8
	Scrotum	57	—	—	—	—	1	—	2	6	3	7	13	9	10	5	1
	Total	3,921	30	7	17	68	45	54	106	204	322	579	732	755	617	302	83
52	Skin	650	—	—	4	6	8	9	18	24	40	69	83	126	115	80	68
53	Brain, meninges	201	7	13	12	18	16	17	29	37	26	11	7	5	3	—	—
	Other nervous system (6)	16	—	1	—	1	1	—	2	2	3	3	2	1	—	—	—
	Thyroid	71	—	—	1	1	3	2	5	7	11	10	11	11	7	1	1
	Bones (jaw excepted)	494	3	13	49	31	20	29	31	56	59	65	52	46	34	5	1
	Others (7) and unspecified	680	11	12	20	28	15	25	31	65	74	92	92	103	64	30	18
	Total	1,462	21	39	82	79	55	73	98	167	173	181	164	166	108	36	20

(1) Includes Palate, cheek (internal surface), salivary glands, gums.
(2) Includes Intestine undefined, peritoneum, omentum, mesentery.
(3) Includes Trachea.
(4) Includes Bronchus and pleura.
(5) Mediastinum.
(6) Spinal cord, cauda equina, nerves and sympathetic system.
(7) Includes Lymphatic glands, abdomen, eye, muscle, etc.

Table LVIII.—Sites and Forms of Fatal Cancer by Sex and Age, 1939 (*contd.*).

		All ages	0–	5–	15–	25–	35–	40–	45–	50–	55–	60–	65–	70–	75–	80–	85–
		DEATHS OF FEMALES															
All Sites		36,160	60	46	124	562	788	1,482	2,310	3,297	4,216	4,903	5,423	5,234	4,241	2,329	1,145
Carcinoma		32,626	7	2	52	429	699	1,323	2,069	2,935	3,822	4,468	4,934	4,783	3,908	2,132	1,063
Sarcoma		1,243	47	39	64	99	55	70	94	134	150	135	130	104	68	39	15
Cancer, N.S.		2,291	6	5	8	34	34	89	147	228	244	300	359	347	265	158	67
45	Lip	24	—	—	—	—	1	—	—	—	2	3	2	4	6	2	4
	Tongue	128	—	—	1	1	1	4	5	15	12	17	24	21	13	10	4
	Mouth	39	—	—	—	—	1	—	—	2	3	3	10	6	4	5	5
	Tonsil	43	—	—	—	1	1	3	3	5	2	6	10	3	3	3	3
	Jaw	188	2	1	2	2	4	7	14	8	29	19	40	20	22	12	6
	Pharynx	129	—	—	3	4	3	7	7	16	18	21	21	16	9	4	—
	Others (1)	34	—	—	—	—	—	1	1	1	4	6	6	5	7	2	1
	Total	585	2	1	6	8	11	22	30	47	70	75	113	75	64	38	23
46	Œsophagus	729	—	—	—	4	7	23	34	71	81	123	137	93	86	44	26
	Stomach	5,983	—	—	4	68	80	128	260	376	600	862	1,005	1,106	873	428	193
	Duodenum	20	—	—	—	1	—	2	—	1	—	4	4	3	4	—	1
	Other small intestine	72	—	—	1	—	1	4	5	5	8	12	12	8	7	5	4
	Cæcum	421	—	—	—	8	4	5	12	29	36	50	61	87	70	45	14
	Hepatic flexure	60	—	—	—	—	—	1	3	4	10	8	7	10	9	3	5
	Splenic flexure	93	—	—	—	4	3	4	2	10	8	12	15	13	16	4	2
	Sigmoid flexure	770	—	—	2	9	7	28	43	59	87	112	129	123	102	53	16
	Large intestine (colon)	3,892	—	—	3	41	54	82	150	235	308	450	625	698	670	397	179
	Rectum excg. anus	2,156	—	—	9	33	35	59	97	157	230	275	359	390	284	149	79
	Liver	1,078	3	1	3	13	16	23	35	65	95	149	181	194	163	92	45
	Gall bladder	573	—	—	—	1	2	11	17	28	67	75	104	110	93	46	19
	Pancreas	1,045	1	—	1	6	4	22	46	75	114	161	180	206	131	60	38
	Anus	14	—	—	—	—	—	—	—	—	—	4	1	4	1	3	1
	Others (2)	463	1	3	2	11	9	12	29	31	58	54	59	70	59	45	20
	Total	17,369	5	4	25	199	222	404	733	1,146	1,702	2,351	2,879	3,115	2,568	1,374	642
47	Larynx (3)	297	—	—	1	3	11	8	12	46	51	53	34	33	29	10	6
	Lung (4)	1,029	—	—	7	27	24	66	69	107	145	160	177	132	80	27	8
	Others (5)	130	—	—	4	5	2	8	5	12	12	22	21	18	13	5	3
	Total	1,456	—	—	12	35	37	82	86	165	208	235	232	183	122	42	17
48	Uterus	4,504	—	1	4	72	159	320	483	597	660	631	603	459	305	159	51
49	Ovary and Fallopian tube	1,770	1	1	19	48	79	122	178	248	274	246	202	158	119	55	20
	Vulva and vagina	436	—	—	—	2	5	8	11	33	39	46	57	82	88	42	23
	Others	1	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—
	Total	2,207	1	1	19	50	84	130	189	281	313	293	259	240	207	97	43
50	Breast	7,410	—	—	2	94	215	424	662	845	991	1,008	984	834	705	414	232
52	Skin	473	1	—	2	11	8	13	15	27	23	32	47	65	73	75	81
53	Brain, meninges	171	11	10	13	27	8	22	18	20	24	9	6	—	3	—	—
	Other nervous system (6)	13	—	—	2	1	2	1	2	2	1	2	—	—	—	—	—
	Thyroid	209	—	—	1	3	5	7	12	18	35	26	39	37	20	5	1
	Kidney	312	24	8	3	9	3	6	17	32	35	47	45	38	21	19	5
	Suprarenal	21	3	1	1	2	1	2	2	1	—	4	1	3	—	—	—
	Bladder, urethra etc.	539	1	1	—	—	1	9	13	32	49	82	93	102	86	51	19
	Bones (jaw excepted)	367	8	12	19	19	17	20	16	39	45	51	43	26	29	17	6
	Others (7) and unspecified	524	4	7	15	32	15	20	32	45	60	57	79	57	38	38	25
	Total	2,156	51	39	54	93	52	87	112	189	249	278	306	263	197	130	56

(1) Includes Palate, cheek (internal surface), salivary glands, gums.
(2) Includes Intestine undefined, peritoneum, omentum, mesentery.
(3) Includes Trachea.
(4) Includes Bronchus and pleura.
(5) Mediastinum.
(6) Spinal cord, cauda equina, nerves and sympathetic system.
(7) Includes Lymphatic glands, abdomen, eye, muscle etc.

Table LIX.—Cancer Mortality : Rates per Million Population (Standardized) for the more important sites for each Sex 1901–10, 1911–20, 1921–30, 1931–35, 1936, 1937, 1938 and 1939.

	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females
	ALL SITES		LIP		TONGUE		MOUTH, TONSIL Etc. (1)		JAW	
1901–10	784	942	12·8	0·8	43·1	4·4	?	?	22·6	6·9
1911–20	897	959	12·6	0·7	50·8	4·3	23·5	3·0	25·1	7·2
1921–30	1,000	980	11·4	0·7	45·9	3·8	28·2	3·6	20·7	6·3
1931–35	1,045	969	10·1	0·6	36·7	3·5	27·9	3·6	15·3	5·0
1936	1,068	969	8·7	0·5	31·8	4·0	27·0	4·0	13·4	5·6
1937	1,071	951	8·5	0·5	31·4	3·5	25·5	3·2	12·3	4·7
1938	1,066	961	8·1	0·7	28·5	3·5	24·8	3·5	11·9	4·6
1939	1,051	943	8·0	0·5	26·0	3·3	20·2	2·9	11·8	5·0
	PHARYNX		ŒSOPHAGUS		STOMACH		LIVER		GALL BLADDER	
1901–10	?	?	51·2	14·6	167·2	133·0	?	?	?	?
1911–20	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	64·1	18·0	220·2	154·2	60·7	60·3	8·7	16·4
1931–35	13·6	3·2	60·3	19·1	232·1	155·2	43·7	36·9	9·5	16·8
1936	12·8	3·3	56·8	20·1	237·6	152·2	38·4	33·1	9·5	15·8
1937	12·2	4·0	54·3	19·0	232·7	149·6	35·6	29·2	9·3	14·9
1938	12·7	3·1	50·8	18·4	231·6	150·5	32·9	28·7	9·4	14·8
1939	12·8	3·6	48·8	18·4	230·2	147·9	32·2	26·7	8·1	13·7
	MESENTERY and PERITONEUM(2)		INTESTINE (3)		RECTUM and ANUS		OVARY AND FALLOPIAN TUBE		UTERUS	
1901–10	8·2	15·8	63·5	72·3	79·8	55·9	—	19·2	—	?
1911–20	6·0	12·0	96·8	109·2	93·6	59·3	—	24·3	—	174·4
1921–30	5·4	8·1	124·8	128·5	105·0	59·3	—	36·1	—	157·7
1931–35	4·5	6·0	137·6	138·2	111·6	58·2	—	45·4	—	136·3
1936	4·2	5·8	145·0	138·1	110·2	56·8	—	51·8	—	128·1
1937	4·7	5·4	143·8	141·8	113·6	57·9	—	50·6	—	129·0
1938	4·8	5·2	142·8	139·1	113·7	59·3	—	53·2	—	126·9
1939	5·0	5·8	140·0	137·0	112·3	54·6	—	50·6	—	124·7
	BREAST		RODENT ULCER		PENIS		SCROTUM		OTHER SKIN(4)	
1901–10	1·5	158·4	?	?	?	—	?	—	?	?
1911–20	1·6	170·8	6·7	4·3	6·6	—	2·4	—	17·6	10·9
1921–30	1·8	188·4	8·4	4·8	6·4	—	2·7	—	17·5	10·1
1931–35	2·1	197·7	7·8	4·1	6·2	—	2·4	—	15·7	9·4
1936	2·8	200·7	6·7	3·9	6·7	—	1·5	—	16·4	9·0
1937	2·0	192·9	5·7	3·6	5·4	—	2·3	—	16·9	9·8
1938	2·0	197·3	5·5	3·2	5·6	—	2·0	—	17·1	10·2
1939	1·9	197·7	6·2	3·0	5·5	—	1·8	—	14·9	8·4
	LARYNX (only)		LUNG (and BRONCHUS)		PANCREAS		KIDNEY and SUPRARENAL		BLADDER	
1901–10	?	?	10·2	7·0	14·5	11·8	8·4	7·6	?	?
1911–20	23·9	6·0	12·7	7·0	16·7	13·1	9·1	7·2	28·2	9·7
1921–30	31·2	7·1	25·1	9·6	26·3	19·4	11·7	8·8	30·3	11·3
1931–35	30·7	7·3	66·7	18·8	32·2	23·5	14·2	9·8	33·0	11·1
1936	29·5	8·2	90·1	23·6	36·0	26·2	14·6	9·6	33·0	12·0
1937	29·8	6·7	100·9	23·2	36·1	25·2	14·8	10·0	33·3	11·4
1938	28·6	7·1	115·2	26·0	33·6	26·2	15·0	9·6	35·2	11·2
1939	29·7	7·8	118·4	27·7	35·8	25·8	14·6	10·5	33·9	12·7
	PROSTATE		TESTIS		BONES (5)		MEDIASTINUM			
1901–10	11·8	—	?	—	?	?	8·1	4·5		
1911–20	26·5	—	4·9	—	15·7	12·0	9·2	4·6		
1921–30	47·3	—	5·8	—	17·5	13·4	12·6	5·8		
1931–35	58·2	—	6·4	—	17·1	13·0	9·7	4·0		
1936	62·7	—	6·8	—	20·2	14·5	7·9	3·4		
1937	64·1	—	8·5	—	18·1	14·2	10·7	3·4		
1938	64·4	—	6·4	—	19·6	13·8	8·8	3·4		
1939	62·1	—	7·3	—	19·2	11·8	8·3	3·6		

NOTES : (1) Includes palate, cheek (internal surface), salivary glands, gums.
(2) Includes omentum.
(3) Includes duodenum, small intestine, cæcum, colon, hepatic, splenic and sigmoid flexures and intestine (undefined).
(4) Includes face, nose, scalp, ear, neck, trunk, upper limb and lower limb.
(5) Includes skull, spinal column, rib, sternum, clavicle, scapula, pelvis, arm, leg (undefined).

Effect of Multiple Cause classification on Cancer death-rates.—When combined with some other cause of death cancer takes precedence over most diseases according to Rule 6 (Manual of International List, 1929). It was deduced from a sample of 6,947 deaths classed to cancer in 1924 and from samples of 116,265 deaths classed to other causes in 1921–30 that, whereas the mean annual deaths

assigned to cancer in the decade numbered 52,225, the mean annual deaths otherwise assigned with mention of cancer numbered 7,855. This means that for each 100 deaths classed to cancer there were 115 deaths in all with mention of cancer on the certificate, or in other words 87 per cent. of all persons certified as having cancer were classified under that cause by the operation of the rules of selection. This proportion varied considerably for different sites, being less than one half for cancer of the lymph glands and lung and about 60 per cent. for liver cancer, ranging to 98 per cent. for the uterus, 99 per cent. for the stomach and 100 per cent. for the breast. The cancer deaths tabulated for 1938 and 1939 (except in Appendix B) probably represent, therefore, about seven-eighths of the deaths of persons who had died as a result of cancer or were suffering from it at the time of death.

Classification of deaths by means of the order of statement of causes on the certificate, instead of by application of the selective rules, reduces the number of deaths assigned to cancer in 1938 from 68,605 to 66,584, the groups most affected being cancer of the skin (from 1,202 to 1,061) and of the breast (from 7,278 to 6,832). This indicates that the selective rules overstated the death-rate due to cancer in the opinion of the certifier to the extent of about 3 per cent.; and it follows that (if we assume the 1921–30 ratio to have remained unchanged) for every 100 deaths certified as due to cancer there must have been 18 with mention of cancer on the certificate as a contributory cause only.

The fifth revision of the International List, which comes into force from 1940, transfers gliomas (unless stated to be benign) from the non-malignant tumours to a special subheading of Cancer of the Brain and other parts of the Nervous System (see Manual of International List, 1938, No. 54a). This transfer will reduce to some extent the loss of deaths assigned to cancer, produced by the change in system of multiple cause classification, when both changes are made in 1940, and the new classification in Appendix B, 1939 Review, shows that in that year the 69,001 deaths according to the old classification are reduced to 67,154 according to the new or by 2·7 per cent. The necessary steps to ensure continuity of the cancer statistics in all their detail will be taken in the Review for 1940.

54, 55.—**Tumours not returned as malignant.**—Table LX analyses according to sex, age and site of the tumour all deaths from neoplasms which were assigned to No. 54, non-malignant tumours, and to No. 55, Tumours of undetermined nature, during 1938 and 1939, the criterion of malignancy being that defined in the Manual of the International List (1929 Revision). The non-malignant group numbered 1,505 in 1938, the pathological variety of the tumour being specified in 1,359 instances, and the growth merely described as benign in 146. In 1939 the non-malignant group numbered 1,380, with variety specified in 1,321 and not specified in 59. Table LXXXVIII (*a*) shows that inquiries in 1938 concerning tumours of unstated nature resulted in 757 being assigned to cancer and 115 to glioma, but for 988 deaths the malignant or non-malignant nature of the growth could not be ascertained by inquiry and these were assigned to No. 55 and are analysed under the description " nature unstated " in Table LX. In 1939, for which year some inquiries had to be dispensed with, 1,248 deaths had to be assigned to this group. Full details of all the classified tumours by variety and age are available for each year since 1921.

Adenoma, myo-adenoma, fibro-adenoma and fibroma of the prostate are classed to No. 137, Diseases of the prostate, because these conditions seem to be closely allied with that described as prostatic hypertrophy. Other non-malignant or undefined tumours of the prostate are included under " other sites " in Table LX. Adenoma of the thyroid is also excluded from this table, being assigned to No. 66 (*a*), Simple goitre.

The arrangement of the brain tumours in Table LX has been modified for convenience of comparison with the classification according to the 1938 revision of the International List, which will come into use from 1940. The first five groups will fall within the general heading of " glioma " and comprise, together with glioma of the spinal cord, nerves and eye, a new sub-division of cancer under that classification. Table LXI brings together all deaths from tumours of the brain (or meninges), whether classed to No. 53, Cancer, No. 54, Non-malignant tumours or No. 55, Tumours of undetermined nature, in each year 1921 to 1939. The " glioma " group has been enlarged in its content, as explained in the note below the table, by transference of certain pathological descriptions which have come into use in recent years, in order to conform with the definition of glioma in the revised classification from 1940 onwards. The number of annual deaths under this heading has not changed appreciably since 1928, and averaged 347 in 1938–39. Large numbers of gliomas, probably doubling this total, must be included in the tumours whose nature was unstated owing to absence of either surgical or postmortem evidence. The combined crude death-rate from all neoplasms of the brain has risen since 1925 from 31 to 47 per million for males and from 28 to 40 for females.

Deaths ascribed to pituitary tumours other than cancer have increased from 16 in 1921 to 43 in 1939. Deaths from neoplasm of the lung not described as malignant numbered 41 in 1938 and 58 in 1939, compared with 97 in 1934 when a maximum was reached, males being in large excess as in the case of lung cancer.

Table LX.—Deaths attributed to Tumours not returned as Malignant and classed to No. 54, Non-malignant tumours and No. 55, Tumours of undetermined nature. 1938 and 1939.

List No.	Site	Tumour	Sex	1938								1939							
				All ages	0–	15–	35–	45–	55–	65–	75–	All ages	0–	15–	35–	45–	55–	65–	75–
54a	OVARY	Cyst, cystic tumour	F	224	1	29	28	29	46	55	36	195	2	15	14	34	41	48	41
,,		Other named varieties	F	13	—	1	4	3	2	3	—	4	—	1	2	—	—	1	—
,,		Benign (unclassified)	F	13	—	1	1	1	2	—	8	10	—	—	1	1	1	1	6
55a		*Nature unstated*	F	6	—	—	1	1	2	—	2	9	—	1	—	—	2	—	6
54a	UTERUS	Fibroid (1)	F	294	—	17	98	100	35	21	23	289	—	11	72	142	30	19	15
,,		Myoma	F	11	—	3	3	4	—	1	—	5	—	2	1	2	—	—	—
,,		Endometrioma	F	2	—	—	1	1	—	—	—	4	—	1	1	1	1	—	—
,,		Polypus	F	6	—	—	—	3	1	2	—	7	—	—	2	—	3	2	—
,,		Other named varieties (2)	F	3	—	—	—	1	2	—	—	1	—	—	—	1	—	—	—
,,		Benign (unclassified)	F	3	—	—	—	—	1	—	2	1	—	1	—	—	—	—	—
55a		*Nature unstated*	F	2	—	—	1	—	—	1	—	2	—	—	—	2	—	—	—
54a	BROAD LIGAMENT	Cyst	F	6	—	2	3	1	—	—	—	6	—	—	3	2	1	—	—
54a	VAGINA	Cyst	F	1	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—
		Endometrioma	F	1	—	—	—	1	—	—	—	1	—	1	—	—	—	—	—
54a	PELVIS	Cyst	F	—	—	—	—	—	—	—	—	2	—	—	—	—	—	2	—
55a		*Nature unstated*	F	3	—	—	1	—	—	—	2	3	—	—	—	1	1	—	1
54b	BRAIN	Astrocytoma	M	20	—	9	4	5	1	1	—	21	4	5	6	3	2	1	—
,,			F	12	4	3	2	3	—	—	—	18	8	2	2	4	1	1	—
,,		Ependymoma	M	3	2	—	—	—	1	—	—	3	1	2	—	—	—	—	—
,,			F	2	—	1	—	1	—	—	—	4	—	1	1	2	—	—	—
,,		Glioblastoma	M	10	—	2	3	5	—	—	—	5	—	1	2	2	—	—	—
,,			F	8	—	—	1	3	3	1	—	3	—	—	1	—	2	—	—
,,		Glioma (3)	M	191	20	31	30	62	36	8	4	151	15	26	26	44	33	5	2
,,			F	119	9	20	37	24	22	4	3	124	11	23	25	25	29	9	2
,,		Medullo-blastoma	F	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—
,,		Angioma, hæmangioma	M	9	1	2	4	—	2	—	—	9	2	1	2	2	2	—	—
,,			F	4	—	2	—	—	1	1	—	12	1	10	1	—	—	—	—
,,		Cholesteatoma	M	—	—	—	—	—	—	—	—	2	—	2	—	—	—	—	—
,,			F	1	1	—	—	—	—	—	—	4	1	2	—	1	—	—	—
,,		Cyst, cystic tumour	M	12	3	1	2	4	—	2	—	30	4	4	8	8	4	1	1
,,			F	10	—	4	4	1	1	—	—	15	4	6	1	2	1	1	—
,,		Meningioma	M	6	1	1	1	2	1	—	—	3	—	—	1	1	1	—	—
,,			F	4	—	—	2	1	1	—	—	10	—	—	3	4	3	—	—

Table LX.—Deaths attributed to Tumours not returned as Malignant and classed to No. 54, Non-malignant tumours and No. 55, Tumours of undetermined nature. 1938 and 1939 (*contd.*).

List No.	Site	Tumour	Sex	1938 All ages	0–	15–	35–	45–	55–	65–	75–	1939 All ages	0–	15–	35–	45–	55–	65–	75–
54b	BRAIN	Neurofibroma... ...	M	—	—	—	—	—	—	—	—	4	1	—	2	1	—	—	—
,,			F	1	—	—	—	1	—	—	—	3	—	—	2	—	1	—	—
,,		Pinealoma	M	3	1	1	—	1	—	—	—	—	—	—	—	—	—	—	—
,,		Other stated varieties (4)	M	3	—	1	—	1	1	—	—	3	1	1	—	1	—	—	—
			F	—	—	—	—	—	—	—	—	7	—	—	4	1	—	2	—
,,		Benign (unclassified)...	M	19	1	5	2	6	4	1	—	10	—	1	4	2	3	—	—
,,			F	17	3	1	3	3	4	2	1	10	—	3	2	3	2	—	—
55b		*Nature unstated* ...	M	400	46	61	65	103	81	39	5	485	37	90	68	101	132	50	7
,,			F	399	30	56	67	90	101	38	17	472	36	68	80	115	108	50	15
54b	SPINAL CORD	Glioma	M	4	—	1	—	1	2	—	—	3	—	—	—	2	1	—	—
,,			F	—	—	—	—	—	—	—	—	2	1	—	—	—	1	—	—
,,		Other stated varieties (5)	M	4	—	1	1	—	1	1	—	5	—	—	3	2	—	—	—
			F	5	—	1	1	1	1	1	—	3	1	1	—	1	—	—	—
,,		Benign (unclassified)...	M	7	—	4	1	1	1	—	—	2	—	—	1	—	1	—	—
			F	7	—	—	—	1	2	4	—	1	—	—	—	—	—	—	1
55b		*Nature unstated* ...	M	3	—	—	—	1	1	—	1	9	—	1	1	1	5	1	—
			F	5	—	—	—	—	4	—	1	8	1	—	—	1	4	1	1
54b	EYE	Glioma	M	5	5	—	—	—	—	—	—		—	—	—	—	—	—	—
,,	PITUITARY GLAND	Adenoma	M	7	—	1	2	1	2	1	—	10	1	2	2	4	1	—	—
,,			F	9	1	2	—	3	2	1	—	10	—	2	3	2	3	—	—
,,		Other stated varieties (6)	M	3	1	1	1	—	—	—	—	—	—	—	—	—	—	—	—
			F	2	1	1	—	—	—	—	—	3	—	—	—	2	—	1	—
,,		Benign (unclassified)...	M	2	—	2	—	—	—	—	—	2	—	1	—	1	—	—	—
,,			F	5	—	1	1	—	3	—	—	4	—	2	—	1	—	1	—
55b		*Nature unstated* ...	M	9	2	—	4	2	—	1	—	3	1	1	—	1	—	—	—
,,			F	5	—	2	—	2	1	—	—	11	—	2	3	4	2	—	—
54b	OTHER SITES	Benign tumours (7) (including unclassified)	M	253	12	12	23	23	53	79	51	212	7	11	13	19	40	67	55
			F	160	14	16	13	17	38	28	34	147	11	9	14	29	23	33	28
55b		*Nature unstated* (8) ...	M	87	—	5	4	12	20	32	14	139	8	7	6	15	39	40	24
,,			F	69	3	5	2	8	11	18	22	107	7	6	5	12	28	24	25
54b	TOTAL	Benign tumours (including unclassified)	M	561	47	75	74	112	105	93	55	475	36	57	70	92	88	74	58
			F	944	35	105	203	203	167	124	107	905	40	93	155	260	143	121	93
55b		*Nature unstated* ...	M	499	48	66	73	118	102	72	20	636	46	99	75	118	176	91	31
			F	489	33	63	72	101	119	57	44	612	44	77	88	135	145	75	48

(1) Includes fibroma, fibromyoma.

(2) In 1938 adenoma.

(3) Includes oligodendroglioma, neuroglioma.

(4) In 1938, endothelioma, M. 45–; neuroblastoma M. 15–, 55–. In 1939, endothelioma, M. 45–; fibromyoma, F. 35–; ganglioneuroma, M. 0–; granuloma, M. 15–; papilloma, F. 35–, 45–; psammoma, F. 35–, 65–.

(5) In 1938, chordoma, M. 35–; cyst, M. 15–; endothelioma, F. 15–; fibroma, F. 65–; fibromyoma, M. 65–; lipoma, M. 55–; neuroangioma, F. 45–; neurofibroma, F. 35–; neuroma, F. 55–. In 1939 angioma M. 35–; cyst, F. 15–; meningioma, M. 35–; neurofibroma, M. 35–, 45–, 45–, F. 45–; neuroma, F. 0–.

(6) In 1938, cyst, M. 0–, 15–, 35–, F. 0–, 15–. In 1939, craniopharyngioma, F. 45–; cyst, F. 65–; ependymoma, F. 45–.

(7) In 1938, thyroid, 2 M., 3 F.; ear, 3 M., 1 F.; nose, 9 M., 8 F.; larynx, 4 M.; mediastinum, 5 M., 4 F.; lung, 9 M., 5 F.; parotid, 6 M, 4 F.; œsophagus, 3 M., 1 F.; stomach, 3 M., 1 F.; intestines, 1 M., 7 F.; rectum, 9 M., 7 F.; liver, 4 M., 2 F.; pancreas, 6 M., 9 F.; kidney, 6 M, 9 F.; bladder, 133 M., 47 F.; testicle, 2 M; breast, 3 F.; jaw, 1 M, 1 F.; spine, 5 M., 5 F.; neck, 3 M., 1 F.; abdomen, 2 M.; other sites, 37 M., 40 F.; site not stated, 2 F.

In 1939, thyroid, 1 M., 4 F.; nose, 7 M., 7 F.; larynx, 1 M., 3 F.; mediastinum, 2 M., 3 F.; lung, 2 M., 2 F.; parotid, 2 M., 3 F; stomach, 1 M., 3 F.; intestines, 8 M., 5 F.; rectum, 5 M., 5 F.; liver, 3 M., 2 F.; pancreas, 6 M., 9 F.; kidney, 5 M., 5 F.; adrenal, 1 F.; bladder, 121 M., 35 F.; testicle, 1 M.; breast, 3 F.; spine, 1 M., 6 F.; neck, 2 M.; abdomen, 2 F.; other sites, 44 M., 49 F.

(8) In 1938, thyroid, 2 F.; mediastinum, 23 M., 7 F.; lung, 21 M., 6 F.; parotid, 1 M., 1 F.; œsophagus, 2 M.; stomach, 3 M., 2 F.; intestines, 7 M., 10 F.; rectum, 3 M., 2 F.; liver, 5 M., 1 F.; pancreas, 1 M.; kidney, 1 M., 8 F.; bladder, 4 M., 2 F.; testicle, 1 M.; breast, 1 M., 1 F.; jaw, 1 M., 1 F.; spine, 4 M., 3 F.; abdomen, 4 M., 10 F.; other sites, 4 M., 11 F.; site not stated, 1 M., 2 F. In 1939, thyroid, 2 F.; larynx, 1 M., 1 F.; mediastinum, 21 M., 12 F.; lung, 39 M., 15 F.; parotid, 1 M., 1 F.; stomach, 10 M., 6 F.; intestines, 8 M., 13 F.; rectum, 2 M., 2 F.; liver, 4 M., 4 F.; kidney, 4 M., 5 F.; adrenal, 3 F.; bladder, 5 M., 1 F.; testicle, 1 M.; breast, 2 F.; spine, 8 M., 8 F.; neck, 1 M.; abdomen, 6 M., 13 F.; other sites, 26 M., 18 F.; site not stated, 2 M., 1 F.

Table LXI.—Deaths classed to Cancer, Glioma and Other Tumours of the Brain, and Mortality per Million living from all Tumours of the Brain, 1921–39.

	Number of Deaths: Classed to cancer (No. 53)		Glioma* (No. 54*b*)		Other classified† or "benign" tumours (No. 54*b*)		Nature unstated (No. 55*b*)		All tumours		Rate per million (all ages): All tumours	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
1921 ...	52	44	89	57	24	15	408	437	573	553	32	28
1922 ...	66	45	72	73	15	18	429	421	582	557	32	28
1923 ...	77	52	100	71	17	8	424	445	618	576	34	29
1924 ...	77	51	94	84	29	14	430	400	630	549	34	27
1925 ...	65	55	105	80	24	14	389	423	583	572	31	28
1926 ...	51	56	110	93	18	21	447	445	626	615	33	30
1927 ...	82	72	146	104	16	22	420	450	664	648	35	32
1928 ...	91	63	183	131	25	30	434	427	733	651	39	32
1929 ...	81	79	155	140	28	32	443	441	707	692	37	34
1930 ...	90	70	213	138	26	16	427	453	756	677	40	33
1931 ...	103	76	203	145	33	28	417	420	756	669	39	32
1932 ...	120	96	216	139	39	34	395	426	770	695	40	33
1933 ...	155	117	151	151	45	40	441	409	792	717	41	34
1934 ...	141	120	177	137	40	47	439	446	797	750	41	36
1935 ...	165	142	177	147	43	30	430	427	815	746	42	35
1936 ...	197	158	180	141	43	49	430	463	850	811	43	38
1937 ...	221	140	185	155	60	50	427	427	893	772	45	36
1938 ...	205	174	224	142	52	37	400	399	881	752	45	35
1939 ...	201	171	180	149	61	61	485	472	927	853	47	40

* In addition to glioma, cystic glioma, ependymoma, oligodendroglioma, spongioglioma, this group now includes astrocytoma, astroblastoma, glioblastoma, medulloblastoma, neuroglioma, and spongioblastoma, which were assigned to the "other classified" group in Table LXIV of 1937 Review. The numbers for years before 1938 differ in consequence from those shown in that table.

†Includes angioma, cyst, meningioma, fibroma, adenoma, neuroma, psammoma, cholesteatoma, non-malignant endothelioma, etc.

56. **Rheumatic Fever.**—Deaths assigned to rheumatic fever numbered 1,155 in 1938 and 1,018 (including 1 non-civilian) in 1939, compared with annual averages of 1,551 in 1926–30, 1,249 in 1931–35, 1,142 in 1936 and 917 in 1937. The standardized death rates, which declined between 1920 and 1937 from 54 to 22 per million for males and from 59 to 27 for females, increased in 1938 to 28 and 34 respectively but fell again in 1939 to 24 and 29.

The trend of mortality from 1891–1900 to 1937 at different ages was shown in Table LXV of the Review for 1937. The decline at the school ages was arrested between 1911 and 1930, but some improvement then occurred, and a further fall was registered in 1937–39 compared with 1934–36, as also at ages 15–25. This is shown by the following series of rates per million living :—

	Ages 5–15		Ages 15–25	
	Males	*Females*	*Males*	*Females*
1911–20	69	79	54	63
1925–27	75	90	49	60
1928–30	69	83	41	52
1931–33	57	62	36	49
1934–36	56	74	36	43
1937–39	45	59	30	34

Deaths from rheumatic heart disease are only classed to rheumatic fever when the heart affection is designated as "acute (or subacute) rheumatic" or when it is stated or found on inquiry that rheumatic fever was present at the time

of death. On the other hand when rheumatic fever or rheumatism is mentioned as a cause of chronic heart disease, but rheumatic fever is not stated to be present, classification is made to the heart disease group. Most deaths from chronic endocarditis have no mention of rheumatism notwithstanding that many were of rheumatic origin, and consequently it is not possible from death certificates to ascertain the number of deaths due to rheumatism in the past. In the alternative tabulations according to the order of causation stated by the certifying physician an exception has consequently been made where rheumatism is mentioned in conjunction with chronic heart disease, the assignment being to the latter even when rheumatism is mentioned as the remote cause. No considerable change will result therefore in rheumatic fever death rates under the new system of classification, the group being still defined as comprising only those deaths where rheumatic fever was stated or ascertained to have been present at the time of death.

57. **Chronic rheumatism, osteo-arthritis.**—Deaths classed to this group of diseases numbered 3,442 in 1938 and 3,522 in 1939, the ratios of female to male deaths being 2·3 and 2·4 respectively. The group comprises rheumatoid arthritis, osteo-arthritis and other chronic articular rheumatism (No. 57 : 2), and chronic rheumatism not stated to be articular (No. 57 : 1). The number of deaths assigned to the latter sub-group declined from 226 in 1928 to 67 in 1938, but increased to 116 in 1939. The standardized death-rates from all varieties of chronic articular rheumatism have not changed appreciably in recent years, ranging from 31 to 35 per million for males and from 56 to 62 for females during the decennium 1930–39.

These conditions are often entered on death certificates as contributory causes along with circulatory or respiratory diseases, but owing to the high preference given by the selective rules to rheumatoid and osteo-arthritis the death rate overstates the mortality directly attributable to the rheumatic affection. This is apparent from a comparison for the four years 1936–39 :—

		By selective rules (as tabulated)		By physician's preference	
		M.	F.	M.	F.
Deaths classified to chronic articular rheumatism (No. 57 : 2)	1936	1,044	2,421	512	1,245
	1937	1,031	2,428	477	1,083
	1938	1,013	2,362	447	1,157
	1939	1,001	2,405	459	1,153

The distribution of the deaths assigned to this sub-group in 1938 according to the description of the rheumatic disease on the medical certificate was as follows :—Rheumatoid arthritis, M 633, F 1,767 ; *Rheumatic arthritis, M 19, F 28 ; Chronic rheumatic arthritis, M 3, F 18 ; Chronic infective arthritis, M 2, F 2 ; Rheumatic gout, M 9 ; Still's disease, M 2, F 3 ; Osteo-arthritis, M 190, F 302 ; Spondylitis deformans, M 25, F 18 ; Arthritis deformans, M 6, F 19 ; *Chronic articular rheumatism, M 18, F 11 ; *Chronic arthritis, M 37, F 74 ; *Arthritis, M 63, F 108 ; *Multiple or poly-arthritis, M 6, F 12. Total, M 1,013, F 2,362.

The first six of these descriptions will be assignable to a new group under the title " Rheumatoid arthritis " in the 5th Revision of the International List, the numbers in this group in 1939, according to the system of classification by certifier's preference, being 315 of males and 981 of females (see No. 59a in Appendix B 1 of 1939 Review).

* Not further defined after an enquiry had been made.

59. **Diabetes.**—Deaths classed to this disease in 1938 numbered 7,119 (2,714 males, 4,405 females) and in 1939 7,628 (2,882 civilian males, 1 non-civilian male, 4,745 females). The standardized death-rates per million living were, in 1938, 91 for males, 115 for females and 104 for persons, and in 1939 94, 121 and 108 respectively. This rate has shown increasing excess for females compared with males 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 was discussed in the Review for 1933, and the rates at different ages since 1920–22 are given in Table LXII, 1923 being the year in which insulin came into use. At ages under 55 the standardized rate for males declined from 47·9 per million in 1920–22 to 24·2 in 1935, increased slightly in the next two years and fell again to 23·7 in 1938 and 23·6 in 1939 ; for females it fell from 43·1 in 1920–22 to 27·4 in 1938, but increased slightly to 29·4 in 1939. At ages 55 and over the trend has been very different, standardized mortality increasing for males from 478 to 681, and for females from 484 to 880 by 1936, followed by a temporary improvement in 1938 which was not maintained in 1939, the rates in that year being 686 and 886 respectively.

Table LXII.—Diabetes Death-rates per Million living at Various Ages ; 1920–22 to 1939.

	Standardized rates			0–	15–	25–	35–	45–	55–	65–	75 and up
	All ages	0–55	55 and up								
Males											
1920–22	93·7	47·9	477·5	14	42	60	69	133	309	661	772
1923–25	85·6	35·0	510·3	10	28	43	52	101	312	705	910
1926–30	89·9	32·1	575·2	12	27	36	46	93	335	808	1,071
1931 ...	88·1	29·5	580·3	12	22	30	38	97	315	821	1,161
1932 ...	92·4	28·9	625·6	10	21	30	45	93	320	897	1,310
1933 ...	92·3	28·5	628·2	13	26	30	36	80	325	888	1,326
1934 ...	91·0	27·2	627·0	10	22	27	32	94	331	889	1,292
1935 ...	89·5	24·2	637·4	10	16	24	30	87	321	919	1,344
1936 ...	94·6	24·7	680·8	10	16	24	26	97	320	968	1,569
1937 ...	95·7	26·2	680·2	11	17	26	39	87	325	967	1,543
1938 ...	90·5	23·7	651·8	9	15	22	33	90	305	911	1,546
1939 ...	94·0	23·6	686·0	9	17	21	35	82	320	937	1,684
Females											
1920–22	90·1	43·1	483·9	16	35	48	62	124	355	656	632
1923–25	91·6	35·8	560·1	11	29	36	53	118	394	776	767
1926–30	101·3	32·9	675·7	11	23	32	47	120	453	927	1,039
1931 ...	110·9	33·4	762·0	11	26	31	45	121	473	1,097	1,218
1932 ...	112·4	32·5	783·3	13	20	29	46	118	485	1,143	1,219
1933 ...	114·3	33·5	793·0	12	25	30	48	118	470	1,178	1,275
1934 ...	114·9	30·7	821·4	10	18	28	44	123	490	1,204	1,344
1935 ...	117·0	30·4	844·3	9	21	29	39	120	499	1,236	1,410
1936 ...	120·1	29·6	879·6	9	19	23	46	118	496	1,323	1,486
1937 ...	121·1	31·3	875·3	12	21	23	39	129	477	1,295	1,607
1938 ...	114·7	27·4	847·7	10	18	18	33	122	459	1,237	1,611
1939 ...	120·5	29·4	885·6	12	19	25	34	120	498	1,298	1,585

The sex-ratio of mortality has been changing progressively as far back as the records go, as Table LXIII shows :—

Table LXIII.—Diabetes. Standardized Death-rates of Males per cent. of those of Females, 1861–1939.

Ages	1861–70	1871–80	1881–90	1891–1900	1901–10	1911–20	1921–25	1926–30	1931–35	1936–39
Under 55	189	179	150	139	120	120	105	97	86	83
55 & over	260	221	181	142	126	115	93	85	77	77
All ages	205	193	161	141	124	118	97	89	80	79

Although there was at ages under 55 a temporary arrest of this change in 1911–20, the trend gives no indication of any effect on the sex-ratio of the introduction of insulin. In 1861–70 the standardized rate of males at 0–55 was nearly double that of females, but the ratio fell steadily to 120 per cent. in 1901-10, remained about the same in 1911–20 and then continued to fall as before to 86 per cent. in 1931–35 and 83 per cent. in 1936–39. At ages 55 and over the rate for males was 2½ times that for females in 1861–70 and declined steadily to 77 per cent. in 1931–35 and the same value in 1936–39. The crude death rates of Scotland, Holland and the United States of America show similar trends in the sex-ratio.

To what extent the upward trends of all rates in the last century, and of rates at ages 65 and over since the introduction of insulin, have been due to increasing diagnosis and mention on death certificates of diabetes is difficult to determine. Expressing the rates at different ages in 1923–25, 1926–30, 1931–35 and 1936–39 in terms of the corresponding rates in 1920–22, the trend has been as follows :—

Age group	Males					Females				
	1920–22	1923–25	1926–30	1931–35	1936–39	1920–22	1923–25	1926–30	1931–35	1936–39
0– ...	100	71	86	79	71	100	69	69	69	69
15– ...	100	67	64	50	38	100	83	66	63	54
25– ...	100	72	60	47	38	100	75	67	60	46
35– ...	100	75	67	52	48	100	85	76	73	61
45– ...	100	76	70	68	67	100	95	97	98	98
55– ...	100	101	108	104	103	100	111	128	136	136
65– ...	100	107	122	134	143	100	118	141	179	196
75 & over	100	118	139	167	205	100	121	164	205	249

The selective rules for classification of deaths where more than one cause is entered on the certificate give precedence to diabetes over most important causes except acute infections, cancer, rheumatic fever and acute ileus, and this tends to make the rates represent the mortality of diabetics rather than the mortality due to the disease. In 1921–30 the deaths classed to diabetes averaged 4,754 annually and it was estimated from a sample tabulation of secondary diseases mentioned on death certificates that the annual average of deaths classed to other causes with mention of diabetes was 466, so 91 per cent. of all deaths with mention of diabetes were classified to diabetes. In other words the total death certificates with any mention of diabetes were at that time about 10 per cent. in excess of the number classed to diabetes.

Owing to the gradual extension of medical examinations for life insurance and other purposes, the detection of diabetes must in the past have been more complete at earlier than at later ages and the approach towards completeness of detection has been spreading up the scale of ages. Although a state of stability in this regard seems to have been reached in recent years at ages 55–65, the degree of such detection at later ages is probably still increasing and thereby contributing to the continued rise of death-rates after 65. The alternative classification of deaths in 1936–39 according to the system which assigns to diabetes only those deaths where the certifier regarded diabetes as the principal cause leading up to the fatal issue, whilst excluding those for which it was regarded as only a contributory cause, throws some light upon this. A large proportion of the deaths now classed to diabetes would be transferred to other causes according to this method of selection, as shown below :—

		Males			Females		
		1936	1937	1938	1936	1937	1938
Deaths classed to diabetes by selective rules		2,731	2,801	2,714	4,388	4,495	4,405
Deaths included above with preference expressed for an associated cause*	Number	907	979	1,040	1,304	1,421	1,511
	Per cent.	33·2	35·0	38·3	29·7	31·6	34·3
Deaths classed to other associated causes by selective rules but with preference expressed for diabetes		75	88	76	110	122	88
Net deduction of diabetes deaths according to physician's preference	Number	832	891	964	1,194	1,299	1,423
	Per cent.	30·5	31·8	35·5	27·2	28·9	32·3

* Ignoring senility and other " indefinite causes " in each year. (*See* note below page 49.)

These figures imply that only two-thirds of the 7,000 deaths at present assigned annually to diabetes are thought by the attendant physician to be really attributable to the disease or to its direct results. On the other hand about 185 deaths per annum classed by rule to other associated causes are thought to have resulted directly from the diabetes.

The crude death rate *due to* diabetes in 1938, according to the order of statement of definite causes on medical certificates, was consequently only 64·5 per cent. of the tabulated rate for males and 67·7 per cent. of the tabulated rate for females. This overstatement of the rates has tended to become more pronounced ; for persons, the corrected rate was 72 per cent. of the tabulated one in 1936, 70 per cent. in 1937, 66 per cent. in 1938, and 68 per cent. in 1939. This fall in the ratio exemplifies the difficulty of accurately measuring the trend of mortality from such a cause as diabetes when selection of the cause for statistical classification is made by a system of rules. The substitution of the new system of selection from 1940 onwards should remove many of these difficulties.

The exaggeration of the death rate owing to the rules of classification is greater at advanced ages than at the younger ages, as the following analysis of 1938 deaths indicates.

Ages	Males					Females				
	Classed to diabetes by rules	Modification if classified in accordance with order on medical certificate*				Classed to diabetes by rules	Modification if classified in accordance with order on medical certificate*			
		To other causes†	From other causes	Net deduction	per cent. deduction		To other causes†	From other causes	Net deduction	per cent. deduction
0– ...	39	2	—	2	3·4	43	2	1	1	4·9
15– ...	48	7	6	1		59	10	6	4	
25– ...	73	12	6	6	9·0	64	12	1	11	11·2
35– ...	93	20	11	9		105	14	6	8	
45– ...	211	83	9	74	35·1	339	93	10	83	24·5
55– ...	595	237	17	220	37·0	1,049	376	22	354	33·7
65– ...	1,049	434	21	413	39·4	1,744	630	32	598	34·3
75 & over	606	245	6	239	39·4	1,002	374	10	364	36·3
All ages	2,714	1,040	76	964	35·5	4,405	1,511	88	1,423	32·3

* Ignoring indefinite causes (*see* note below page 49).

† The 2,551 deaths in these columns would be transferred to the following causes (deaths of females being shown in italics) :—Diseases of myocardium, 219, *404* ; Other heart diseases, 53, *97* ; Cerebral hæmorrhage or arteriosclerosis 203, *312* ; Nephritis, 95, *151* ; Pneumonia, 91, *96* ; Bronchitis, 56, *85* ; Coronary disease or angina pectoris, 62, *66* , Diseases of prostate, 52 ; Carbuncle, boil, cellulitis or abscess, 43, *25* ; High blood pressure, 27, *76* ; Gangrene, 22, *13* ; Appendicitis or peptic ulcer, 28, *18* ; All other causes, 89, *168*.

After making the net deductions shown in the table, the 1938 death rates per million at separate age groups *due to* diabetes are as follows :—

Ages	0–	15–	25–	35–	45–	55–	65–	75 and over
Males	8	14	20	30	58	192	553	936
Females ...	10	17	15	30	92	304	813	1,026

and the standardized death rates *due to* diabetes become :—

	S.D.R. per million			Per cent. of tabulated rates		
	All ages	*Under 55*	*55 and over*	*All ages*	*Under 55*	*55 and over*
Males	59·9	19·5	399·1	66	82	61
Females	79·9	23·4	554·3	70	85	65

At ages under 55 the standardized mortality *due to* diabetes was, in 1938, about 19 per million for males and 23 for females, or about five-sixths of the rates shown in Table LXII. At ages 55 and over the standardized mortality *due to* diabetes was 399 for males, and 554 for females, or about five-eighths of the rates shown in the table.

In 1939, comparison of the deaths in Table 21 with those in Appendix B 1 shows that the ratios of deaths of diabetics classed to that disease by the selective rules to the deaths caused by diabetes in the opinion of the certifier were as follows :—

Ages	0–	15–	25–	35–	45–	55–	65–	75 and over	All ages
Males ...	1·03	0·90	1·08	1·19	1·33	1·63	1·60	1·65	1·53
Females	1·02	1·05	1·18	1·11	1·22	1·42	1·56	1·52	1·45

For persons of all ages the ratio was 1·48, 7,627 deaths being classed to diabetes by the rules and 5,160 certified as caused by the disease. Remembering that the total deaths with mention of diabetes on the certificate are about 10 per cent. in excess of the number classed to it, the total deaths of diabetics from any cause in 1939 must have been at least 8,400, and consequently not more than 60 per cent. of deaths of diabetics are considered to have been caused by diabetes. It is evident from the ratios above that this proportion falls with advancing age and is probably 50 per cent. or less at ages 75 and over.

During the interval from 1936 to 1939 deaths of diabetics increased by 7 per cent. at ages 65–75 and by 18 per cent. at 75 and over, whereas deaths due to diabetes according to the certifier showed no appreciable change at 65–75 (from 1,941 in 1936 to 1,926 in 1939), and increased by 14 per cent. at 75 and over (from 962 to 1,096). This suggests that during recent years the increase in death-rates at ages 65–75 as shown in Table LXII has been due entirely to increased detection and mention on death certificates of diabetes as a contributory cause. Whether this is the case at 75 and over is uncertain since diabetics who are certified as dying of an ill-defined condition of old age with mention of diabetes as a contributory cause are classed to the definite disease under either system of classification, and consequently increasing mention of glycosuria with senility in old people will have the effect of raising the rates based upon either method. The general conclusion is that there is no longer any real increase in diabetes mortality in progress at any age before 75, and probably not after that age.

71(*a*) **Pernicious and allied Anæmias.**—The international group with this heading comprises not only pernicious anæmia but also aplastic, hæmolytic and other hyperchromic, progressive or profound anæmias of obscure origin. The content of the group in 1937 and 1938 is given by sex and age in Table LXIV.

At ages under 25 only 34 out of 157 deaths were described as pernicious anæmia, whereas at ages 25 and over 4,032 out of 4,442 were so described. In the 1938 Revision of the International List the classification of anæmias was brought into line with knowledge at that time, and Appendix B1 for 1939 shows that the new group 73(a) styled Pernicious anæmia had 1,922 deaths, a number similar to the totals, 2,015 in 1937 and 2,051 in 1938 under the first heading of Table LXIV. Until this revision comes into force in 1940 the term pernicious anæmia in the statistics comprises the whole group as in previous years.

Table LXIV.—" Pernicious Anæmia." Deaths by Sex and Age with distinction of the diseases included in the International group with this title (71a). 1937 and 1938.

	Pernicious anæmia (so described)				Aplastic anæmia				Hæmolytic anæmia				Other varieties in No. 71*a*			
	1937		1938		1937		1938		1937		1938		1937		1938	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
0– ...	—	—	—	—	1	1	—	—	2	2	10	5	—	—	2	—
1– ...	1	2	—	1	7	6	3	2	2	—	1	1	—	—	1	—
5– ...	1	2	1	—	8	4	8	9	—	—	2	—	—	—	—	—
15– ...	6	10	3	7	7	10	10	9	2	1	2	1	1	1	—	2
25– ...	5	30	14	32	12	11	16	14	—	4	1	—	—	1	—	3
35– ...	26	69	27	65	3	11	6	14	—	3	3	1	1	2	—	1
45– ...	74	145	66	137	12	18	12	15	—	3	—	—	1	3	2	3
55– ...	205	312	190	259	21	15	16	14	1	2	3	3	2	6	5	2
65– ...	281	457	333	481	15	16	22	11	—	1	—	1	10	7	6	13
75 & over ...	135	254	154	281	4	7	8	8	—	1	1	—	1	4	2	6
All ages ...	734	1,281	788	1,263	90	99	101	96	7	17	23	12	16	24	18	30

Combining the sexes and the two years, the analysis is as follows :—

	0–	1–	15–	25–	65 and over	All ages
" Pernicious anæmia "	—	8	26	1,656	2,376	4,066
" Aplastic anæmia "...	2	47	36	210	91	386
" Hæmolytic anæmia "	19	6	6	24	4	59
Other varieties in 71(a)	2	1	4	32	49	88
Total classed to 71(a)	23	62	72	1,922	2,520	4,599

The annual deaths averaged 2,629 in 1924–26 ; and in 1928, following the introduction of a more effective treatment in 1927, the deaths fell to 1,854 but increased again year by year to 2,591 in 1932. By 1936 they had fallen again to 2,258 ; in 1937 they numbered 2,268, in 1938 2,331 and in 1939 2,590. The standardized death rate for males, which averaged 46 per million in 1924–26, was 29 in 1937 and 32 in 1938 and 1939 ; for females it was 58 in 1924–26, 40 in 1937, 38 in 1938, and 43 in 1939.

As in the case of diabetes, the remedies are generally only effective in prolonging life so long as treatment is continued, and, unless the patient eventually dies of some disease to which precedence is given in the rules of classification, or without mention being made on the certificate of pernicious anæmia, the death will be carried forward to a later age in a subsequent year. The expected effect on the mortality statistics of the introduction of the new therapy since 1926 would be, therefore, an immediate reduction in the death rates at ages between 25 and 65 with little immediate change at more advanced ages, followed later by a gradual rise in the death rate of the oldest age groups. In Table LXV the death rates at separate age groups are shown in successive periods since 1924–26. At ages under 25, when, as shown above, most of the deaths are not due to true pernicious anæmia, the rate amongst males has not changed appreciably since 1924–26, though the female rate has fallen. At the age periods between 25 and 65 mortality fell after 1927 by about 40 per cent., and since 1933 there has been further improvement, the rates in 1938 being about 55 per cent. below 1924–26 levels. At 65–75 a temporary improvement was not maintained, and the increased survival from the previous age group might account for this, as also for the progressive rise in the rates at ages 75 and over.

Table LXV.—Mortality from Pernicious Anæmia and Other Anæmias included in No. 71(a), 1924–26 to 1939.

	Males						Females					
	All ages*	0–	25–	45–	65–	75 & up	All ages*	0–	25–	45–	65–	75 & up
	DEATH RATES PER MILLION LIVING											
1924–26 ...	46	5	24	153	350	205	58	8	47	181	361	208
1928–30 ...	32	4	15	94	290	237	40	5	27	118	296	235
1931–33 ...	36	4	13	104	331	319	46	4	29	138	356	299
1934 ...	34	5	12	94	306	325	44	5	26	126	349	371
1935 ...	32	5	10	82	329	339	43	5	25	114	353	387
1936 ...	31	4	10	71	317	404	40	3	24	106	328	375
1937 ...	29	5	8	74	273	368	40	5	20	101	351	442
1938 ...	32	6	11	68	314	421	38	5	19	85	359	474
1939 ...	32	4	10	73	327	461	43	7	21	106	372	492
	MORTALITY PER CENT. OF THAT IN 1924–26											
1928–30 ...	70	84	62	61	83	115	69	63	57	66	82	113
1931–33 ...	78	82	54	68	95	156	79	54	61	76	99	143
1934 ...	74	98	49	61	88	161	76	59	55	70	97	180
1935 ...	70	96	44	54	94	167	74	67	53	63	98	188
1936 ...	67	89	44	46	91	199	69	43	51	59	91	182
1937 ...	63	100	32	48	78	182	69	62	42	56	98	214
1938 ...	70	114	45	45	90	208	66	60	42	47	100	230
1939 ...	70	84	40	48	94	227	74	81	46	59	104	239

* Standardized.

72(*b2*). **Agranulocytosis (Agranulocytic Angina).**—The record of deaths from this cause (included in Nos. 115(3), 115(4) or 71b(2) prior to 1935) is given in Table LXVI. There were 60 deaths in 1938 and 52 in 1939 compared with 52, 62 and 56 in the three preceding years.

Table LXVI.—Deaths from Agranulocytosis by Sex and Age in each year 1930 to 1939.

	1930		1931		1932		1933		1934		1935		1936		1937		1938		1939	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
0–	—	—	—	—	—	—	—	2	—	—	—	1	2	—	1	1	2	4	1	—
5–	—	—	—	—	—	—	—	2	—	—	1	2	4	—	—	2	1	1	2	—
15–	—	—	—	—	1	1	2	3	4	2	1	4	6	2	1	3	1	2	3	3
25–	—	1	—	1	—	—	—	2	1	5	1	—	2	1	5	2	3	2	2	4
35–	—	—	—	1	—	1	1	—	1	4	2	6	2	4	5	6	6	7	5	3
45–	—	1	1	—	1	1	1	7	2	3	3	8	5	8	5	12	2	6	3	4
55–	—	—	—	—	—	2	—	5	3	5	7	10	5	7	3	4	3	10	4	10
65–	—	—	—	—	—	—	1	4	1	6	—	5	3	9	1	4	—	9	1	3
75 and up ...	—	—	—	—	—	—	—	1	1	1	1	—	—	2	—	1	—	1	2	2
All ages ...	—	2	1	2	2	5	5	26	13	26	16	36	29	33	21	35	18	42	23	29

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 during 1938 and 1939 in certification of which any mention of alcohol appears are assembled in Table LXVII. These numbered 481 in 1938 and 459 in 1939, compared with 535 in 1937, 503 in 1936, 523 in 1935 and 494 in 1934.

Table LXVIII groups the deaths with mention of alcoholism in each year since 1921 under 5 heads, those classed by the selective rules to alcoholism, to cirrhosis of the liver, to heart diseases, to violent causes and to all other causes. The rates per million represented by the aggregates of all such deaths, and the rates for cirrhosis of the liver without mention of alcoholism, are given in the last two columns. The change in form of the medical certificate in 1926 was followed

in subsequent years by a temporary increase in mention of alcoholism in association with non-violent causes, but by 1932 the aggregate rate had returned to about the level of 1925–26 and has changed little since. It seems probable that the 1927–29 rate of about 20 per million was a more reliable record than in other years, before or since, and if the bulk of cirrhosis deaths can be regarded as of alcoholic origin, whether this is mentioned or not, the total rate in those years was about 60 per million. In recent years the standardized death rate from cirrhosis of the liver, with or without mention of alcoholism, has declined for males from 45 per million in 1929 to 25 in 1939, and for females from 20 to 12.

Table LXVII.—Deaths from or connected with Alcoholism, 1938 and 1939.

		All ages		25–		35–		45–		55–		65–		75 and up	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
		1938													
75.	Deaths attributed solely to alcoholism	44*	28*	3	1	12	4	16	6	7	6	3	7	2	3
	Deaths attributed to other causes in conjunction with alcoholism :—														
11.	Influenza	2	1	—	—	—	1	1	—	1	—	—	—	—	—
23.	Tuberculosis (respiratory) ...	1	1	—	—	—	—	—	1	1	—	—	—	—	—
34.	Syphilis	3	—	1	—	—	—	—	—	—	—	2	—	—	—
35.	Gonorrhœa	1	—	—	—	—	—	—	—	1	—	—	—	—	—
38.	Malaria	1	—	1	—	—	—	—	—	—	—	—	—	—	—
45–53.	Cancer	7	4	—	—	—	1	1	1	5	1	—	1	1	—
57 (2).	Arthritis	—	1	—	—	—	—	—	—	—	1	—	—	—	—
59.	Diabetes	1	—	—	—	—	—	—	—	—	—	1	—	—	—
79.	Meningitis	—	1	—	—	—	—	—	1	—	—	—	—	—	1
82.	Cerebral vascular lesions ...	2	2	—	—	—	—	—	1	2	—	—	—	—	—
85.	Epilepsy	1	—	—	—	—	—	—	—	—	—	1	—	—	—
87 (*b*).	Neuritis	2	4	—	—	—	1	1	—	1	2	—	1	—	—
92.	Valvular disease of heart ...	2	1	—	—	—	—	1	—	—	1	1	—	—	—
93 (*a*).	Acute myocarditis	4	1	—	—	1	—	3	—	—	1	—	—	—	—
93 (*b*1).	Fatty heart	5	11	—	—	1	2	2	3	2	3	—	1	—	2
93 (*b*2).	Cardiovascular degeneration	1	7	—	—	—	1	—	2	—	2	1	2	—	—
93 (*b*3).	Other myocardial disease ...	27	11	—	—	1	1	10	7	9	1	5	1	2	1
93 (*c*).	Myocarditis (unspecified) ...	5	1	1	—	—	—	1	—	1	—	2	1	—	—
94.	Coronary disease	4	2	—	—	1	—	2	—	—	1	1	1	—	—
95.	Other heart disease	2	—	—	—	1	—	—	—	—	—	1	—	—	—
96.	Aneurysm	1	—	—	—	—	—	—	—	1	—	—	—	—	—
97.	Arteriosclerosis	6	2	—	—	—	—	1	—	4	1	1	—	—	1
100 (1).	Varicose ulcer	—	1	—	—	—	—	—	1	—	—	—	—	—	—
102.	Hyperpiesis	1	—	—	—	—	—	—	—	1	—	—	—	—	—
106.	Bronchitis	4	—	—	—	—	—	2	—	2	—	—	—	—	—
107.	Broncho-pneumonia ...	6	3	—	—	1	—	2	1	1	2	1	—	1	—
108.	Lobar pneumonia	12	—	—	—	5	—	4	—	—	—	3	—	—	—
114 (*b*2).	Abscess of lung	1	—	—	—	—	—	1	—	—	—	—	—	—	—
115 (3).	Septic tonsillitis	—	1	—	—	—	—	—	1	—	—	—	—	—	—
115 (4).	Septic parotitis	—	1	—	—	—	—	—	—	—	—	—	1	—	—
117 (*a*).	Gastric ulcer	—	1	—	—	—	—	—	—	—	1	—	—	—	—
117 (*b*).	Duodenal ulcer	1	—	—	—	—	—	—	—	1	—	—	—	—	—
118.	Diseases of stomach	1	2	—	—	—	1	1	—	—	—	—	1	—	—
119, 120.	Gastro-enteritis	1	—	—	—	—	—	—	—	—	—	1	—	—	—
121.	Appendicitis	1	—	—	—	1	—	—	—	—	—	—	—	—	—
122 (*b*).	Intestinal obstruction ...	3	—	—	—	1	—	—	—	1	—	—	—	1	—
124 (*a*).	Cirrhosis of liver	127	65	1	—	14	8	37	16	47	24	23	14	5	3
125 (1).	Acute hepatitis	1	—	—	—	1	—	—	—	—	—	—	—	—	—
129.	Peritonitis	1	—	—	—	—	—	1	—	—	—	—	—	—	—
131.	Chronic nephritis	9	2	—	—	—	—	3	—	2	1	2	1	2	—
133 (*b*).	Cystic kidney	1	—	—	—	—	—	—	—	1	—	—	—	—	—
137.	Enlarged prostate	2	—	—	—	—	—	—	—	—	—	2	—	—	—
152 (1).	Cellulitis	1	—	—	—	—	—	—	—	1	—	—	—	—	—
155.	Fragilitas ossium	1	—	—	—	1	—	—	—	—	—	—	—	—	—
163–171.	Suicide	3	—	—	—	2	—	—	—	1	—	—	—	—	—
186 (*pt.*).	Injury by fall... ...	9	5	1	—	1	—	3	3	2	2	2	—	—	—
186 (*pt.*).	Injury by crushing ...	1	—	1	—	—	—	—	—	—	—	—	—	—	—
	Other violence	12	1	1	—	3	—	2	—	3	—	3	1	—	—
	Total	321*	160*	10	1	47	20	95	44	98	50	56	33	14	11

* Includes 1 death at ages under 25.

Table LXVII.—Deaths from or connected with Alcoholism, 1938 and 1939 (*contd.*).

		All ages		25–		35–		45–		55–		65–		75 and up	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
	1939														
75.	Deaths attributed solely to alcoholism	51	29	—	—	3	—	10	4	15	8	12	7	11	10
	Deaths attributed to other causes in conjunction with alcoholism :—														
11.	Influenza	4	3	—	—	1	—	3	2	—	—	—	1	—	—
23.	Tuberculosis (respiratory) ...	4	1	—	—	2	—	1	1	1	—	—	—	—	—
30.	Tuberculosis (urinary) ...	—	1	—	—	—	—	—	—	—	1	—	—	—	—
34.	Syphilis	—	1	—	—	—	—	—	1	—	—	—	—	—	—
36 (*a*).	Sepsis, chronic	1	—	—	—	—	—	—	—	1	—	—	—	—	—
45–53.	Cancer	5	—	—	—	—	—	1	—	1	—	2	—	1	—
57 (2).	Arthritis	—	1	—	—	—	—	—	—	—	1	—	—	—	—
58.	Gout	1	—	—	—	—	—	—	—	1	—	—	—	—	—
59.	Diabetes	2	1	—	—	—	—	—	—	1	—	1	1	—	—
62.	Pellagra	—	1	—	—	—	—	—	1	—	—	—	—	—	—
69 (2).	Obesity	1	—	—	—	—	—	—	—	1	—	—	—	—	—
71 (*a*).	Aplastic anæmia	—	1	—	1	—	—	—	—	—	—	—	—	—	—
81 (3).	Myelitis	1	—	—	—	—	—	1	—	—	—	—	—	—	—
82.	Cerebral vascular lesions ...	2	3	—	—	1	1	1	—	—	1	—	1	—	—
83.	General paralysis of insane ...	—	1	—	—	—	—	—	1	—	—	—	—	—	—
84 (*b*).	Korsakoff's syndrome ...	—	2	—	—	—	—	—	2	—	—	—	—	—	—
87 (*b*).	Neuritis	2	4	1	—	—	1	—	2	—	1	1	—	—	—
87d.	Cerebro-spinal degeneration	—	1	—	—	—	—	—	—	—	1	—	—	—	—
92.	Valvular disease of heart ...	3	3	—	—	—	—	—	—	1	2	2	1	—	—
93 (*a*).	Acute myocarditis	1	—	—	—	1	—	—	—	—	—	—	—	—	—
93 (*b*1).	Fatty heart	15	8	2	—	—	1	2	2	5	4	5	—	1	1
93 (*b*2).	Cardiovascular degeneration	5	6	—	—	—	—	—	—	1	3	4	1	—	2
93 (*b*3).	Other myocardial disease ...	19	11	—	—	1	—	6	1	8	5	3	3	1	2
93 (*c*).	Myocarditis (unspecified) ...	5	—	—	—	—	—	—	—	4	—	1	—	—	—
94.	Coronary disease	4	1	—	—	1	—	—	—	1	—	2	1	—	—
95.	Other heart disease	—	1	—	—	—	—	—	—	—	1	—	—	—	—
96.	Aneurysm	1	1	—	—	—	—	—	1	1	—	—	—	—	—
97.	Arteriosclerosis	3	2	—	—	—	—	1	—	—	1	1	—	1	1
98 (*a*).	Gangrene	—	1	—	—	—	—	—	—	—	—	—	1	—	—
105 (2).	Œdema of glottis	—	1	—	—	—	—	—	—	—	—	—	1	—	—
106.	Bronchitis	2	—	—	—	1	—	—	—	1	—	—	—	—	—
107.	Broncho-pneumonia ...	6	5	—	1	2	2	4	1	—	1	—	—	—	—
108.	Lobar pneumonia	6	1	—	—	—	—	3	—	2	—	1	1	—	—
110 (2).	Pleurisy	1	—	—	—	—	—	—	—	1	—	—	—	—	—
117 (*a*).	Gastric ulcer	1	—	—	—	—	—	—	—	1	—	—	—	—	—
117 (*b*).	Duodenal ulcer	1†	—	—	—	—	—	1†	—	—	—	—	—	—	—
118.	Diseases of stomach	2	1	—	—	—	—	1	1	1	—	—	—	—	—
119, 120.	Gastro-enteritis	1	—	—	—	—	—	—	—	—	—	1	—	—	—
122 (*b*).	Intestinal obstruction ...	1	—	—	—	—	—	—	—	—	—	1	—	—	—
124 (*a*).	Cirrhosis of liver	111	50	2	—	9	2	24	16	44	18	29	13	3	1
125 (1).	Acute hepatitis	—	1	—	—	—	—	—	1	—	—	—	—	—	—
128.	Pancreatitis	1	—	—	—	1	—	—	—	—	—	—	—	—	—
131.	Chronic nephritis	5	1	—	—	—	—	2	—	1	—	1	—	1	1
132.	Nephritis (unspecified) ...	2	—	—	—	—	—	1	—	1	—	—	—	—	—
133 (*a*).	Pyelonephritis	—	1	—	—	—	—	—	1	—	—	—	—	—	—
137.	Enlarged prostate	1	—	—	—	—	—	—	—	—	—	—	—	1	—
163–171.	Suicide	5	2	—	—	1	1	—	1	2	—	2	—	—	—
186 (*pt.*).	Injury by fall...	12	4	1	—	3	1	3	—	2	1	3	2	—	—
186 (*pt.*).	Injury by crushing	9	—	1	—	—	—	2	—	5	—	1	—	—	—
	Other violence	5	6	1	—	1	—	1	3	2	2	—	1	—	—
	Total	302	157	8	2	28	9	68	42	105	51	73	35	20	18

† Death of a non-civilian.

Table LXVIII.—Deaths from or associated with Alcoholism ; Death-rate per Million from the Combined Causes and from Cirrhosis of Liver not returned as Alcoholic, 1921–1939.

	Number of deaths										Death rate per million persons	
			Returned as connected with alcoholism									
	Alcoholism No. 75		Cirrhosis of liver 124 (a)		Heart diseases 90–95		Violent deaths 163–198		Other causes		Returned as alcoholism or associated therewith	Cirrhosis of liver not returned as alcoholic 124 (b)
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.		
1921 ...	127	55	100	54	41	17	61	11	125	56	17	47
1922 ...	117	47	103	47	41	14	52	16	125	59	16	46
1923 ...	104	47	98	54	22	12	46	16	106	57	15	42
1924 ...	94	33	90	57	36	8	44	7	120	53	14	42
1925 ...	95	55	87	49	25	19	34	6	90	48	13	44
1926 ...	76	39	82	50	31	20	36	17	90	58	13	44
1927 ...	84	24	162	101	40	22	37	14	176	92	19	41
1928 ...	74	34	210	110	54	34	30	10	205	102	22	40
1929 ...	85	49	175	83	69	38	41	11	206	75	21	38
1930 ...	49	45	144	71	46	25	35	10	147	75	16	36
1931 ...	40	41	162	99	45	35	24	2	136	45	16	34
1932 ...	61	34	115	62	42	19	18	4	99	45	12	32
1933 ...	43	30	115	77	52	19	24	10	79	35	12	26
1934 ...	33	19	125	84	38	22	17	9	97	50	12	28
1935 ...	50	23	139	62	46	30	17	8	91	57	13	28
1936 ...	32	27	133	64	48	26	22	4	96	51	12	26
1937 ...	54	48	135	72	51	29	29	12	62	43	13	25
1938 ...	44	28	127	65	50	34	25	6	75	27	12	26
1939 ...	51	29	111	50	52	30	31	12	57	36	11	25

90–103. **Diseases of the Circulatory System.**—The deaths assigned to *heart diseases* including coronary disease (Nos. 90–95) in 1938 numbered 126,382 (62,638 of males, 63,744 of females), and in 1939 139,282 (68,945 of civilian males, 50 of non-civilian males, 70,287 of females). The crude death-rates per million living at all ages were, in 1938 3,165 for males and 2,975 for females, and in 1939 3,502 and 3,260 respectively. The standardized rates in each year 1931 to 1939 have been as follows :—

	1931	1932	1933	1934	1935	1936	1937	1938	1939
Males	1,845	1,848	1,896	1,897	1,949	2,118	2,113	2,058	2,208
Females ...	1,592	1,560	1,616	1,565	1,597	1,700	1,685	1,589	1,670

These rates fell in 1938 below the levels of the two previous years for each sex, and for females below those of 1931, 1933 and 1935 also. In 1939, however, the rate for males was the highest recorded, whilst that of females was above the rate of 1938 but below those of 1936 and 1937. Exclusion of the age-selected group of non-civilians from September onwards raised the crude rate for males in 1939 by not more than one per cent., and affected the standardized rate to a much smaller extent.

As pointed out in previous Reviews, the introduction of the new form of death certificate led to more frequent mention of some forms of heart disease as a subsidiary cause of death, and by the operation of the rules of selection this often results in the death being transferred to the heart group as a consequence. In the Reviews for 1936 and 1937 it was shown that assignment according to the physician's selection of the essential cause would reduce the deaths of males classed to heart diseases as a whole by about 22 per cent., and those of females by about 21 per cent. Large numbers of deaths at advanced ages, however,

were certified as arising from myocardial degeneration or other heart diseases " due to old age," and would be transferred to the senility group by a literal reading of the order of statement. Since little or no significance can be attached to the mention or lack of mention of senility as the cause of degenerative heart disease, or other disease in old people it has been decided in operating the new system of selection from 1940 onwards to regard ' old age ' (in common with congenital debility, infantile convulsions and ' heart failure ') as an indefinite cause to be ignored if stated on a certificate in conjunction with a more definite disease no matter what is the order of statement (see page 49). Consequently there will be no change from previous practice in the case of such combinations. The degree of overstatement in 1936–38 of the deaths classed under the present system of rules to heart disease is indicated below.

	Deaths classed to Nos. 90–95, Heart Diseases					
	Males			Females		
	1936	1937	1938	1936	1937	1938
Selection by rule (tabulated figures)	61,762	62,925	62,638	64,822	65,788	63,744
Selection by physician's preference (ignoring indefinite causes)	51,847	53,128	53,876	57,219	58,157	58,114
Per cent. excess by use of rules	19·1	18·4	16·3	13·3	13·1	9·7

A similar comparison for separate groups of circulatory disease is shown in Table LXIX for the combined years 1936–38. This table differs from Table LXIX of 1936 and Table LXXII of 1937 Review in that the indefinite causes mentioned above have been ignored in applying the selection by physician's preference as well as under the system of rules.

Deaths assigned to heart diseases other than myocarditis or angina pectoris are, when judged on this basis, overstated by 2 to 10 per cent. of the smaller figure, whilst those assigned to myocarditis or myocardial degeneration (excluding fatty heart and cardiovascular degeneration) are overstated by about 25 per cent. for males and 15 per cent. for females. Coronary disease and angina pectoris deaths appear to be overstated by about 40 per cent. for males and 50 per cent. for females. The groups comprising " cardiovascular degeneration " and cerebral hæmorrhage with mention of arteriosclerosis are not much affected, but other deaths assigned to cerebral hæmorrhage are overstated by about 8 per cent. On the other hand deaths for which high blood pressure was thought to be primary causes have been considerably understated by the rules of selection. In the revised International List, however, myocardial disease with arteriosclerosis or high blood pressure, and coronary disease or angina pectoris said to be due to those causes, are to be classed to the heart group ; and arteriosclerosis said to be due to high blood pressure is to be classed to arteriosclerosis. Also, chronic nephritis with arteriosclerosis or high blood pressure is to be classed to nephritis. The effects of the new method of selection will, therefore, be much less than those shown in Table LXIX, some 2,500 deaths being restored to myocardial diseases, and 9,000 to coronary disease, whilst some 8,000 are taken back from arteriosclerosis and 14,000 from hyperpiesis.

Table LXIX.—Diseases of Heart and Circulation. Effects of Classification in accordance with Physician's preference where multiple causes were certified (ignoring indefinite causes), 1936–38.

International group to which death is classified		Selection by rule (tabulated figures for 1936–38)		Selection by physician's preference as expressed on the certificate ignoring " indefinite " causes		Excess (or defect) of first over second, per cent. of second figure	
		Males	Females	Males	Females	Males	Females
90	Pericarditis	748	509	694	469	8	9
91	Acute endocarditis	1,827	1,850	1,707	1,712	7	8
92	Chronic endocarditis, valvular disease	28,330	34,724	25,781	32,366	10	7
95	Diseases of heart not included in Nos. 90–94	9,059	11,330	8,509	10,984	6	3
93b (1)	Fatty heart	2,432	3,366	2,411	3,279	2	3
	Myocarditis group without mention of arteriosclerosis :—						
93a	Acute myocarditis	453	399	274	278	65	44
93b (3)	Myocardial degeneration, chronic myocarditis	64,137	76,659	53,110	67,990	21	13
93c	Myocarditis not distinguished as acute or chronic	20,967	22,205	15,268	17,720	37	25
	Angina pectoris group :—						
94	Coronary disease, angina pectoris	31,066	15,671	22,307	10,378	39	51
	Myocardial degeneration with mention of vascular sclerosis :—						
93b (2)	Cardiovascular degeneration ...	28,286	27,641	28,790	28,314	–2	–2
	Other vascular sclerosis, hyperpiesis :—						
97 (2) (3)	Arteriosclerosis without cerebral hæmorrhage	23,722	22,131	29,797	25,762	–20	–14
97 (1)	Arteriosclerosis with cerebral hæmorrhage	13,208	14,566	13,330	14,821	–1	–2
82a (1)	Cerebral hæmorrhage (without mention of arteriosclerosis) ...	23,056	30,320	21,149	27,990	9	8
102	High blood pressure	1,354	1,194	8,475	9,499	–84	–87

For 1939 Appendix B tabulates the deaths according to the revised classifications and method of selection, and since the main groups of heart disease are little altered in content by the List revision, the differences shown below are due for the most part to the changes in assignment where more than one cause was certified.

		No. of deaths registered in 1939*			
		By 1931–39 Classification		By 1940 Classification	
		Males	Females	Males	Females
90	Pericarditis	166	102	181	103
91	Acute endocarditis	573	592	499	530
92	Chronic endocarditis, valvular disease	8,768	10,830	7,872	10,020
93	Diseases of the myocardium ...	43,595	48,436	38,098	44,534
94	Coronary disease, angina pectoris...	12,959	6,537	11,919	5,925
95	Other heart disease	2,884	3,790	2,639	3,574

* Civilians only from September 3rd.

Table LXX shows the trend of the standardized death rate for each sex from (1) Heart disease as a whole, (2) the "Myocarditis" group of Table LXIX, (3) Coronary disease and angina pectoris, (4) Other vascular degeneration or high blood pressure (with or without myocardial degeneration or cerebral vascular lesions), (5) Old age.

Table LXX.—Standardized death rates per million living from heart disease and degenerative vascular diseases, at triennial intervals from 1925 to 1934 and in each year 1935 to 1939. Also mortality per cent. of that in 1925.

	MALES					FEMALES				
	All heart disease (1)	Myocarditis group (2)	Coronary disease, angina (3)	Vascular degeneration, etc. (4)	Old age (5)	All heart disease (1)	Myocarditis group (2)	Coronary disease, angina (3)	Vascular degeneration, etc. (4)	Old age (5)
1925	1,322	398	55	1,054	499	1,220	351	19	827	488
1928	1,474	579	100	1,064	344	1,349	509	34	837	335
1931	1,845	757	168	1,067	290	1,592	676	59	843	292
1934	1,897	807	248	1,058	237	1,565	715	94	848	242
1935	1,949	841	279	1,060	248	1,597	737	107	871	245
1936	2,118	959	314	1,108	246	1,700	824	118	908	237
1937	2,113	962	338	1,112	234	1,685	827	128	910	233
1938	2,058	921	360	1,116	210	1,589	764	144	899	201
1939	2,208	1,013	406	1,181	225	1,670	824	153	942	218
Rates for subsequent years per cent. of those in 1925										
1928	111	145	182	101	69	111	145	179	101	69
1931	140	190	305	101	58	130	193	311	102	60
1934	143	203	451	100	47	128	204	495	103	50
1935	147	211	507	101	50	131	210	563	105	50
1936	160	241	571	105	49	139	235	621	110	49
1937	160	242	615	106	47	138	236	674	110	48
1938	156	231	655	106	42	130	218	758	109	41
1939	167	255	738	112	45	137	235	805	114	45

The rates for *heart disease* as a whole increased rapidly between 1925 and 1931, changed little in the next 3 years and again rose in 1936. In 1938 the rates were lower than in 1936–37, expecially for females ; but, in 1939 the male rate rose to a new high level and the female rate returned almost to 1937 level. For the *myocarditis* group the rates doubled between 1925 and 1934 and by 1936–37 were 2·4 times the 1925 figures, this being due in part to increasing mention of myocarditis in association with bronchitis and other diseases of old age, as was pointed out in the Review for 1937. Moreover, large numbers of deaths formerly attributed simply to senility are now defined as myocardial degeneration, with consequent fall in the rates of column (5) and increase in those of column (2). In 1938 both these rates showed an improvement, but in 1939 the female myocarditis rate returned to 1936–37 level whilst the male rate was the highest recorded.

The progressive rise since 1920 in the standardized mortality assigned to *coronary disease and angina pectoris* continued without a break in 1938 and 1939. In 1920 the rates were 32 per million for males and 13 for females, and by 1939 they were twelve or thirteen times as great (406 and 153 respectively). To what extent this increase is explained by changing fashion in death certification, leading to transfer of deaths from the myocardial and cardiovascular degeneration groups, and to what extent it is real, is difficult to ascertain. If Nos.

93b(3), Myocardial degeneration, 93b(2), Cardiovascular degeneration, and 94, Coronary disease and angina pectoris are grouped together, the combined standardized death rates per million have changed since 1931 as follows :—

	1931	1932	1933	1934	1935	1936	1937	1938	1939
Males	921	969	1,053	1,081	1,162	1,320	1,358	1,395	1,550
Females ...	686	712	769	788	847	947	973	971	1,060

Of the total increment of 629 per million for males 238 was due to conditions described as coronary disease or angina pectoris ; and of the total increment of 374 per million for females 94 was due to such conditions. Little change occurred during the period in other arteriosclerosis death rates. Even if the whole increase in deaths attributed to coronary disease and angina pectoris has been due to a changing description of deaths formerly attributed to myocardial degeneration, with or without associated arteriosclerosis, the problem of the cause of the rapid increase for the combined group is still unsolved, for the bulk of this increase cannot be accounted for by changes in certification and rules of classification.

Table LXXI.—Death rates per million living at various ages over 45 years from different forms of Circulatory Disease, 1921–30, 1931–35, 1938 and 1939.

Age	Valvular disease, chronic endocarditis (No. 92)				Coronary disease, angina pectoris (No. 94)				Myocardial disease, arteriosclerosis and senility*				Other heart disease†			
	1921–30	1931–35	1938	1939	1921–30	1931–35	1938	1939	1921–30	1931–35	1938	1939	1921–30	1931–35	1938	1939
Males																
45– ...	568	474	379	367	82	255	388	431	364	516	522	596	225	150	121	142
50– ...	845	705	551	612	161	504	755	935	718	1,051	1,234	1,321	338	224	206	202
55– ...	1,358	1,123	762	896	297	827	1,349	1,587	1,468	2,020	2,400	2,598	573	355	309	298
60– ...	2,175	1,762	1,260	1,215	485	1,281	2,146	2,446	3,081	4,082	4,913	5,230	1,030	576	495	513
65– ...	3,544	2,785	1,924	1,826	712	1,972	3,181	3,377	6,654	8,659	9,249	10,103	1,825	1,010	801	737
70– ...	4,974	4,113	2,823	2,672	894	2,637	4,287	4,752	15,785	19,220	20,078	21,601	2,863	1,664	1,154	1,171
75 & up	7,280	6,142	4,199	4,104	994	3,160	5,219	5,805	52,910	58,886	62,760	68,955	5,062	3,139	2,207	2,377
Females																
45– ...	600	521	406	407	17	48	85	82	264	378	397	418	204	130	118	107
50– ...	852	676	511	513	38	105	169	174	520	738	794	808	330	190	178	152
55– ...	1,270	986	699	705	75	212	370	398	1,027	1,463	1,452	1,580	533	310	241	243
60– ...	2,059	1,516	1,076	1,053	154	447	791	810	2,184	3,106	3,106	3,416	933	513	445	416
65– ...	3,219	2,485	1,727	1,671	267	785	1,308	1,454	4,638	6,534	6,622	7,254	1,628	912	700	696
70– ...	4,774	3,812	2,423	2,412	370	1,157	1,991	2,096	11,765	14,838	15,219	16,461	2,675	1,575	1,092	1,117
75 & up	7,320	6,100	3,809	3,923	479	1,662	2,987	3,303	46,786	52,818	53,206	59,175	4,690	3,023	2,148	2,377

* Excluding acute myocarditis, senile dementia and arteriosclerosis associated with cerebral vascular lesions or with nephritis. Nos. 93b, c, 97 (3) and 162b in 1931–39 ; Nos. 90 (5, 7), 91b (2) and 164 (2) in 1921–30.

† Comprises Nos. 90, 91, 93a and 95 in 1931–39 ; Nos. 87, 88 and 90 (6, 8, 9) in 1921–30.

Table LXXI shows the trend of death rates from 1921–30 to 1939 for four main groups of circulatory disease at various ages above 45. The rates for valvular disease have fallen remarkably, especially at ages after 55, where in 1939 they were little more than half the mean annual rates of 1921–30. The residual group of other heart disease shows an even greater relative fall, and it is probable that some transfer has taken place to coronary and myocardial disease from each of these groups owing to changing views about heart disease. Such transfer could, however, account for only a fraction of the increases registered amongst males for degenerative diseases affecting the myocardium and vascular system, as shown below.

	Increase (+) or decrease (—) in rates from 1921–30 to 1939				Percentage increase in combined death rates from coronary and myocardial disease, arteriosclerosis (excluding cerebral hæmorrhage) and senility.					
	Coronary, myocardial, arteriosclerosis, senility		Valvular and "other heart" disease		1921–30 to 1931–35		1931–35 to 1938		1938 to 1939	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
45–	+581	+219	—284	—290	73	52	18	13	13	4
50–	+1,377	+424	—369	—517	77	51	28	14	13	2
55–	+2,420	+876	—737	—855	61	52	32	9	12	9
60–	+4,110	+1,888	—1,477	—1,523	50	51	32	10	9	8
65–	+6,114	+3,803	—2,806	—2,480	44	49	17	8	8	11
70–	+9,674	+6,422	—3,994	—3,920	31	32	11	8	8	8
75 & up	+20,856	+15,213	—5,861	—5,710	19	15	10	3	10	11

At ages 45–60 since 1921–30 males have consistently shown much more rapid increases than females in mortality classed to the degenerative group ; and this was true also at ages over 60 during the interval from 1931–35 to 1938. Comparing 1939 with 1921–30 male rates increased more than female rates at every age but the contrast was pronounced only at ages under 65 as shown by the following percentage increases.

	45–	50–	55–	60–	65–	70–	75 *and over*
Males ...	+130	+157	+137	+115	+83	+58	+39
Females ...	+78	+76	+79	+81	+78	+53	+32

The increases in 1939 compared with the preceding year were particularly remarkable amongst males under 60, considering the favourable climatic conditions in both years.

104–114. **Diseases of the Respiratory System.**—Table LXXII shows the trend of standardized death-rates from bronchitis, asthma, the pneumonias and pulmonary congestion since 1911–20.

Table LXXII.—Diseases of the Respiratory System. Standardized death-rates per million living at all ages, 1911–1939.

Period	Bronchitis (106)		Asthma (112)		Lobar, broncho- and unspecified pneumonia (107–109)		Chronic interstitial pneumonia (114a)		Congestion and hæmorrhagic infarct of lung (111)	
	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females
1911–20	1,129	940	56	35	1,354	957	11	3	41	35
1921–30	750	594	48	31	1,111	776	8	2	25	25
1931–35	422	314	35	26	886	623	10	2	23	21
1936	370	241	31	23	826	545	10	1	21	18
1937	365	246	35	25	859	563	11	2	20	17
1938	282	171	30	22	748	491	10	1	15	14
1939	305	194	32	22	589	414	11	2	15	14

Mortality from pneumonia declined in the 10 years from 1911–20 to 1921–30 by 18 per cent. for males and 19 per cent. for females. In 1934–37 the rates were 828 and 554 respectively, so the percentage decline in the next 10 years was

25 per cent. for males and 29 per cent. for females. Had this annual rate of fall continued from 1934–37 to 1939 the rates in 1938 would have been 770 and 508 ; and in 1939 they would have been 749 and 491. The actual decrease registered between 1938 and 1939 was very much greater for each sex than that expected, a significant fact when it is remembered that sulphonamide treatment began to be applied to an appreciable extent in 1939. Lobar pneumonia rates fell from 252 and 129 per million males and females respectively in 1938 to 167 and 92, that is by 34 and 29 per cent. respectively, whereas broncho-pneumonia rates fell from 425 and 320 to 366 and 285, that is by only 14 and 11 per cent. When a new and effective drug first becomes available in limited quantities the tendency is to employ it for younger people in preference to older, and if the above difference between the behaviour of the standardized rates for lobar and broncho-pneumonia in 1939 was due to sulphonamides it would be expected to be more pronounced at ages under 45 than later. The rates per million living at separate ages, given below, show that this was the case.

Age group	Lobar pneumonia						Broncho-pneumonia					
	Males			Females			Males			Females		
	1938 rate	1939 rate	Per cent. change	1938 rate	1939 rate	Per cent. change	1938 rate	1939 rate	Per cent. change	1938 rate	1939 rate	Per cent. change
0– ...	126	89	—29	109	73	—33	814	673	—17	641	538	—16
15– ...	102	45	—56	48	35	—27	38	23	—39	22	26	+18
25– ...	146	70	—52	73	50	—31	40	34	—15	34	34	0
35– ...	284	143	—50	122	66	—46	95	80	—16	54	56	+4
45– ...	595	418	—30	202	156	—23	344	344	0	155	166	+7
65 and over	911	805	—12	557	469	—16	1,242	1,326	+7	1,132	1,231	+9

Lobar pneumonia death-rates of males between 15 and 45 fell by 50 per cent. or more, and of females by 30 or 40 per cent. ; for broncho-pneumonia the relative improvement was less for males whilst females registered increases at most age groups.

Bronchitis and asthma death-rates have been affected considerably, as pointed out in the section on heart diseases, by the increasing mention of myocardial degeneration as a contributory cause of death and consequent classification by the rules of selection of increasing numbers to heart disease. The importance of this in the case of bronchitis is shown by the following analysis of deaths in 1937, 1938 and 1939.

		Males			Females			Persons
		1937	1938	1939	1937	1938	1939	1937–39
106	Bronchitis, so assigned by rules ...	9,482	7,448	8,460	8,400	5,824	7,003	46,617
93	Myocardial diseases :—							
	With bronchitis preferred by certifier	5,982	4,985	6,206	5,146	3,588	5,023	30,930
	With bronchitis as subsidiary cause	4,301	3,511	37,389	4,045	2,999	43,413	226,745
	Without bronchitis	28,949	30,529		35,289	36,320		

The 46,617 deaths assigned to bronchitis in the three years would be increased by 30,930 as a result of an expressed preference over diseases of the myocardium. The net increases which would result in bronchitis deaths in 1938 and 1939, taking into account all deaths certified in conjunction with another definite cause, however they were classified by the selective rules, are shown for each sex and age group in the table on the next page :—

Age group	MALES					FEMALES				
	1938		1939		1938–39	1938		1939		1938–39
	Rules	Certifier	Rules	Certifier	Per cent. excess	Rules	Certifier	Rules	Certifier	Per cent. excess
0–	708	870	609	772	25	494	671	536	654	29
5–	41	52	36	49	31	40	55	34	44	34
15–	70	111	90	126	48	56	85	50	85	60
25–	117	167	105	167	50	72	112	65	110	62
35–	191	368	251	443	83	93	219	125	224	103
45–	668	1,305	816	1,596	95	220	486	250	540	118
55–	1,332	2,923	1,616	3,593	121	504	1,395	668	1,697	164
65–	1,837	4,168	2,151	4,952	129	1,308	3,078	1,609	3,923	140
75 up	2,484	4,568	2,786	5,515	91	3,037	5,321	3,666	6,933	83
All ages ...	7,448	14,532	8,460	17,213	100	5,824	11,422	7,003	14,210	100

The percentage change produced in 1938–39 death rates by following the certifier's preference would have been 100 per cent. increase at all ages for each sex, the effect being smallest at ages under 5 and greatest at ages between 55 and 75.

Lobar, broncho– and undefined pneumonia are affected to only a slight extent by such a change in the system of selection (2·6 per cent. increase for males and 5·8 per cent. for females in 1936–39), but asthma deaths are increased by 73 per cent.

Notifiable " acute primary and influenzal pneumonia " may be regarded as comparable with those deaths for which, in the opinion of the certifier, the primary cause was influenzal, lobar, broncho-, or undefined pneumonia, and on this basis the notifications and deaths from 1927 to 1939 are compared in the table below :—

Years	Number of notifications	Estimated number of deaths	Deaths per 100 notifications
1927–29	214,489	142,027	66·2
1930–32	169,215	107,294	63·4
1933–35	163,393	105,427	64·5
1936	46,167	31,720	68·7
1937	55,896	39,241	70·2
1938	45,160	29,646	65·6
1939	42,312	26,957	63·7

The high ratio suggests that for pneumonia, as for some other notifiable diseases, notification must be incomplete.

130–132. **Nephritis.**—Deaths classed to nephritis numbered 13,538 in 1938 and 13,099 in 1939 (including 10 of non-civilians). The standardized death rates declined to 245 per million for males and 192 for females in 1938, and again to 228 for males and 184 for females in 1939, these being the lowest recorded in the twenty-one years for which such rates have been calculated for separate years. The trend of the standardized rates since 1901–10 is shown in Table LXXIII, with separation of acute, chronic and unspecified nephritis for each year since 1931.

Table LXXIII. Nephritis (Acute, Chronic or Unspecified).—Standardized death-rates per million living in 1901–10, 1911–20, 1921–30 and in each year 1931 to 1939.

	Acute nephritis (No. 130)		Chronic nephritis (No. 131)		Nephritis not stated to be acute or chronic (No. 132)		Total nephritis	
	M.	F.	M.	F.	M.	F.	M.	F.
1901–10 ...							435	325
1911–20 ...							406	302
1921–30 ...							306	240
1931 ...	27	23	258	200	40	32	325	255
1932 ...	26	23	256	202	37	30	319	255
1933 ...	26	22	234	196	32	27	292	245
1934 ...	27	22	239	190	30	25	296	237
1935 ...	24	21	243	196	29	24	296	241
1936 ...	27	20	231	187	30	21	288	228
1937 ...	21	18	226	181	23	17	270	216
1938 ...	23	18	197	155	25	19	245	192
1939 ...	22	16	184	150	22	18	228	184

Classification of deaths with mention of more than one cause in accordance with the order of preference stated by the certifying physician produces a considerable increase in the deaths assigned to nephritis, from 13,099 to 14,775 in 1939.

140–150. **Maternal Mortality.**—

Deaths and their Classification.

The numbers of deaths assigned to diseases of pregnancy, childbirth and the puerperal state in 1938 and 1939 respectively were 1,917 and 1,815 (Tables 6, 21 and LXXIV), of which 226 and 227 (11·8 and 12·5 per cent.) were assigned to abortion, 66 and 59 (3·4 and 3·3 per cent.) to ectopic gestation, and the remainder to other diseases and accidents arising from pregnancy and childbirth.

In addition 80 and 114 deaths from criminal abortion were assigned in the two years to various forms of violence, e.g. suicide, murder, etc., in accordance with the verdicts recorded by the coroners' juries (Tables 25 and LXXVII), whilst 629 and 554 deaths of pregnant or parturient women who suffered from various non-puerperal diseases (Table LXXV) were classified to those diseases. The assignment of deaths with mention of pregnancy or childbearing to the maternal cause on the one hand or to the associated 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 (1929).

It should be remembered that the 1,183 deaths defined by this process as " not classed to pregnancy or childbearing but returned as associated therewith," resulted in large part from risks to which the general population 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 causes unconnected with pregnancy 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 be sure 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. This and other factors mentioned in the Review for 1933, pp. 96–113, should be borne in mind when comparing recent rates with those prior to 1931.

Table LXXIVa.—Deaths of Women classed to Pregnancy and Childbearing 1938.

Cause of death	All ages	Civil condition			Ages						
		Single	Married	Widowed	15–	20–	25–	30–	35–	40–	45 and upwards
140. Post abortive sepsis	177	23	148	6	5	29	43	48	34	15	3
Single	—	23	—	—	3	10	4	4	2	—	—
Married	—	—	148	—	2	19	38	43	31	12	3
Widowed	—	—	—	6	—	—	1	1	1	3	—
Scarlet fever	1	—	1	—	—	—	—	—	—	1	—
Tetanus	2	—	2	—	—	—	—	—	2	—	—
Streptococcal infection	10	—	10	—	1	3	2	3	1	—	—
Staphylococcal infection	5	1	4	—	—	1	3	1	—	—	—
Bacillus coli infection	1	—	—	1	—	—	—	—	1	—	—
Bacillus Welchii infection	1	—	1	—	—	—	1	—	—	—	—
Gas gangrene	3	1	2	—	—	1	2	—	—	—	—
Septic phlegmasia alba dolens, etc.	3	1	1	1	—	—	—	1	1	1	—
Septic pneumonia	4	1	3	—	—	—	1	2	1	—	—
Septic endocarditis	10	1	8	1	1*	—	3	3	1	2	—
Septicæmia	70	8	61	1	1	13	16	17	14	6	3
Sepsis	5	—	5	—	—	—	2	—	2	1	—
Septic intoxication, sapræmia	7	3	3	1	1	—	3	3	—	—	—
Pelvic peritonitis	4	—	4	—	—	1	1	1	—	1	—
Peritonitis	23	3	20	—	1	4	4	9	4	1	—
Salpingitis	5	—	5	—	—	1	2	1	—	1	—
Metritis	4	1	2	1	—	1	—	1	2	—	—
Endometritis	11	2	9	—	—	2	3	3	3	—	—
Pyæmia	5	—	5	—	—	1	—	1	2	1	—
Pelvic cellulitis	2	—	2	—	—	1	—	1	—	—	—
Parametritis	1	1	—	—	—	—	—	1	—	—	—
141. Abortion not returned as septic	49	2	46	1	4	11	6	15	8	4	1
Single	—	2	—	—	—	1	—	1	—	—	—
Married	—	—	46	—	4	10	6	14	8	4	—
Widowed	—	—	—	1	—	—	—	—	—	—	1
(1) Hæmorrhage following abortion	39	2	36	1	4	10	5	13	5	1	1
Single	—	2	—	—	—	1	—	1	—	—	—
Married	—	—	36	—	4	9	5	12	5	1	—
Widowed	—	—	—	1	—	—	—	—	—	—	1
(2) Without record of haemorrhage	10	—	10	—	—	1	1	2	3	3	—
Single	—	—	—	—	—	—	—	—	—	—	—
Married	—	—	10	—	—	1	1	2	3	3	—
Widowed	—	—	—	—	—	—	—	—	—	—	—
142. Ectopic gestation	66	3	61	2	1	—	13	19	25	8	—
Single	—	3	—	—	1	—	1	1	—	—	—
Married	—	—	61	—	—	—	12	18	24	7	—
Widowed	—	—	—	2	—	—	—	—	1	1	—
143. Other accidents of pregnancy	20	—	20	—	—	3	5	3	5	2	2
Single	—	—	—	—	—	—	—	—	—	—	—
Married	—	—	20	—	—	3	5	3	5	2	2
Widowed	—	—	—	—	—	—	—	—	—	—	—
Hydatidiform mole	7	—	7	—	—	1	3	1	—	—	2
Carneous mole	1	—	1	—	—	—	1	—	—	—	—
Vesicular mole	1	—	1	—	—	1	—	—	—	—	—
Hydramnios	6	—	6	—	—	—	1	1	3	1	—
Incarcerated gravid uterus	1	—	1	—	—	—	—	—	—	1	—
"Pregnancy" (unqualified)	4	—	4	—	—	1	—	1	2	—	—

* Including 1 under 15 years.

Table LXXIVa.—Deaths of Women classed to Pregnancy and Childbearing 1938. (*contd.*).

Cause of death	All ages	Civil condition			Ages						
		Single	Married	Widowed	15–	20–	25–	30–	35–	40–	45 and upwards
144. Puerperal hæmorrhage	289	7	282	—	5	30	87	68	49	42	8
Single	—	7	—	—	2	1	1	1	1	1	—
Married	—	—	282	—	3	29	86	67	48	41	8
Widowed	—	—	—	—	—	—	—	—	—	—	—
(*a*) Placenta prævia	118	3	115	—	1	7	30	27	22	26	5
Single	—	3	—	—	—	—	1	—	1	1	—
Married	—	—	115	—	1	7	29	27	21	25	5
Widowed	—	—	—	—	—	—	—	—	—	—	—
(*b*) Other puerperal hæmorrhage	171	4	167	—	4	23	57	41	27	16	3
Single	—	4	—	—	2	1	—	1	—	—	—
Married	—	—	167	—	2	22	57	40	27	16	3
Widowed	—	—	—	—	—	—	—	—	—	—	—
Adherent or retained placenta	84	2	82	—	2	15	26	21	11	9	—
Accidental hæmorrhage	14	—	14	—	—	1	1	2	5	3	2
Ante partum hæmorrhage	5	—	5	—	—	—	—	2	—	2	1
Ante partum and post partum hæmorrhage	2	—	2	—	—	—	2	—	—	—	—
Hæmorrhage	4	—	4	—	—	—	1	2	1	—	—
Post partum hæmorrhage	62	2	60	—	2	7	27	14	10	2	—
145. Puerperal sepsis not returned as post abortive	378	21	352	5	8	51	100	118	74	24	3
Single	—	21	—	—	1	9	7	2	2	—	—
Married	—	—	352	—	7	42	93	116	69	23	2
Widowed	—	—	—	5	—	—	—	—	3	1	1
(*a*) Puerperal septicæmia and pyæmia	378	21	352	5	8	51	100	118	74	24	3
Single	—	21	—	—	1	9	7	2	2	—	—
Married	—	—	352	—	7	42	93	116	69	23	2
Widowed	—	—	—	5	—	—	—	—	3	1	1
Scarlet fever	2	—	2	—	—	1	—	1	—	—	—
Streptococcal infection	34	—	34	—	—	4	11	12	5	2	—
Pneumococcal infection	4	—	4	—	—	1	1	2	—	—	—
Staphylococcal infection	5	—	5	—	—	1	1	2	1	—	—
Bacillus coli infection	2	—	2	—	—	1	—	1	—	—	—
Bacillus Welchii infection	1	—	1	—	—	—	—	—	—	—	1
Gas gangrene	2	—	2	—	1	—	—	—	—	1	—
Septic phlegmasia alba dolens	38	2	36	—	—	7	6	9	11	5	—
Septic pneumonia	12	1	10	1	1	1	2	4	4	—	—
Septic endocarditis	12	1	11	—	—	—	5	5	2	—	—
Toxic myocarditis	8	1	7	—	—	1	3	1	2	—	1
Septicæmia	101	5	94	2	6	10	33	26	22	4	—
Sepsis	60	5	54	1	—	11	15	19	11	4	—
Septic intoxication, sapræmia	15	—	15	—	—	1	4	6	2	2	—
Pelvic peritonitis	3	—	3	—	—	—	—	2	1	—	—
Peritonitis	26	1	24	1	—	4	7	9	3	2	1
Endometritis	7	2	5	—	—	1	—	4	1	1	—
Parametritis	4	—	4	—	—	—	2	1	1	—	—
Pyæmia	7	1	6	—	—	—	4	—	2	1	—
Pelvic cellulitis	7	1	6	—	—	2	3	2	—	—	—
Pelvic abscess	2	—	2	—	—	—	—	1	1	—	—
"Puerperal fever"	26	1	25	—	—	5	3	11	5	2	—
(*b*) Puerperal tetanus	—	—	—	—	—	—	—	—	—	—	—

Table LXXIVa.—Deaths of Women classed to Pregnancy and Childbearing 1938 (*contd.*).

Cause of death	All ages	Civil condition			Ages						
		Single	Married	Widowed	15–	20–	25–	30–	35–	40–	45 and upwards
146. Puerperal albuminuria and convulsions ...	283	21	259	3	17	50	77	68	40	27	4
Single	—	21	—	—	7	8	3	1	1	1	—
Married	—	—	259	—	10	42	74	65	38	26	4
Widowed	—	—	—	3	—	—	—	2	1	—	—
(1) Puerperal convulsions	210	16	193	1	13	40	60	48	25	21	3
Single	—	16	—	—	6	6	2	1	1	—	—
Married	—	—	193	—	7	34	58	46	24	21	3
Widowed	—	—	—	1	—	—	—	1	—	—	—
(2) Other conditions under 146	73	5	66	2	4	10	17	20	15	6	1
Single	—	5	—	—	1	2	1	—	—	1	—
Married	—	—	66	—	3	8	16	19	14	5	1
Widowed	—	—	—	2	—	—	—	1	1	—	—
147. Other toxæmias of pregnancy	168	6	159	3	3	28	46	39	40	11	1
Single	—	6	—	—	1	1	1	1	2	—	—
Married	—	—	159	—	2	27	43	37	38	11	1
Widowed	—	—	—	3	—	—	2	1	—	—	—
Chorea gravidarum	2	—	2	—	—	2	—	—	—	—	—
Toxæmia of pregnancy	118	4	111	3	2	18	29	26	31	11	1
Puerperal toxæmia	2	1	1	—	—	1	—	—	1	—	—
Uncontrollable vomiting	46	1	45	—	1	7	17	13	8	—	—
148. Puerperal phlegmasia alba dolens, embolism and sudden death	135	6	129	—	4	13	30	41	31	13	3
Single	—	6	—	—	—	—	3	2	—	1	—
Married	—	—	129	—	4	13	27	39	31	12	3
Widowed	—	—	—	—	—	—	—	—	—	—	—
(*a*) Puerperal phlegmasia alba dolens not returned as septic	49	2	47	—	1	5	13	16	11	2	1
Single	—	2	—	—	—	—	—	2	—	—	—
Married	—	—	47	—	1	5	13	14	11	2	1
Widowed	—	—	—	—	—	—	—	—	—	—	—
(*b*) Puerperal embolism and sudden death	86	4	82	—	3	8	17	25	20	11	2
Single	—	4	—	—	—	—	3	—	—	1	—
Married	—	—	82	—	3	8	14	25	20	10	2
Widowed	—	—	—	—	—	—	—	—	—	—	—
149. Other accidents of childbirth	320	7	312	1	6	39	90	89	61	31	4
Single	—	7	—	—	2	—	4	1	—	—	—
Married	—	—	312	—	4	39	86	87	61	31	4
Widowed	—	—	—	1	—	—	—	1	—	—	—
Contracted pelvis	42	3	39	—	1	7	11	8	10	4	1
Craniotomy	5	—	5	—	—	—	4	1	—	—	—
Instrumental delivery	26	2	24	—	—	2	12	6	5	1	—
Malpresentation	44	1	43	—	1	11	13	9	4	5	1
Abnormal fœtus	15	—	15	—	—	1	2	4	5	2	1
Disproportion	23	—	23	—	1	1	6	8	4	3	—
Difficult and prolonged labour	47	—	47	—	—	3	10	20	8	6	—
*Cæsarean section (reason not stated)	11	—	11	—	—	2	4	3	2	—	—
Obstetrical shock	10	—	10	—	—	1	3	1	4	1	—
Ruptured uterus	26	—	26	—	—	3	4	5	10	3	1
Laceration of perineum	3	—	3	—	—	1	1	—	1	—	—
Inversion of uterus	14	—	14	—	1	2	7	2	1	1	—
Retroverted gravid uterus	1	—	1	—	—	—	—	—	—	1	—
Uterine inertia	16	—	16	—	1	2	4	7	1	1	—
Atony of uterus	4	—	3	1	1	—	—	2	—	1	—
Contraction of uterine ring	1	—	1	—	—	—	—	1	—	—	—
Rigid cervix uteri	1	—	1	—	—	—	—	—	1	—	—
Sub involution of uterus	3	—	3	—	—	2	—	—	—	1	—
Retained or adherent placenta ...	15	—	15	—	—	—	4	9	1	1	—
Precipitate birth	2	—	2	—	—	—	—	1	1	—	—
Stillbirth	3	—	3	—	—	—	2	—	1	—	—
Multiple birth	8	1	7	—	—	1	3	2	2	—	—

* In addition, Cæsarean section was stated to have been performed in the case of 137 deaths included under other headings in this table:—Hydramnios 1, placenta prævia 21, accidental hæmorrhage 6, eclampsia 8, albuminuria 1, toxæmia of pregnancy 8, toxic vomiting 7, contracted pelvis 32, malpresentation 10, failed forceps 1, disproportion 21, difficult labour 18, uterine inertia 3.

Table LXXIVa.—Deaths of Women classed to Pregnancy and Childbearing 1938 (*contd.*).

Cause of death	All ages	Civil condition			Ages						
		Single	Married	Widowed	15–	20–	25–	30–	35–	40–	45 and upwards
150. Other or unspecified conditions of the puerperal state	32	1	31	—	—	6	10	9	6	1	—
Single	—	1	—	—	—	—	1	—	—	—	—
Married	—	—	31	—	—	6	9	9	6	1	—
Widowed	—	—	—	—	—	—	—	—	—	—	—
(1) Puerperal insanity	14	—	14	—	—	1	6	4	2	1	—
Single	—	—	—	—	—	—	—	—	—	—	—
Married	—	—	14	—	—	1	6	4	2	1	—
Widowed	—	—	—	—	—	—	—	—	—	—	—
(2) Puerperal diseases of the breast ...	5	—	5	—	—	3	—	2	—	—	—
Single	—	—	—	—	—	—	—	—	—	—	—
Married	—	—	5	—	—	3	—	2	—	—	—
Widowed	—	—	—	—	—	—	—	—	—	—	—
(3) Childbirth (unqualified)	13	1	12	—	—	2	4	3	4	—	—
Single	—	1	—	—	—	—	1	—	—	—	—
Married	—	—	12	—	—	2	3	3	4	—	—
Widowed	—	—	—	—	—	—	—	—	—	—	—
Anæmia	2	—	2	—	—	—	1	1	—	—	—
Myocarditis	1	—	1	—	—	—	—	1	—	—	—
Endocarditis	1	—	1	—	—	—	1	—	—	—	—
Cardiac dilatation	1	—	1	—	—	1	—	—	—	—	—
Broncho-pneumonia	2	1	1	—	—	—	1	—	1	—	—
Pneumonia	1	—	1	—	—	1	—	—	—	—	—
Pulmonary œdema	1	—	1	—	—	—	—	—	1	—	—
Cardiac failure	3	—	3	—	—	—	1	1	1	—	—
Unqualified	1	—	1	—	—	—	—	—	1	—	—
Total (including abortion other than criminal)	1,917	97	1,799	21	53	260	507	517	373	178	29
Single	—	97	—	—	17*	30	25	14	8	3	—
Married	—	—	1,799	—	36	230	479	498	359	170	27
Widowed	—	—	—	21	—	—	3	5	6	5	2
Total from causes other than abortion (Nos. 142–150)	1,691	72	1,605	14	44	220	458	454	331	159	25
Single	—	72	—	—	14	19	21	9	6	3	—
Married	—	—	1,605	—	30	201	435	441	320	154	24
Widowed	—	—	—	14	—	—	2	4	5	2	1
Criminal abortion (see Table 25)	80	—	—	—	3	20	27	15	9	5	1
Single	—	30	—	—	3	13	12	1	1	—	—
Married	—	—	46	—	—	7	14	14	7	4	—
Widowed	—	—	—	4	—	—	1	—	1	1	1

* Including 1 under 15 years.

Table LXXIVb.—Deaths of Women classed to Pregnancy and Childbearing 1939.

Cause of death	All ages	Civil condition			Ages						
		Single	Married	Widowed	15–	20–	25–	30–	35–	40–	45 and upwards
140. Post abortive sepsis	168	24	142	2	7	15	48	50	36	11	1
Single	—	24	—	—	6	5	6	5	1	1	—
Married	—	—	142	—	1	10	41	45	34	10	1
Widowed	—	—	—	2	—	—	1	—	1	—	—
Tetanus	4	—	4	—	1	2	1	—	—	—	—
Staphylococcal infection	2	—	2	—	—	—	1	1	—	—	—
Streptococcal infection	10	2	8	—	—	1	2	5	1	1	—
Bacillus coli infection	2	—	2	—	—	1	—	1	—	—	—
Gas gangrene	3	1	2	—	—	1	—	1	1	—	—
Septic pneumonia	6	—	5	1	—	—	3	1	2	—	—
Septic endocarditis	5	2	2	1	—	—	2	2	—	1	—
Septicæmia	73	13	60	—	2	4	20	22	20	4	1
Sepsis	7	—	7	—	—	—	2	1	2	2	—
Sapræmia	3	1	2	—	1	—	—	1	1	—	—
Pelvic peritonitis	3	—	3	—	—	1	—	2	—	—	—
Peritonitis	21	4	17	—	2	3	6	6	3	1	—
Salpingitis	2	—	2	—	—	—	1	1	—	—	—
Metritis	5	—	5	—	—	—	4	—	1	—	—
Endometritis	13	1	12	—	1	2	6	1	2	1	—
Parametritis	1	—	1	—	—	—	—	1	—	—	—
Pyæmia	3	—	3	—	—	—	—	1	1	1	—
Pelvic cellulitis	3	—	3	—	—	—	—	3	—	—	—
Ovarian abscess	1	—	1	—	—	—	—	—	1	—	—
Pelvic abscess	1	—	1	—	—	—	—	—	1	—	—
141. Abortion not returned as septic	59	3	56	—	1	7	13	18	13	7	—
Single	—	3	—	—	1	1	1	—	—	—	—
Married	—	—	56	—	—	6	12	18	13	7	—
Widowed	—	—	—	—	—	—	—	—	—	—	—
(1) Hæmorrhage following abortion	49	2	47	—	1	6	12	16	8	6	—
Single	—	2	—	—	1	—	1	—	—	—	—
Married	—	—	47	—	—	6	11	16	8	6	—
Widowed	—	—	—	—	—	—	—	—	—	—	—
(2) Without record of hæmorrhage	10	1	9	—	—	1	1	2	5	1	—
Single	—	1	—	—	—	1	—	—	—	—	—
Married	—	—	9	—	—	—	1	2	5	1	—
Widowed	—	—	—	—	—	—	—	—	—	—	—
142. Ectopic gestation	59	6	53	—	1	6	13	15	19	3	2
Single	—	6	—	—	1	4	—	1	—	—	—
Married	—	—	53	—	—	2	13	14	19	3	2
Widowed	—	—	—	—	—	—	—	—	—	—	—
143. Other accidents of pregnancy	10	1	9	—	2	—	4	2	1	—	1
Single	—	1	—	—	—	—	—	1	—	—	—
Married	—	—	9	—	2	—	4	1	1	—	1
Widowed	—	—	—	—	—	—	—	—	—	—	—
Hydatidiform mole	3	—	3	—	1	—	1	—	—	—	1
Carneous mole	1	1	—	—	—	—	1	—	—	—	—
Hydramnios	2	—	2	—	—	—	1	1	—	—	—
Incarcerated gravid uterus	1	—	1	—	—	—	—	—	1	—	—
"Pregnancy" (unqualified)	3	—	3	—	1	—	1	1	—	—	—
144. Puerperal hæmorrhage	268	6	261	1	3	29	80	66	53	34	3
Single	—	6	—	—	1	3	—	2	—	—	—
Married	—	—	261	—	2	26	79	64	53	34	3
Widowed	—	—	—	1	—	—	1	—	—	—	—
(*a*) Placenta prævia	82	—	82	—	1	6	19	17	19	17	3
Single	—	—	—	—	—	—	—	—	—	—	—
Married	—	—	82	—	1	6	19	17	19	17	3
Widowed	—	—	—	—	—	—	—	—	—	—	—
(*b*) Other puerperal hæmorrhage	186	6	179	1	2	23	61	49	34	17	—
Single	—	6	—	—	1	3	—	2	—	—	—
Married	—	—	179	—	1	20	60	47	34	17	—
Widowed	—	—	—	1	—	—	1	—	—	—	—

Table LXXIVb.—Deaths of Women classed to Pregnancy and Childbearing 1939 (*contd.*).

Cause of death	All ages	Civil condition			Ages						
		Single	Married	Widowed	15–	20–	25–	30–	35–	40–	45 and upwards
144. (*Contd.*)											
Adherent or retained placenta	83	4	78	1	—	13	28	22	14	6	—
Accidental hæmorrhage	17	—	17	—	—	2	6	1	3	5	—
Ante partum hæmorrhage	6	—	6	—	—	—	2	3	1	—	—
Ante and post partum hæmorrhage	7	—	7	—	—	—	1	2	3	1	—
Post partum hæmorrhage	73	2	71	—	2	8	24	21	13	5	—
145. Puerperal sepsis not returned as post abortive	308	20	285	3	12	46	84	90	59	16	1
Single	—	20	—	—	3	5	5	5	2	—	—
Married	—	—	285	—	9	41	78	84	57	15	1
Widowed	—	—	—	3	—	—	1	1	—	1	—
(*a*) Puerperal septicæmia and pyæmia	307	20	284	3	12	46	84	90	58	16	1
Single	—	20	—	—	3	5	5	5	2	—	—
Married	—	—	284	—	9	41	78	84	56	15	1
Widowed	—	—	—	3	—	—	1	1	—	1	—
Scarlet fever	1	—	1	—	—	—	—	1	—	—	—
Streptococcal infection	18	—	18	—	—	1	5	6	5	1	—
Hæmolytic streptococcal infection	3	—	3	—	—	1	—	1	1	—	—
Pneumococcal infection	3	—	3	—	—	1	1	1	—	—	—
Staphylococcal infection	5	—	5	—	—	1	1	2	1	—	—
Gonococcal infection	1	1	—	—	—	1	—	—	—	—	—
Bacillus coli infection	5	—	5	—	—	—	1	2	1	1	—
Bacillus Welchii infection	1	—	1	—	—	—	—	—	1	—	—
Gas gangrene	2	—	2	—	—	—	—	2	—	—	—
Septic phlegmasia alba dolens, phlebitis, thrombosis	23	1	21	1	—	4	7	6	4	2	—
Septic pneumonia	3	—	3	—	—	—	2	1	—	—	—
Septic endocarditis	12	—	12	—	—	1	6	4	—	1	—
Toxic myocarditis	4	—	4	—	—	1	—	1	2	—	—
Septicæmia	100	6	93	1	5	15	27	27	22	4	—
Sepsis	53	3	49	1	1	6	14	19	8	4	1
Sapræmia	6	1	5	—	—	—	2	1	2	1	—
Pelvic peritonitis	2	—	2	—	—	—	—	1	—	1	—
Peritonitis	19	2	17	—	—	2	8	6	3	—	—
Metritis	2	—	2	—	—	—	—	2	—	—	—
Endometritis	19	4	15	—	1	6	5	3	3	1	—
Parametritis	3	—	3	—	1	1	—	1	—	—	—
Erysipelas	1	—	1	—	1	—	—	—	—	—	—
Pelvic cellulitis	5	1	4	—	2	1	—	1	1	—	—
Pelvic abscess	1	—	1	—	—	1	—	—	—	—	—
Pyrexia	7	—	7	—	1	2	2	1	1	—	—
"Puerperal fever"	8	1	7	—	—	1	3	1	3	—	—
(*b*) Puerperal tetanus	1	—	1	—	—	—	—	—	1	—	—
Single	—	—	—	—	—	—	—	—	—	—	—
Married	—	—	1	—	—	—	—	—	1	—	—
Widowed	—	—	—	—	—	—	—	—	—	—	—
146. Puerperal albuminuria and convulsions	309	22	287	—	21	50	93	73	48	23	1
Single	—	22	—	—	6	7	4	3	1	1	—
Married	—	—	287	—	15	43	89	70	47	22	1
Widowed	—	—	—	—	—	—	—	—	—	—	—
(1) Puerperal convulsions	222	14	208	—	15	41	65	54	32	15	—
Single	—	14	—	—	3	3	3	3	1	1	—
Married	—	—	208	—	12	38	62	51	31	14	—
Widowed	—	—	—	—	—	—	—	—	—	—	—
(2) Other conditions under 146	87	8	79	—	6	9	28	19	16	8	1
Single	—	8	—	—	3	4	1	—	—	—	—
Married	—	—	79	—	3	5	27	19	16	8	1
Widowed	—	—	—	—	—	—	—	—	—	—	—

Table LXXIVb.—Deaths of Women classed to Pregnancy and Childbearing 1939 (*contd.*).

Cause of death	All ages	Civil condition			Ages						
		Single	Married	Widowed	15–	20–	25–	30–	35–	40–	45 and upwards
147. Other toxæmias of pregnancy	156	12	144	—	5	28	35	39	31	16	2
Single	—	12	—	—	2	4	2	1	3	—	—
Married	—	—	144	—	3	24	33	38	28	16	2
Widowed	—	—	—	—	—	—	—	—	—	—	—
Chorea gravidarum	3	1	2	—	—	2	1	—	—	—	—
Toxæmia of pregnancy	110	6	104	—	3	15	21	31	25	14	1
Uncontrollable vomiting	43	5	38	—	2	11	13	8	6	2	1
148. Puerperal phlegmasia alba dolens, embolism and sudden death	140	3	134	3	2	13	37	43	28	15	2
Single	—	3	—	—	—	1	1	1	—	—	—
Married	—	—	134	—	2	12	36	42	26	14	2
Widowed	—	—	—	3	—	—	—	—	2	1	—
(*a*) Puerperal phlegmasia alba dolens not returned as septic	53	1	51	1	—	2	9	19	13	9	1
Single	—	1	—	—	—	—	—	1	—	—	—
Married	—	—	51	—	—	2	9	18	12	9	1
Widowed	—	—	—	1	—	—	—	—	1	—	—
Puerperal thrombosis	33	1	31	1	—	1	5	13	9	5	—
Others	20	—	20	—	—	1	4	6	4	4	1
(*b*) Puerperal embolism and sudden death	87	2	83	2	2	11	28	24	15	6	1
Single	—	2	—	—	—	1	1	—	—	—	—
Married	—	—	83	—	2	10	27	24	14	5	1
Widowed	—	—	—	2	—	—	—	—	1	1	—
149. Other accidents of childbirth	306	12	291	3	9	44	96	80	55	19	3
Single	—	12	—	—	—	5	4	2	1	—	—
Married	—	—	291	—	9	39	91	78	53	18	3
Widowed	—	—	—	3	—	—	1	—	1	1	—
Contracted pelvis	34	1	32	1	—	6	5	17	4	2	—
Craniotomy	2	—	2	—	—	1	—	—	1	—	—
Instrumental delivery	22	1	21	—	—	8	5	5	4	—	—
Malpresentation	33	1	32	—	—	1	10	11	6	5	—
Abnormal fœtus	11	1	10	—	2	—	6	2	1	—	—
Disproportion	18	—	18	—	—	1	4	6	5	2	—
Difficult and prolonged labour	56	2	54	—	3	8	21	11	10	1	2
*Cæsarean section (reason not stated) ...	12	1	11	—	—	2	6	2	2	—	—
Obstetrical shock	19	1	18	—	2	2	7	5	3	—	—
Ruptured uterus	22	—	21	1	—	3	4	2	8	5	—
Laceration of perineum	2	—	2	—	—	—	1	1	—	—	—
Ruptured perineum	1	—	1	—	—	—	1	—	—	—	—
Inversion of uterus	11	—	11	—	1	4	5	—	—	—	1
Retroverted gravid uterus	1	1	—	—	—	—	—	—	1	—	—
Sub-involution of uterus	2	—	2	—	—	—	—	1	1	—	—
Uterine inertia	20	—	20	—	—	3	9	3	4	1	—
Atony of uterus	1	1	—	—	—	—	—	1	—	—	—
Contraction of ring	1	—	1	—	—	—	—	1	—	—	—
Retained or adherent placenta ...	23	—	23	—	1	1	10	6	3	2	—
Precipitate birth	4	—	4	—	—	2	1	—	1	—	—
Hæmatoma, broad ligament	1	—	1	—	—	—	—	1	—	—	—
Stillbirth	2	1	1	—	—	—	—	2	—	—	—
Siamese twins	1	—	1	—	—	—	1	—	—	—	—
Multiple birth	7	1	5	1	—	2	—	3	1	1	—

* In addition Cæsarean section was stated to have been performed in the cases of 109 deaths included under other headings in this table:—placenta prævia 18, accidental hæmorrhage 4, eclampsia 8, puerperal albuminuria and convulsions 5, toxæmia of pregnancy 7, puerperal embolism 1, contracted pelvis 24, failed forceps 3, disproportion 13, difficult and prolonged labour 8, uterine inertia 3, perineal laceration 1, septic endometritis 2, ruptured uterus 3, malformation of fœtus 3, malpresentation 6.

Table LXXIVb.—Deaths of Women classed to Pregnancy and Childbearing 1939 (*contd.*).

Cause of death	All ages	Civil condition			Age						
		Single	Married	Widowed	15–	20–	25–	30–	35–	40–	45 and upwards
150. Other or unspecified diseases of the puerperal state	32	—	32	—	1	3	11	7	6	4	—
Single	—	—	—	—	—	—	—	—	—	—	—
Married	—	—	32	—	1	3	11	7	6	4	—
Widowed	—	—	—	—	—	—	—	—	—	—	—
(1) Puerperal insanity	6	—	6	—	—	—	3	1	2	—	—
Single	—	—	—	—	—	—	—	—	—	—	—
Married	—	—	6	—	—	—	3	1	2	—	—
Widowed	—	—	—	—	—	—	—	—	—	—	—
(2) Puerperal diseases of the breast ...	6	—	6	—	—	3	1	1	—	1	—
Single	—	—	—	—	—	—	—	—	—	—	—
Married	—	—	6	—	—	3	1	1	—	1	—
Widowed	—	—	—	—	—	—	—	—	—	—	—
(3) Childbirth (unqualified)	20	—	20	—	1	—	7	5	4	3	—
Single	—	—	—	—	—	—	—	—	—	—	—
Married	—	—	20	—	1	—	7	5	4	3	—
Widowed	—	—	—	—	—	—	—	—	—	—	—
Anæmia	1	—	1	—	—	—	—	—	1	—	—
Myocarditis	1	—	1	—	—	—	—	—	—	1	—
Valvular disease	1	—	1	—	—	—	1	—	—	—	—
Broncho-pneumonia	4	—	4	—	—	—	2	1	—	1	—
Pneumonia	1	—	1	—	—	—	—	—	1	—	—
Bronchitis	2	—	2	—	—	—	1	1	—	—	—
Pulmonary œdema	3	—	3	—	—	—	1	1	—	1	—
Collapse of lungs	2	—	2	—	1	—	—	—	1	—	—
Dilatation of stomach	1	—	1	—	—	—	—	1	—	—	—
Unqualified	4	—	4	—	—	—	2	1	1	—	—
Total (including abortion other than criminal)...	1,815	109	1,694	12	64	241	514	483	349	148	16
Single	—	109	—	—	20	35	23	21	8	2	—
Married	—	—	1,694	—	44	206	487	461	337	143	16
Widowed	—	—	—	12	—	—	4	1	4	3	—
Total from causes other than abortion (142–150)	1,588	82	1,496	10	56	219	453	415	300	130	15
Single	—	82	—	—	13	29	16	16	7	1	—
Married	—	—	1,496	—	43	190	434	398	290	126	15
Widowed	—	—	—	10	—	—	3	1	3	3	—
Criminal abortion (*see* Table 25)...	114	14	94	6	3	16	28	23	31	12	1
Single	—	14	—	—	2	3	3	3	2	1	—
Married	—	—	94	—	1	12	25	17	28	10	1
Widowed	—	—	—	6	—	1	—	3	1	1	—

Table LXXVa.—Deaths of women not classed to Pregnancy or Childbearing, but returned as associated therewith, 1938

	Cause of death	Classification by selective rules as in previous years: All ages	15–	20–	25–	30–	35–	40–	45 and upwards	Classification by order of preference stated by certifying physician All ages
7	Measles	1	—	—	—	—	1	—	—	*1*
8	Scarlet fever	1	—	—	—	1	—	—	—	*1*
10	Diphtheria	2	—	—	1	1	—	—	—	*2*
11	Influenza	23	—	4	5	7	6	1	—	*23*
16 (1)	Acute anterior poliomyelitis	1	—	—	—	—	1	—	—	*1*
17	Encephalitis lethargica	1	—	—	—	1	—	—	—	—
23	Tuberculosis of respiratory system	33	1	13	5	8	5	1	—	*31*
24–32	Other forms of tuberculosis	10	—	2	3	2	2	1	—	*10*
34 (*b*) (*c*)	Syphilis acquired or unspecified	5	—	2	—	—	—	3	—	*3*
36 (*a*)	Septicæmia	1	—	1	—	—	—	—	—	*1*
38	Malaria	1	—	—	—	1	—	—	—	*1*
43 (1)	Actinomycosis of liver	1	—	—	—	—	—	1	—	—
45–53	Cancer	11	—	1	1	3	3	2	1	*9*
54 (*a*)	Tumours of female genital organs	15	—	—	3	2	9	1	—	*18*
56	Rheumatic fever	6	—	1	3	1	1	—	—	*5*
59	Diabetes	10	—	2	3	4	—	1	—	*6*
63 (1)	Rickets	—	—	—	—	—	—	—	—	*1*
63 (2)	Spinal curvature of undetermined nature	—	—	—	—	—	—	—	—	*1*
65 (2)	Dwarfism	1	—	—	—	1	—	—	—	*1*
66 (*a*)	Simple goitre	1	—	—	—	1	—	—	—	*1*
66 (*b*)	Exophthalmic goitre	6	—	—	2	2	—	2	—	*5*
69 (2)	Acholuric jaundice	2	—	—	—	—	1	1	—	*1*
70 (*a*)	Purpura	1	—	—	—	—	1	—	—	—
71 (*a*)	Pernicious anæmia	12	—	4	1	2	4	1	—	*10*
71 (*b*) (1)	Splenic anæmia	1	—	—	1	—	—	—	—	*1*
71 (*b*) (2)	Anæmia	1	—	—	—	1	—	—	—	*3*
72 (*a*)	Myelogenous leukæmia	2	—	1	—	—	—	1	—	—
72 (*a*)	Splenomedullary leukæmia	1	—	—	—	—	1	—	—	—
72 (*b*)	Lymphadenoma	1	—	—	1	—	—	—	—	*1*
73 (2)	Enlarged spleen	—	—	—	—	—	—	—	—	*1*
78 (*b*)	Encephalitis	1	—	—	1	—	—	—	—	*1*
79	Meningitis	1	—	1	—	—	—	—	—	*2*
82 (*a*) (1)	Cerebral hæmorrhage	2	—	—	1	—	1	—	—	*1*
82 (*a*) (2)	Apoplexy	1	—	—	—	—	—	1	—	*1*
82 (*b*) (2)	Cerebral thrombosis	2	—	—	—	—	2	—	—	*3*
83	General paralysis of insane	1	—	—	—	—	1	—	—	*1*
84 (*a*)	Dementia præcox	1	—	—	—	1	—	—	—	*1*
84 (*b*)	Melancholia	1	—	—	1	—	—	—	—	—
85	Epilepsy	2	—	1	—	—	1	—	—	*2*
87 (*a*)	Chorea	1	—	—	1	—	—	—	—	*1*
87 (*e*)	Mental deficiency	1	—	—	—	1	—	—	—	*1*
88	Panophthalmitis	1	—	—	—	—	1	—	—	*1*
89 (*a*)	Otitis media	4	—	—	1	1	1	1	—	*4*
89 (*b*)	Mastoiditis	2	—	—	—	1	1	—	—	*2*
90	Pericarditis	1	—	—	—	1	—	—	—	*1*
91 (1)	Malignant endocarditis	5	—	2	1	1	1	—	—	*5*
92 (1)	Aortic valve disease	3	—	2	—	—	1	—	—	*3*
92 (2)	Mitral valve disease	58	—	6	17	24	7	3	1	*52*
92 (3, 4, 5)	Other or unspecified valvular disease	31	—	3	12	7	7	2	—	*32*
93 (*a*)	Acute myocarditis	1	—	—	—	—	—	1	—	*1*
93 (*b*)	Fatty heart	11	—	1	1	4	2	2	1	*11*
93 (*b*) (2)	Cardiovascular degeneration	1	—	—	—	—	—	—	1	*1*
93 (*c*)	Myocardial disease	33	—	1	6	8	11	5	2	*34*
94	Diseases of coronary arteries	4	—	—	—	1	—	3	—	*2*

Table LXXVa.—Deaths of women not classed to Pregnancy or Childbearing, but returned as associated therewith, 1938 (*contd.*).

	Cause of death	Classification by selective rules as in previous years: All ages	15–	20–	25–	30–	35–	40–	45 and upwards	Classification by order of preference stated by certifying physician All ages
95	Other diseases of the heart	6	—	—	2	2	2	—	—	*6*
96	Aneurysm	1	—	—	—	—	1	—	—	*1*
100 (1)	Varix	1	—	—	1	—	—	—	—	*1*
100 (2)	Other diseases of veins	2	—	—	—	1	—	—	1	*2*
102	Hypertension	1	—	—	—	1	—	—	—	*3*
106	Bronchitis	4	—	—	2	1	1	—	—	*10*
107	Broncho-pneumonia	18	—	1	4	7	4	2	—	*21*
108	Lobar pneumonia	71	3	9	14	18	20	7	—	*63*
109	Pneumonia (not otherwise defined)	6	1	—	3	—	1	1	—	*11*
110 (1)	Empyema	2	1	—	—	1	—	—	—	*3*
110 (2)	Pleurisy	2	—	—	1	1	—	—	—	*3*
111 (1)	Hypostatic congestion of lungs	—	—	—	—	—	—	—	—	*1*
111 (2)	Pulmonary embolism	2	—	—	—	1	1	—	—	*2*
112	Asthma	1	—	—	1	—	—	—	—	*1*
114 (*b*) (2)	Abscess of lung	1	—	—	—	1	—	—	—	*1*
115 (3)	Diseases of the tonsils	4	—	1	—	1	2	—	—	*3*
115 (4)	Other diseases included under 115	2	—	2	—	—	—	—	—	*3*
116	Achalasia of cardia	1	—	—	—	—	1	—	—	*1*
117 (*b*)	Ulcer of duodenum	1	—	—	1	—	—	—	—	*1*
119 & 120 (*a*)	Enteritis	2	—	—	—	1	1	—	—	*2*
119 & 120 (*b*)	Ulcerative colitis	1	—	1	—	—	—	—	—	*1*
121	Appendicitis	8	2	2	1	1	1	1	—	*8*
122 (*b*)	Intestinal obstruction	52	1	4	10	17	16	3	1	*10*
125 (1)	Acute yellow atrophy	54	3	7	15	17	10	2	—	*53*
126 (1)	Gall stones	3	—	—	—	2	—	1	—	*3*
127 (2)	Obstructed bile duct	1	—	—	1	—	—	—	—	*1*
128	Acute pancreatitis	1	—	—	—	1	—	—	—	*1*
130	Acute nephritis	2	—	—	—	1	1	—	—	*3*
131	Chronic nephritis	36	1	1	6	9	14	4	1	*37*
132	Nephritis unspecified	1	—	1	—	—	—	—	—	*1*
133 (*a*)	Pyelitis	1	—	—	—	—	1	—	—	*2*
133 (*b*)	Necrosis of kidney	1	—	1	—	—	—	—	—	*1*
134 (*a*)	Calculi of kidney and ureter	4	1	1	1	—	—	1	—	*5*
135 (*b*)	Recto-vesical fistula	2	—	—	—	—	2	—	—	*2*
139 (*a*) (2)	Ruptured tubal abscess	1	—	—	—	—	1	—	—	*1*
139 (*b*)	Diseases of the uterus	2	—	—	—	1	—	1	—	*2*
152 (1)	Cellulitis	—	—	—	—	—	—	—	—	*1*
155	Chronic periostitis	1	—	1	—	—	—	—	—	*1*
157 (*c*)	Congenital pulmonary stenosis	1	—	1	—	—	—	—	—	*1*
157 (*e*) (4)	Congenital deformity	1	—	—	—	1	—	—	—	*1*
163–198	Violence	8	—	1	3	—	3	1	—	*8*
	Total	629*	14	82	137	174	155	58	9	*583*
	Single	30	7	10	2	6	2	3	—	—
	Married	593	7	72	135	168	151	53	7	—
	Widowed	6	—	—	—	—	2	2	2	—
Associated with abortion (included above)		81	2	8	19	24	20	7	1	—
	Single	3	—	2	—	—	—	1	—	—
	Married	76	2	6	19	24	19	5	1	—
	Widowed	2	—	—	—	—	1	1	—	—
Totals in accordance with preference stated by certifying physician		—	14	78	128	159	141	55	8	*583*
	Single	—	7	7	2	6	1	3	—	*26*
	Married	—	7	71	126	153	138	50	6	*551*
	Widowed	—	—	—	—	—	2	2	2	*6*

* Of these 629 deaths, 197 were stated to be associated with pregnancy, 81 with abortion, 28 with premature delivery, 15 with delivery at full term and 308 with childbirth. Cæsarean section was stated to have been performed in the case of 62 of these deaths of which 21 were attributed to ileus following Cæsarean section and assigned to No. 122 (*b*) above.

Table LXXVb.—Deaths of Women not classed to Pregnancy or Childbearing but returned as associated therewith, 1939

	Cause of death	Classification by selective rules as in previous years: All ages	15–	20–	25–	30–	35–	40–	45 and upwards	Classification by order of preference stated by certifying physician: All ages
8	Scarlet fever	1	—	—	—	—	1	—	—	*2*
10	Diphtheria	2	—	1	—	—	1	—	—	*1*
11	Influenza	32	—	6	8	9	7	2	—	*30*
13 (*a*)	Amœbic dysentery	1	—	—	—	—	1	—	—	—
16 (1)	Poliomyelitis	1	—	—	—	—	1	—	—	*1*
18	Cerebro-spinal fever	1	—	—	—	—	1	—	—	*1*
23	Tuberculosis of the respiratory system	38	1	9	11	7	10	—	—	*36*
24–32	Other forms of tuberculosis	6	—	2	2	2	—	—	—	*5*
34 (*b*) (*c*)	Syphilis	1	—	1	—	—	—	—	—	*1*
35 (1)	Gonorrhœa	—	—	—	—	—	—	—	—	*1*
36 (*a*)	Septicæmia	1	—	—	1	—	—	—	—	*2*
44 (5)	Mumps	1	—	—	—	—	1	—	—	*1*
45–53	Cancer	11	—	—	1	4	4	2	—	*11*
54 (*a*)	Tumours of female genital organs	16	—	—	5	5	3	3	—	*17*
54 (*b*)	Hæmangioma of bronchus	1	—	1	—	—	—	—	—	*1*
56	Rheumatic fever	4	—	1	1	2	—	—	—	*4*
59	Diabetes	6	1	1	3	—	1	—	—	*5*
66 (*a*)	Thyroid cyst	1	—	—	—	1	—	—	—	*1*
66 (*b*)	Exophthalmic goitre	14	1	—	5	4	2	2	—	*8*
66 (*c*)	Myxœdema	1	—	—	—	1	—	—	—	—
70 (*a*)	Purpura	2	—	1	—	1	—	—	—	*1*
70 (*b*)	Hæmorrhagic diathesis	1	—	1	—	—	—	—	—	*1*
71 (*a*)	Pernicious anæmia	20	—	—	8	5	6	1	—	*14*
71 (*b*) (1)	Splenic anæmia	1	—	—	—	1	—	—	—	*1*
71 (*b*) (2)	Anæmia	4	—	—	—	2	2	—	—	*4*
72 (*b*) (1)	Lymphadenoma	1	—	—	—	—	1	—	—	*1*
73 (1)	Banti's disease	1	—	—	—	—	—	1	—	*1*
78 (*a*)	Cerebral abscess	1	1	—	—	—	—	—	—	*1*
79	Acute meningitis	1	—	—	—	—	1	—	—	*1*
82 (*b*) (2)	Cerebral thrombosis	1	—	—	—	—	—	1	—	*2*
84 (*b*)	Acute mania	1	1	—	—	—	—	—	—	*1*
85	Epilepsy	5	—	1	1	2	—	1	—	*6*
87 (*b*)	Polyneuritis	1	1	—	—	—	—	—	—	*1*
87 (*d*)	Disseminated sclerosis	3	—	—	—	1	2	—	—	*3*
89 (*a*)	Otitis media	1	—	—	1	—	—	—	—	*1*
91 (1)	Malignant endocarditis	8	1	2	4	1	—	—	—	*9*
92 (1)	Aortic valve disease	1	—	—	1	—	—	—	—	*1*
92 (2)	Mitral valve disease	55	2	5	23	11	11	2	1	*55*
92 (3) & (5)	Other or unspecified valvular disease	14	—	1	8	2	2	1	—	*16*
93 (*a*)	Acute myocarditis	1	—	—	1	—	—	—	—	*1*
93 (*b*) (1)	Fatty heart	8	—	2	1	1	2	2	—	*8*
93 (*b*) (3)	Other or unspecified myocardial disease	22	—	1	—	9	6	6	—	*19*
93 (*c*)	Myocarditis not distinguished as acute or chronic	7	—	—	3	2	1	1	—	*5*
94	Diseases of coronary arteries	3	—	—	—	1	2	—	—	*3*
95	Other diseases of the heart	5	—	—	2	1	2	—	—	*5*
96	Miliary aneurysm	1	—	—	—	1	—	—	—	*1*
97	Arteriosclerosis	1	—	—	—	—	1	—	—	*1*
100 (1)	Varix	4	—	—	—	—	3	1	—	*4*
100 (2)	Phlebitis	1	—	—	—	—	—	—	1	*1*
105 (2)	Acute œdematous laryngitis	1	—	—	—	1	—	—	—	*1*
106	Bronchitis	5	—	—	—	2	1	1	1	*8*
107	Broncho-pneumonia	21	1	1	7	4	5	3	—	*24*
108	Lobar pneumonia	29	1	9	6	8	4	1	—	*27*
109	Pneumonia (not otherwise defined)	8	—	1	3	2	2	—	—	*8*
110 (1)	Empyema	1	—	—	1	—	—	—	—	*1*
110 (2)	Pleurisy	1	—	—	1	—	—	—	—	*1*
111 (1)	Acute pulmonary œdema	1	—	—	1	—	—	—	—	*1*
111 (2)	Pulmonary embolism	—	—	—	—	—	—	—	—	*1*

Table LXXVb.—Deaths of Women not classed to Pregnancy or Childbearing but returned as associated therewith, 1939 (*contd.*).

	Cause of death	Classification by selective rules as in previous years: All ages	15–	20–	25–	30–	35–	40–	45 and upwards	Classification by order of preference stated by certifying physician: All ages
112	Asthma	3	—	—	1	—	1	1	—	*8*
115 (1)	Dental abscess	1	—	—	1	—	—	—	—	*1*
115 (3)	Diseases of the tonsils	2	—	—	—	1	1	—	—	*4*
117 (*a*)	Ulcer of the stomach	3	—	2	—	1	—	—	—	*3*
118 (1)	Acute gastritis	1	—	—	—	—	—	1	—	*1*
119 & 120 (*a*)	Chronic colitis	1	—	—	—	1	—	—	—	*2*
119 & 120 (*b*)	Ulceration of the intestines	2	—	2	—	—	—	—	—	*2*
121	Appendicitis	8	1	3	2	—	2	—	—	*9*
122 (*a*)	Hernia	—	—	—	—	—	—	—	—	*1*
122 (*b*)	Intestinal obstruction	34	—	5	5	11	10	3	—	*4*
125 (1)	Acute yellow atrophy	44	2	8	11	12	7	2	2	*43*
126 (2)	Gall stones	1	—	—	1	—	—	—	—	*1*
128	Diseases of the pancreas	3	—	1	1	1	—	—	—	*2*
129	General peritonitis	1	—	—	—	1	—	—	—	*1*
131	Chronic nephritis	39	3	1	3	11	14	7	—	*40*
132	Nephritis	1	—	—	—	1	—	—	—	*1*
133 (*a*)	Pyelitis (chronic)	2	—	—	1	—	1	—	—	*2*
133 (*b*)	Other diseases included under 133	2	—	—	1	—	—	1	—	*2*
134 (*a*)	Calculi of kidney and ureter	2	—	—	—	1	—	1	—	*3*
135 (*a*)	Cystitis	1	—	—	—	1	—	—	—	*1*
139 (*a*) (2)	Diseases of the Fallopian tube	2	—	—	1	—	1	—	—	*2*
139 (*a*) (3)	Pelvic abscess	1	—	1	—	—	—	—	—	*1*
139 (*b*)	Diseases of the uterus	4	—	1	—	2	1	—	—	*4*
154	Osteomyelitis	1	—	—	—	1	—	—	—	*1*
157 (*e*) (4)	Horse shoe kidney	1	—	1	—	—	—	—	—	*1*
163–198	Violence	13	—	3	3	4	3	—	—	*13*
	Total	554*	17	75	140	142	128	47	5	*521*
	Single	22	6	4	7	1	3	1	—	—
	Married	529	11	71	133	139	124	46	5	—
	Widowed	3	—	—	—	2	1	—	—	—
Associated with abortion (included above)		49	1	8	10	15	10	5	—	—
	Married	49	1	8	10	15	10	5	—	—
Totals in accordance with preference stated by certifying practitioner		—	*16*	*71*	*135*	*133*	*118*	*44*	*4*	*521*
	Single	—	*6*	*5*	*7*	*2*	*3*	*1*	—	*24*
	Married	—	*10*	*66*	*128*	*129*	*114*	*43*	*4*	*494*
	Widowed	—	—	—	—	*2*	*1*	—	—	*3*

* Of these 554 deaths, 200 were stated to be associated with pregnancy, 49 with abortion, 36 with premature delivery, 10 with delivery at full term and 259 with childbirth. Cæsarean section was stated to have been performed in the case of 47 of these deaths, of which 18 were attributed to ileus following Cæsarean section and assigned to 122 (*b*) above.

Table LXXIV gives in full detail of civil condition, age and cause the deaths of women registered during 1938 and 1939 which were classed to pregnancy and childbearing, that is to say to International groups 140–150, and to criminal abortion amongst the violent causes (Nos. 171, 175, 194, 195). It is not intended to continue publication of the details of certified cause in this table in future years since the number of deaths no longer justifies it. The total deaths from causes other than abortion (Nos. 142–150) during each year 1931 to 1939, distributed by civil condition and age have been as follows, the numbers of live and stillbirths registered in each year being also shown.

	1931	1932	1933	1934	1935	1936	1937	1938	1939
Total deaths (excluding abortions) Nos. 142–150	2,254	2,208	2,240	2,354	2,104	1,991	1,765	1,691	1,588
Single or divorced women	117	108	123	127	106	109	73	72	82
Married women ...	2,121	2,084	2,101	2,211	1,986	1,866	1,680	1,605	1,496
Widowed women ...	16	16	16	16	12	16	12	14	10
All women :									
Ages 10–	—	—	1	—	—	—	—	—	—
15–	68	62	61	59	63	46	39	44	56
20–	383	321	366	372	327	314	293	220	219
25–	581	576	617	638	554	538	474	458	453
30–	578	553	501	585	541	515	464	454	415
35–	414	435	455	441	404	388	333	331	300
40–	207	234	215	235	185	171	148	159	130
45 up	23	27	24	24	30	19	14	25	15
Live and still births ...	659,014	640,443	605,497	622,851	624,191	630,337	635,363	645,933	643,661

Table LXXV gives in similar detail of age, and by civil condition for the total, the causes to which the deaths classed *as associated with, though not due to, pregnancy or childbearing* were assigned, those associated with abortion being also distinguished at the foot of the table. The totals of single, married and widowed women respectively were 30, 593, 6 in 1938 and 22, 529, 3 in 1939, compared with average numbers during 1931–37 of 36, 720, 6. The annual totals of these deaths in the 9 years 1931 to 1939 have been 911, 713, 828, 747, 712, 668, 759, 629, 554, and the successive triennial totals have been 2,452, 2,127, 1,942, a progressive reduction being apparent. A large part of the fluctuation in the annual totals has been due to influenza epidemics, the deaths associated with that disease in the 9 years being 94, 55, 129, 31, 33, 21, 85, 23, 32, whilst the deaths associated with all other causes were 817, 658, 699, 716, 679, 647, 674, 606, 522. In the three periods 1931–33, 1934–36, 1937–39 lobar pneumonia accounted for 259, 230, 166 deaths, broncho– and undefined pneumonia for 145, 81, 84, chronic nephritis for 159, 203, 127, acute yellow atrophy of the liver for 87, 124, 156, intestinal obstruction for 122, 131, 141 (including ileus following Cæsarean section 59, 56, 62) and mitral valve disease for 257, 215, 191.

The effect of the operation of the rules of preference upon the distribution of the total deaths between Tables LXXIV and LXXV is slight, an addition of 46 deaths to maternal causes with corresponding deduction from the associated causes being the net result in 1938. Intestinal obstruction was responsible for 42 deaths being thus included amongst associated rather than maternal causes, a matter which has been referred to in previous Reviews. Acute yellow atrophy of the liver associated with childbearing will be classified under the toxæmias of pregnancy or childbirth in the revised International List, but under the arrangement of the present list it remains in Table LXXV, contributing 54 in 1938 and 44 in 1939 to the total associated deaths.

No national statistics are available of the frequency with which *Cæsarean section* is resorted to, but the deaths with mention of the operation, whether assigned to puerperal or non-puerperal causes, were increasing until 1931. In 1921–23 and succeeding triennial periods to 1933–35 they averaged 103, 117, 142, 164, 175 per annum, and in the 4 years from 1936 to 1939 they numbered 187, 182, 210 and 168 (Table LXXVI).

Table LXXVI.—Deaths with Mention of Cæsarean Section, 1921–39.

	Assigned to puerperal causes						Assigned to non-puerperal causes			Total with mention of Cæsarean section
	Placenta prævia	Contracted pelvis	Albuminuria, etc.	Other specified	Reason not stated	Total	Intestinal obstruction	Other causes	Total	
1921	4	19	3	13	50	89	5	18	23	112
1922	5	9	9	25	20	68	7	13	20	88
1923	1	8	8	35	33	85	5	18	23	108
1924	7	39	6	32	4	88	11	13	24	112
1925	9	31	8	32	10	90	11	18	29	119
1926	6	40	16	30	5	97	10	12	22	119
1927	5	24	10	56	2	97	8	23	31	128
1928	9	40	16	46	2	113	11	24	35	148
1929	15	55	9	17	8	104	11	35	46	150
1930	11	43	8	25	5	92	23	27	50	142
1931	14	54	16	41	10	135	16	32	48	183
1932	13	46	10	38	9	116	22	30	52	168
1933	10	51	9	39	16	125	21	24	45	170
1934	6	33	16	42	9	106	23	32	55	161
1935	18	40	9	59	16	142	17	36	53	195
1936	17	34	2	68	17	138	21	28	49	187
1937	16	27	9	44	10	106	23	53	76	182
1938	21	32	9	75	11	148	21	41	62	210
1939	18	24	13	54	12	121	18	29	47	168

Deaths classified as caused by or associated with *abortion* are brought together in Table LXXVII under the various headings, with corresponding figures for previous years for which the information is available. These deaths averaged 536 annually in 1930–32 and 546 in 1933–35, but declined thereafter to 387 in 1938 and 390 in 1939.

Table LXXVII.—Deaths attributed to, or associated with, Abortion, 1926–39.

1931 List No.		1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939
140	Post-abortive sepsis	222	215	224	238	300	229	262	257	295	262	241	173	177	168
141	Abortion not returned as septic :—														
	(1) Hæmorrhage following abortion	72	72	47	51	59	97	105	108	94	71	56	44	39	49
	(2) Without record of hæmorrhage	86	82	77	67	65	21	12	13	5	20	13	6	10	10
VI (Table 25)	Criminal abortion (inquest cases)	51	47	57	67	67	79	69	85	100	94	73	84	80	114
	Total attributed to abortion ...	431	416	405	423	491	426	448	463	494	447	383	307	306	341
	Associated with abortion but not classed to it	?	?	83	182*	77	77	90	97	64	74	70	104	81	49
	Total attributed to, and associated with abortion	?	?	488	605	568	503	538	560	558	521	453	411	387	390

* 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 or induced therapeutically on that account are classed to Nos. 143, 146, 147 and do not appear under any of the "abortion" headings unless there was some other reason causing the death to be classed as "associated with abortion" in Table LXXV.

Special enquiries were continued during 1938 regarding the deaths classified as due to pregnancy or childbearing as to whether the deceased had been delivered of a live or still-born child, or whether there had been an abortion, or death had occurred whilst in the pregnant state (which would include some incomplete abortions). The results of these enquiries are shown in Table LXXVIII. There were 43 deaths classed to albuminuria, eclampsia and other toxæmias of pregnancy in which an abortion was ascertained to have occurred. How many of these took place spontaneously and how many by therapeutic induction was not ascertained. Such abortions, which are secondary to toxæmia or to some other morbid condition of pregnancy, and of which mention is not always made on death certificates, are in a class by themselves, and they are not in the present system of classification included amongst abortion deaths. As explained in Reviews of previous years, there still remain in the Table a few anomalous assignments which must continue until the International List has been revised, but the hæmorrhage deaths as tabulated are now, by means of the enquiries, kept substantially free from errors due to a somewhat confused terminology and an unsatisfactory classification at the last revision.

Table LXXVIII.—Deaths from Pregnancy and Childbearing Classified by Cause, Age, Civil Condition and Outcome of Pregnancy, 1938.

Cause to which initial classification was made*	Deaths following or accompanied by				Deaths in the pregnant state	No information obtained	Total
	Live birth(s)	Still birth(s)	Live and still birth	Abortion			
140–150 All Causes—Total	753	465	14	238	218	229	1,917
Single	29	13	1	24	12	18	97
Married	721	449	11	209	205	204	1,799
Widowed	3	2	2	5	—	7	19
Divorced	—	1	—	—	1	—	2
Ages 15–	25	8	—	6	6	4	49
20–	124	46	4	36	24	21	255
25–	223	115	3	54	58	58	511
30–	202	117	5	64	51	71	510
35–	124	114	2	49	43	48	380
40–	49	56	—	24	30	23	182
45 up	6	9	—	5	6	4	30
140 Post-abortive sepsis	—	—	—	158	—	19	177
141 Abortion not returned as septic :—							
(1) With record of hæmorrhage	—	—	—	24	4	11	39
(2) Without record of hæmorrhage	—	—	—	7	1	2	10
142 Ectopic gestation	—	—	—	—	57	9	66
143 Other accidents of pregnancy	3	2	—	—	15	—	20
144 Puerperal hæmorrhage:—							
(*a*) Placenta prævia	17	61	—	2	27	11	118
(*b*) Other puerperal hæmorrhage	110	40	—	3	6	12	171
145 Puerperal sepsis not returned as post-abortive	228	108	5	—	—	37	378
146 Puerperal albuminuria and convulsions	79	90	2	9	64	39	283
147 Other toxæmias of pregnancy	34	38	2	34	34	26	168
148 (*a*) Puerperal phlegmasia alba dolens not returned as septic	39	5	—	—	—	5	49
(*b*) Puerperal embolism and sudden death	56	17	1	—	2	10	86
149 Other accidents of childbirth	165	99	4	1	8	43	320
150 (1) Puerperal insanity	10	—	—	—	—	4	14
150 (2) Puerperal diseases of the breast	5	—	—	—	—	—	5
150 (3) Childbirth (unqualified)	7	5	—	—	—	1	13

* The classification by cause was modified in the light of the information obtained in the course of the special enquiries in the case of deaths certified as puerperal sepsis and found to be post-abortive, or deaths certified as antepartum hæmorrhage or accidental hæmorrhage of pregnancy following which a live or still birth was said to have occurred or deaths otherwise assignable to No. 144 (*b*) but found to have followed an abortion.

Deaths known to have resulted from criminal abortion numbered 80 in 1938 and 114 in 1939, compared with a yearly average of 87 in the preceding 5 years. Post-abortive sepsis deaths not classified to criminal abortion numbered 177 in 1938 and 168 in 1939, compared with 173 in 1937 and a yearly average of 263 in 1932–1936. These post-abortive sepsis deaths comprised 33 per cent. of the total assigned to sepsis following delivery in the two years. Since 1935, a correct allocation of sepsis deaths to the groups following abortion and childbirth has been made possible by the enquiries mentioned above. Puerperal sepsis following childbirth was the assigned cause of 378 deaths in 1938 and 308 in 1939, compared with 917, 744, 602 and 423 in the four years preceding.

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 also prior to 1939. It is necessary, therefore, 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 the years 1921–30, crude death rates per million women of all ages were shown in 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 LXXIX such rates are given from 1891–95 to 1906–10 according to the classification in use prior to 1911, and from 1911 onwards according to both the old and revised systems.

The changes in the classification of causes in 1911 involved certain transfers of puerperal mastitis, phlegmasia alba dolens and nephritis deaths, which necessitate tabulation of the dual series of rates for comparison with earlier years.

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 dying 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.

For a discussion of the relative advantages of, and fallacies inherent in, the different rates used as measures of mortality risk in childbearing, reference should be made to the Review for 1933, pp. 113–116.

Table LXXIX shows that the annual rate of total mortality from pregnancy and childbearing, with exclusion of criminal abortion, ranged from 3·87 to 4·37 per 1,000 live-born children during 1911–20, and from 3·81 to 4·42 in 1921–30. The periods 1928–30 and 1933–34 were characterized by higher rates for sepsis than had been recorded for many years, save in 1920, and the total rate was thereby enhanced, reaching the high level of 4·60 in 1934. Since then it has declined year by year to 3·09 in 1938 and 2·93 in 1939, the lowest levels so far attained.

Mortality classed to other causes, but associated with pregnancy or childbearing, ranged from 0·91 to 1·09 per 1,000 live-born children during 1911–17, was very high owing to influenza in the years 1918 and 1919, and was again enhanced by the same cause in 1922, 1927, 1929, 1933 and 1937. During the period 1923–26, before introduction of the new death certificate, the rate averaged 1·06, and in 1931–35 it averaged 1·29, but as was pointed out in the Review for 1933 an increase of about one fifth in this rate has probably resulted from the fuller information invited by the new certificate. In the years 1936 to 1939 the rates were 1·10, 1·24, 1·01 and 0·90.

Abortion deaths can be distinguished from 1926 onwards, and Table LXXX

shows the mortality rates per 1,000 live births from pregnancy and childbearing (distinguishing sepsis) and also from associated causes, with exclusion of abortion in each instance, in each year 1926 to 1939. In the same table are shown corresponding rates based on the totals of live and stillbirths for the years since stillbirth registration commenced. Since 1934 the abortion-free rate per 1,000 live and stillbirths has fallen year by year from 3·78 to 2·47 in 1939; and the sepsis component of this rate has declined from 1·47 to 0·48. It may be noted that in the same period of 5 years the crude death-rate of males from septicæmia fell from 25 to 11 per million living, and for erysipelas it fell from 41 to 8.

In the last two columns of Table LXXX are given the total abortion death rates (including criminal) and the rates from non-maternal causes associated with abortion, based in each instance on the living population of women aged 15–45. No consistent change in this rate was apparent between 1928 and 1935, but from 46 per million in 1935 it fell to 31 in 1937 and 1938, followed by a slight increase to 34 in 1939.

Table LXXIX.—Mortality of Women in or associated with Childbirth per Thousand Children born alive, 1891–1939.

Year	Classification in use from 1911 onwards				Classification in use before 1911				Total mortality from or associated with pregnancy or childbirth‡
	Puerperal (including post-abortive) sepsis	Other puerperal causes including abortion‡	Total mortality from pregnancy and childbearing‡	Associated causes*	Puerperal (including post-abortive) sepsis	Other puerperal causes including abortions‡	Total mortality from pregnancy and childbearing‡	Associated causes†	
1891–95	—	—	—	—	2·60	2·89	5·49	—	—
1896–1900	—	—	—	—	2·12	2·57	4·69	—	—
1901–05	—	—	—	—	1·95	2·32	4·27	1·29	5·56
1906–10	—	—	—	—	1·56	2·18	3·74	1·26	5·00
1911–15	1·42	2·61	4·03	0·99	1·50	2·31	3·81	1·21	5·02
1916–20	1·51	2·61	4·12	1·68	1·59	2·29	3·88	1·92	5·80
1921–25	1·40	2·50	3·90	1·14	1·48	2·21	3·69	1·35	5·04
1926–30	1·73	2·54	4·27	1·24	1·78	2·23	4·01	1·50	5·51
1931–35	1·76	2·54	4·30	1·29	1·83	2·29	4·12	1·48	5·60
1911 ...	1·43	2·44	3·87	1·04	1·52	2·15	3·67	1·24	4·91
1912 ...	1·39	2·59	3·98	0·97	1·47	2·31	3·78	1·17	4·95
1913 ...	1·26	2·70	3·96	0·91	1·34	2·37	3·71	1·16	4·87
1914 ...	1·55	2·62	4·17	0·95	1·63	2·32	3·95	1·17	5·12
1915 ...	1·47	2·71	4·18	1·09	1·56	2·38	3·94	1·38	5·27
1916 ...	1·38	2·74	4·12	0·94	1·47	2·40	3·87	1·19	5·06
1917 ...	1·31	2·58	3·89	0·95	1·39	2·27	3·66	1·18	4·84
1918 ...	1·28	2·51	3·79	3·81	1·35	2·20	3·55	4·05	7·60
1919 ...	1·67	2·70	4·37	1·93	1·76	2·36	4·12	2·18	6·30
1920 ...	1·81	2·52	4·33	1·13	1·87	2·25	4·12	1·34	5·46
1921 ...	1·38	2·54	3·92	1·08	1·46	2·25	3·71	1·29	5·00
1922 ...	1·39	2·42	3·81	1·35	1·46	2·12	3·58	1·58	5·16
1923 ...	1·30	2·52	3·82	1·00	1·38	2·22	3·60	1·22	4·82
1924 ...	1·39	2·51	3·90	1·16	1·48	2·22	3·70	1·36	5·06
1925 ...	1·56	2·52	4·08	1·07	1·62	2·24	3·86	1·29	5·15
1926 ...	1·60	2·52	4·12	1·02	1·64	2·23	3·87	1·27	5·14
1927 ...	1·57	2·54	4·11	1·32	1·63	2·20	3·83	1·60	5·43
1928 ...	1·79	2·63	4·42	1·20	1·85	2·30	4·15	1·47	5·62
1929 ...	1·80	2·53	4·33	1·49	1·83	2·24	4·07	1·75	5·82
1930 ...	1·92	2·48	4·40	1·19	1·96	2·19	4·16	1·43	5·59
1931 ...	1·66	2·45	4·11	1·44	1·71	2·22	3·93	1·62	5·55
1932 ...	1·61	2·60	4·21	1·16	1·68	2·33	4·01	1·36	5·37
1933 ...	1·83	2·68	4·51	1·43	1·90	2·42	4·32	1·62	5·94
1934 ...	2·03	2·57	4·60	1·25	2·10	2·30	4·39	1·45	5·85
1935 ...	1·68	2·42	4·10	1·19	1·75	2·20	3·95	1·34	5·29
1936 ...	1·39	2·41	3·80	1·10	1·47	2·18	3·65	1·25	4·90
1937 ...	0·98	2·28	3·26	1·24	1·03	2·07	3·10	1·40	4·50
1938 ...	0·89	2·19	3·09	1·01	0·93	2·04	2·97	1·13	4·10
1939 ...	0·77	2·16	2·93	0·90	0·81	1·98	2·79	1·04	3·83

* 629 deaths in 1938 and 554 in 1939 (Table LXXV).
† Adding in 1938 and 1939 respectively, 73 and 87 deaths from puerperal nephritis and albuminuria and 0 and 1 deaths from tetanus.
‡ Excluding criminal abortion.

Table LXXX.—Mortality rates of Women in or associated with pregnancy and childbearing, with separation of abortion, 1926–39.

Year	Per 1,000 live births				Per 1,000 live and still births					Per million women aged 15–45	
	Pregnancy and childbearing without abortion			Associated causes without abortion	Pregnancy and childbearing without abortion			Associated causes without abortion	Sepsis including abortion ‡	Abortion including criminal	Associated with abortion
	Sepsis	Other	Total		Sepsis	Other	Total				
1926 ...	1·28	2·29	3·57	?	—	—	—	—	—	—	—
1927 ...	1·24	2·30	3·54	?	—	—	—	—	—	—	—
1928 ...	1·46	2·44	3·90	1·07	1·40	2·34	3·74	1·03	1·72	42	9
1929 ...	1·43	2·35	3·78	1·21	1·38	2·25	3·63	1·25	1·73	43*	12†
1930 ...	1·45	2·29	3·74	1·07	1·40	2·19	3·59	1·03	1·84	50*	8
1931 ...	1·30	2·27	3·57	1·32	1·25	2·17	3·42	1·27	1·59	43*	8
1932 ...	1·19	2·41	3·60	1·01	1·14	2·31	3·45	0·97	1·55	46*	9
1933 ...	1·39	2·47	3·86	1·26	1·33	2·37	3·70	1·21	1·75	47*	10
1934 ...	1·53	2·40	3·93	1·14	1·47	2·31	3·78	1·10	1·95	51*	7
1935 ...	1·24	2·27	3·51	1·07	1·19	2·18	3·37	1·02	1·61	46	8
1936 ...	0·99	2·30	3·29	0·98	0·96	2·20	3·16	0·94	1·34	39	7
1937 ...	0·69	2·20	2·89	1·07	0·67	2·11	2·78	1·03	0·94	31	10
1938 ...	0·61	2·11	2·72	0·88	0·59	2·03	2·62	0·85	0·86	31	8
1939 ...	0·50	2·07	2·57	0·82	0·48	1·99	2·47	0·78	0·74	34	5

* If corrected for puerperal sepsis deaths having no statement as to duration of pregnancy (see text) the estimated rates for 1929 to 1934 are raised to 46, 53, 46, 47, 50 and 53, and the sepsis and total rates excluding abortion are decreased by about 0·04 per 1,000. No correction is necessary for 1935–39.
† Corrected in accordance with the note below Table LXXVII.
‡ Excluding criminal abortion.

The trend of mortality rates from the separate causes can be ascertained from Table 7.

Number of previous confinements and multiple births.—In 1938 special enquiries were again made regarding the number of previous pregnancies for every death classed to maternal causes; and as to whether the birth was multiple or single, live or still for every death of a married woman classed to maternal causes other than abortion. Complete replies on these matters were received relating to 1,487 of the deaths and partial replies relating to 108, and the information so obtained is analysed in Table LXXXI. Comparison of the birth-order distribution with those for previous years is made below :—

Order of 'confinement' (1935) *or of 'pregnancy'* (1936–38).	*Per cent. distribution in the year specified.*			
	1935	1936	1937	1938
1st	43·2	41·8	42·7	47·1
2nd	18·3	19·6	19·5	17·6
3rd	10·8	11·4	12·0	10·1
4th	7·1	7·9	7·9	8·1
5th and later	20·6	19·3	18·0	17·1

A higher proportion of the deaths occurred in connection with first pregnancies in 1938 than in previous years.

Table LXXXI.—Deaths of Married Women Classed to Pregnancy and Childbearing according to previous Fertility and Outcome of the Pregnancy which resulted in Death, 1938.

No. of previous pregnancies	Total of known birth order	With live or still birth					Total with live or still birth	With abortion	Deaths in the pregnant state
		Single birth		Multiple birth					
		Live	Still	Live only	Live and still	Still only			
0	701	384	187	10	5	3	589	38	74
1	262	116	68	4	—	5	193	33	36
2	150	52	49	1	2	—	104	30	16
3	120	42	26	4	—	2	74	27	19
4	72	25	18	1	2	—	46	17	9
5	50	14	13	—	—	—	27	15	8
6	41	14	14	1	—	1	30	8	3
7	21	7	5	—	—	1	13	5	3
8	20	4	5	—	1	—	10	7	3
9	15	4	3	—	—	—	7	3	5
10	12	6	3	—	—	—	9	3	—
11	8	2	3	—	—	—	5	2	1
12	5	2	2	—	—	—	4	1	—
13	3	—	1	—	—	—	1	—	2
14	3	—	3	—	—	—	3	—	—
15	1	1	—	—	—	—	1	—	—
16	1	—	1	—	—	—	1	—	—
17	2	1	1	—	—	—	2	—	—
Totals of above	1,487	674	402	21	10	12	1,119	189	179
Birth order unknown	—	24	35	2	1	—	62	20	26

Combining Table LXXXI with the corresponding tables for 1936 and 1937, the following analysis for 1936–38 is obtained :—

		0	*1*	*2*	*3*	*4 or more*	*Total*
Maternal deaths with number of previous pregnancies known		2,066	893	527	374	859	4,719
Accompanied by one or more live births	Number	1,169	431	212	145	294	2,251
	Per cent.	*56·6*	*48·3*	*40·2*	*38·8*	*34·2*	*47·7*
Accompanied by stillbirth but no live birth	Number	566	230	138	92	254	1,280
	Per cent.	*27·4*	*25·8*	*26·2*	*24·6*	*29·6*	*27·1*
Post abortive or undelivered	Number	331	232	177	137	311	1,188
	Per cent.	*16·0*	*26·0*	*33·6*	*36·6*	*36·2*	*25·2*

The percentage of maternal deaths accompanied by a live birth was 56·6 for first pregnancies, but diminished with increasing parity to 34·2 where the previous pregnancies numbered 4 or more. The stillbirth percentages were not affected by parity ; but the proportion of the deaths which followed abortion or occurred in the pregnant state increased from 16 per cent. for primiparæ to over 36 per cent. for women with a record of 4 or more previous pregnancies.

Out of the 3,693 maternal deaths following a live or stillbirth 136 accompanied a multiple birth, a proportion of 1 in 27. The proportion of multiple to total maternities being about 1 in 83, it is evident that the fact of a pregnancy being multiple enhanced the average mortality risk considerably.

Regional distribution of deaths and puerperal pyrexia notifications.—The distribution throughout the country of the death rate from pregnancy and childbearing, including abortion and distinguishing sepsis, during 1938 and 1939 is shown in Table LXXXII.

In the same table are given the proportions of notified cases of puerperal pyrexia (which now includes conditions formerly distinguished as puerperal fever) to each 1,000 live and stillbirths and to each 100 deaths. In London " puerperal fever " is still distinguished, but is here included under the heading " pyrexia." The records in full detail of locality will be found in Table 29.

The proportions of notified cases per 1,000 live and stillbirths during the 9 years 1931 to 1939 were :—12·3, 11·8, 13·0, 13·5, 13·0, 13·1, 13·9, 14·4, 14·4. As usual, the highest rates were recorded in North III and Greater London both in 1938 and 1939.

Table LXXXII.—Distribution throughout England and Wales of Mortality of Women from Pregnancy, Childbirth and Abortion, distinguishing Septic and Other Causes, and of Prevalence of Puerperal Pyrexia, 1938 and 1939.

	1938					1939				
	Per 1,000 live and still births				Cases per 100 deaths	Per 1,000 live and still births				Cases per 100 deaths
	Deaths			Cases of pyrexia*		Deaths			Cases of pyrexia*	
	Sepsis	Other	Total			Sepsis	Other	Total		
England and Wales	0·86	2·11	2·97	14·4	1,677	0·74	2·08	2·82	14·4	1,943
South East	0·70	1·59	2·29	15·4	2,202	0·63	1·71	2·34	15·1	2,385
Greater London	0·78	1·33	2·11	17·5	2,247	0·64	1·61	2·25	15·5	2,438
Remainder	0·58	1·98	2·56	12·2	2,112	0·62	1·85	2·48	14·4	2,309
North	1·02	2·40	3·42	13·9	1,365	0·88	2·39	3·27	14·5	1,651
North I	0·91	2·84	3·75	11·8	1,291	1·03	2·61	3·64	11·4	1,103
,, II	0·63	2·77	3·40	13·6	2,179	1·04	2·71	3·75	13·4	1,291
,, III	1·07	2·12	3·20	15·9	1,488	1·01	2·12	3·13	16·9	1,676
,, IV	1·13	2·30	3·42	13·7	1,219	0·71	2·38	3·10	14·7	2,061
Midland	0·85	2·11	2·96	14·8	1,746	0·71	1·86	2·58	13·8	1,938
Midland I	0·92	2·13	3·05	15·1	1,637	0·85	1·87	2·72	14·1	1,666
,, II	0·69	2·06	2·75	14·1	2,048	0·43	1·84	2·27	13·3	3,059
East	0·50	1·96	2·45	11·7	2,357	0·67	2·08	2·75	13·8	2,063
South-West	0·75	2·27	3·02	14·7	1,973	0·53	1·54	2·07	13·8	2,581
Wales	1·24	3·33	4·57	12·2	986	0·86	3·51	4·37	12·3	1,426
Wales I	1·35	3·83	5·18	13·5	1,003	0·87	3·30	4·17	13·1	1,504
,, II	0·94	1·97	2·91	8·6	920	0·85	4·07	4·92	10·3	1,211
County Boroughs†	0·96	2·03	2·99	18·2	1,906	0·84	2·04	2·88	18·3	2,180
Other Urban Districts†	0·85	2·63	3·48	11·7	1,367	0·72	2·21	2·93	12·4	1,717
Rural Districts†	0·78	2·24	3·02	8·6	1,097	0·71	2·45	3·16	9·5	1,341
Greater London Admin. County	0·77	1·09	1·85	19·1	2,502	0·61	1·24	1·85	16·7	2,727
Greater London Outer Ring	0·79	1·51	2·31	16·3	2,054	0·65	1·89	2·54	14·6	2,234

* Includes puerperal fever in London, where it is still notified separately.

† Excluding Greater London.

163–171. **Suicide.**—In 1938 there were 5,316 deaths by suicide, 3,558 of males and 1,758 of females ; and in 1939 the numbers were 5,092, 3,345 (including 38 of non-civilians) and 1,747 respectively. The male standardized rate, which reached its highest level, 165 per million living, in 1932, declined to 131 in 1937, 133 in 1938 and 123 in 1939. The female standardized rate, which reached 65 per million in 1933, was 60 in 1938 and 59 in 1939.

Table LXXXIII compares the mean annual death-rates by suicide for each sex and age in the decades from 1861–70 to 1911–20, quinquennial periods from 1921–25 to 1931–35 and each year 1936 to 1939.

Table LXXXIII.—Mean Annual Death rates by Suicide, per million living at different ages : 1861 to 1939.

	0–	10–	15–	20–	25–	35–	45–	55–	65–	75 and over	All ages (Standardized)
Males											
1861–70 ...	—	4	28	59	93	163	263	377	359	251	105
1871–80 ...	—	4	24	64	104	179	276	408	416	335	115
1881–90 ...	—	4	29	67	117	202	310	437	478	373	128
1891–1900 ...	—	5	34	84	142	241	348	456	479	386	144
1901–10 ...	—	4	36	91	152	252	397	523	508	382	157
1911–20 ...	—	3	32	69	122	196	278	389	380	350	119
1921–25 ...	—	2	28	71	100	200	326	457	493	408	129
1926–30 ...	—	2	35	84	122	222	366	513	530	464	146
1931–35 ...	—	2	39	96	141	209	379	542	534	483	152
1936	—	2	29	91	120	192	300	491	478	436	133
1937	—	4	32	81	132	173	298	467	497	455	131
1938	—	1	28	78	123	185	308	490	496	505	133
1939	—	1	35	87	109	164	270	464	467	445	123
Females											
1861–70 ...	—	3	31	31	35	53	84	87	83	70	35
1871–80 ...	—	3	26	33	39	54	81	95	92	64	36
1881–90 ...	—	3	34	40	43	64	84	92	86	53	39
1891–1900 ...	—	4	37	41	52	76	96	100	88	52	44
1901–10 ...	—	3	34	45	56	80	109	109	88	49	47
1911–20 ...	—	2	30	41	50	74	100	102	81	52	43
1921–25 ...	—	1	23	40	48	78	120	125	92	60	46
1926–30 ...	—	0	27	45	66	96	148	158	123	66	57
1931–35 ...	—	—	23	49	77	108	153	165	135	84	62
1936	—	—	19	39	61	99	164	161	134	68	57
1937	—	1	13	46	73	100	155	162	152	83	60
1938	—	1	15	39	68	103	163	176	134	96	60
1939	—	1	12	39	72	101	154	164	144	107	59

The distribution of suicide in separate areas of the country was given in detail for the period 1931–35 in Table XCVII of the Review for 1935. An analysis of suicides by poisoning according to the substance employed was given for 3 year periods from 1924–26 to 1933–35 in Table XCIV of the same Review.

Table LXXXIV. Accidental deaths.—Air Transport, by sex and age, 1931–39

	Males									Females 1931–39
	1931	1932	1933	1934	1935	1936	1937	1938	1939*	
Under 15 ...	—	1	2	—	—	—	1	4	—	2
15– ...	5	1	1	5	3	4	14	22	22	5
20– ...	32	18	18	15	24	32	85	76	80	6
25– ...	25	18	23	33	21	35	46	66	69	16
35– ...	6	2	3	6	7	16	18	12	18	12
45– ...	1	—	—	1	—	4	4	4	—	1
55– ...	1	—	—	—	1	1	1	2	1	1
65 and over	—	—	—	2	—	—	2	1	—	1
All ages ...	70	40	47	62	56	92	171	187	190	44

* Excluding non-civilians after September 3rd.

186 (pt). **Deaths caused by Air Transport.**—In 1938 there were 194 deaths from air accidents (187 of males and 7 of females), compared with 74, 43, 49, 67, 61, 99 and 175 in the years 1931 to 1937. In 1939 there were 190 deaths of males and 7 of females not during operations of war and 175 of non-civilians after the outbreak of war. The record of the accidental deaths by sex and age from 1931 to 3rd September, 1939, is shown in Table LXXXIV.

186 (pt), 195 (pt). **Deaths caused by Motor and other Vehicles (not on railways).**—Apart from deaths on railways, numbering 414 in 1938 and 458 in 1939, and those already mentioned due to aircraft, there were 5,557 accidental (or " open verdict ") deaths attributed to mechanically-propelled vehicles in 1938 (4,179 of males and 1,378 of females) and 6,761 in 1939 (5,185 of males and 1,576 of females, excluding non-civilians in the war period). The death-rates per million persons were 135 and 164 in the two years, compared with 147, 141, 147, 151, 131, 133, 135 in the years 1931 to 1937. Table LXXXV shows the allocation of deaths to the different types of mechanically-propelled vehicles. The group " motor omnibus " includes, in each year, deaths due to trolley buses. The deaths classified as " Others " in 1938 and 1939 were made up as follows :— Motor cab 12, 32 ; motor coach 28, 38 ; motor tractor 13, 9 ; steam roller 3, 0 ; other or undefined motor 13, 23 ; collisions involving a motor vehicle without statement as to which of the vehicles caused the death 1,767, 1,778.

Table LXXXV.—Deaths, and Death rates per Million Living caused by various Types of Road Motor Vehicles in each year, 1930–1939.

	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939
	Deaths									
Electric tram	73	74	52	66	69	51	65	64	62	100
Motor car	1,643	1,688	1,646	1,773	1,882	1,633	1,617	1,648	1,763	2,225
Motor van, lorry, etc. ...	1,273	1,209	1,111	1,180	1,290	1,170	1,059	998	919	1,161
Motor omnibus	692	529	447	421	413	369	384	359	333	781
Motor cycle	1,286	1,083	983	965	875	733	650	638	644	614
Others	1,375	1,309	1,432	1,529	1,583	1,355	1,664	1,840	1,836	1,880
Total motor vehicles... ...	6,342	5,892	5,671	5,934	6,112	5,311	5,439	5,547	5,557	6,761
	Rate per million living									
Electric tram	1·8	1·9	1·3	1·6	1·7	1·3	1·6	1·6	1·5	2·4
Motor car	41·3	42·2	40·9	43·9	46·5	40·2	39·6	40·2	42·8	53·9
Motor van, lorry, etc. ...	32·0	30·2	27·6	29·2	31·9	28·8	25·9	24·3	22·3	28·1
Motor omnibus	17·4	13·2	11·1	10·4	10·2	9·1	9·4	8·7	8·1	18·9
Motor cycle	32·3	27·1	24·5	23·9	21·6	18·0	15·9	15·5	15·6	14·9
Others	34·5	32·7	35·6	37·9	39·1	33·3	40·7	44·8	44·5	45·6
Total motor vehicles... ...	159·3	147·3	141·1	147·1	151·0	130·7	133·2	135·2	134·8	163·8

The total registered deaths in the causation of which a motor or trolley omnibus was concerned (alone or in collision with some other vehicle) numbered 852, 699, 595, 559, 537, 474, 528, 533, 493 and 932 in the 10 years 1930 to 1939, a large increase occurring in 1939. For the motor cycle the corresponding totals were 2,091, 1,797, 1,783, 1,727, 1,621, 1,380, 1,338, 1,331, 1,343 and 1,311, a continuous fall from 1930 to 1936 being followed by no important change in the next 3 years. For the motor car the totals were 2,219, 2,257, 2,291, 2,527, 2,700, 2,315, 2,500, 2,647, 2,791 and 3,275, a continuous increase having occurred since 1935 after the fall in that year. These figures are not mutually exclusive, deaths resulting from collisions involving more than one type of vehicle being included in more than one of the groups.

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

		1930	*1931*	*1932*	*1933*	*1934*	*1935*	*1936*	*1937*	*1938*	*1939*
Pedal cycles alone	M.	258	235	308	345	399	447	384	379	341	358
	F.	61	84	95	105	152	159	118	107	121	102
Pedal cycle in collision with other vehicles	M.	294	309	431	544	627	511	694	807	818	756
	F.	34	35	49	64	99	77	116	141	119	125
Total	M.	552	544	739	889	1,026	958	1,078	1,186	1,159	1,114
	F.	95	119	144	169	251	236	234	248	240	227
	P.	647	663	883	1,058	1,277	1,194	1,312	1,434	1,399	1,341

These deaths increased rapidly until 1934, and again in 1936 and 1937 but each year 1938 and 1939 showed an improvement.

Table LXXXVI compares the mean annual death-rates per million living due to accidents caused by all forms of road motor vehicles at various ages in 1937, 1938 and 1939 with those in the four triennial periods 1925–27, 1928–30, 1931–33 and 1934–36. The male rate at all ages is three times the female rate. An excess is present at each age, but the ratio of male to female risk increases with age to a maximum about 7 between 20 and 35 and then declines to about 2 at ages over 65.

Table LXXXVI.—Death rates per Million living from All Accidents caused by Road Motor Vehicles, by Sex and Age. 1925–27, 1928–30, 1931–33, 1934–36, 1937, 1938 and 1939.

	Males							Females						
	1925–27	1928–30	1931–33	1934–36	1937	1938	* 1939	1925–27	1928–30	1931–33	1934–36	1937	1938	1939
0–	107	142	143	135	111	137	116	55	87	88	83	70	73	68
5–	195	250	242	204	185	190	197	92	129	133	112	92	86	88
10–	102	132	106	105	91	110	108	26	40	37	35	36	34	36
15–	151	231	238	217	188	198	200	32	50	52	61	64	52	58
20–	233	365	393	386	404	384	360	30	57	55	54	68	40	55
25–	146	221	228	209	202	219	241	22	31	33	33	29	30	34
35–	112	147	142	144	147	140	180	23	33	33	27	31	24	32
45–	134	166	160	170	159	153	231	36	57	53	47	51	43	48
55–	170	239	228	220	224	228	367	75	95	104	86	88	85	100
65–	301	400	395	358	364	363	582	140	190	186	185	176	181	211
75 and over ...	490	738	711	672	628	615	1,074	179	276	260	297	296	325	335
All ages	159	226	225	214	207	211	263	48	71	72	69	69	64	73

* Excluding non-civilians after September 3rd.

From 1925–27 to 1928–30 the rates at all ages rose by 42 per cent. for males and 48 per cent. for females, the increase being pronounced at each age. From 1928–30 to 1931–33 the changes were remarkably slight, but in 1934–36 there was considerable improvement for children under 10, males at young adult ages and over 65 and females aged 35–75. From 1934–36 to 1939 a further decline occurred in the rates for children under 10, particularly girls, and also for males aged 15–25, but rates increased sharply in 1939 at ages over 25 amongst males and ages over 55 amongst females.

As indicated in the Review for 1933 there are three age periods of exceptionally high risk, 5–10, 20–25 (now 15–25 for women) and old age, depending on the fact that the death-rates are the resultants of the combined risks to pedestrians, cyclists and occupants of motor vehicles.

Tables LXXXVII(a) and (b) divide the deaths from road accidents in 1938 and 1939 not only by the type of vehicle causing the accident but according to whether the person killed was a pedestrian, rider of a pedal cycle, rider of a motor-cycle or occupant of a vehicle other than these, and whether resident in Greater London, a county borough, other urban district or rural district. This information was obtained with regard to 5,935 and 7,418 deaths in 1938 and 1939 respectively out of the 5,940 and 7,431 remaining after exclusion of "open verdict" cases and deaths from burns or drowning connected with transport. In the final columns the deaths have been expressed as rates per million residents of the areas in question, these rates indicating the risks to such residents of dying as a result of the specified type of road accident anywhere within England and Wales. Deaths of non-civilians are excluded after September 3rd, 1939.

In the country as a whole 2,836 of the deaths in 1938, or 47·8 per cent. of the total for whom the information was given, were of pedestrians, this proportion being about the same as in 1937. In 1939, however, the number of pedestrian deaths rose to 4,193 or 56·5 per cent. of the total. Of pedal cyclists there were 1,199 and 1,169 deaths in the two years (20·2 and 15·8 per cent. of the totals); and of motor-cyclists there were 1,095 and 1,105 (18·4 and 14·9 per cent.). The remainder, comprising occupants of cars and other vehicles, numbered 805 and 951 (13·6 and 12·8 per cent.). Comparing 1939 with 1938, deaths of pedestrians increased by 1,357 or 48 per cent., those of pedal cyclists decreased by 30 or 3 per cent., those of motor-cyclists increased by 10 or 1 per cent., and those of other occupants of vehicles by 146 or 18 per cent. Although separate figures are not available for different parts of the year, there can be little doubt that the large increase in pedestrian fatalities in 1939 was accounted for by the "black-out" in the last few months of the year. The increase of male pedestrian deaths (1,816 to 2,992 or 65 per cent.) was much more pronounced than that of females (1,020 to 1,201 or 18 per cent.).

When divided according to sex and area of residence (excluding non-civilians in the last four months of 1939), the proportions were as follows :—

Year	Area of residence	Percentage of all road deaths for the specified sex and area							
		Pedestrians		Pedal-cyclists		Motor-cyclists		Occupants of vehicles	
		M.	F.	M.	F.	M.	F.	M.	F.
1938	England and Wales ...	41	70	23	12	23	6	14	13
	Greater London	44	70	21	9	22	7	13	14
	County boroughs	46	76	21	8	18	5	15	11
	Other urban districts ...	42	70	21	10	22	6	15	14
	Rural districts	30	60	29	23	28	6	12	11
1939	England and Wales ...	52	72	17	10	18	4	13	14
	Greater London	56	77	19	7	15	3	10	12
	County boroughs	62	78	13	7	13	2	12	13
	Other urban districts ...	52	69	18	11	17	5	13	15
	Rural districts	40	59	23	20	24	4	13	17

In 1938, as in 1937, about 30 per cent. of the road deaths of males resident in rural districts were of pedestrians, 29 per cent. were of pedal cyclists and about 28 per cent. were of motor-cyclists, but in 1939 these proportions changed to 40, 23 and 24. For males resident in large towns the 1938 and 1937 proportions were between 44 and 48 per cent. pedestrians, about 21 per cent. pedal-cyclists and about 20 per cent. motor-cyclists. Amongst females the rural proportions were about 60, 20 and 7 per cent. in the three groups, and for female residents of large towns they were about 75, 8 and 6 per cent.

In 1939 the proportions of pedestrians increased for males in all classes of area whereas for females the increase in proportion was appreciable only in Greater London. Comparison of the numbers of deaths in 1938 and 1939 shows, however, that whilst the increases in pedestrian deaths of males were not accompanied by appreciable increases in the totals of other road deaths, this cannot be said of females outside Greater London, and it is evident from the figures below that the greatest increases in female mortality occurred in the county boroughs.

	Deaths of pedestrians (percentage changes from 1938 to 1939)				Other road deaths (percentage changes from 1938 to 1939)			
	Greater London	County boroughs	Other U.D.s	Rural districts	Greater London	County boroughs	Other U.D.s	Rural districts
Males ...	+61	+77	+51	+52	+1	—6	+1	+1
Females	+27	+36	+4	—3	—12	+23	+8	+5

The percentage ratios of male to female deaths in the three years 1937, 1938, 1939 were, for pedestrians 169, 178, 249 respectively, for pedal cyclists 607, 605, 588, for motor-cyclists 1,070, 1,204, 1,682, for occupants of vehicles 304, 338, 313 and for all road accidents 290, 307, 346. The 1939 ratios include non-civilian deaths.

The final columns of Table LXXXVII show that the death-rate amongst males resident in rural districts resulting from road accidents in general in 1938 was 317 per million compared with 190 for Greater London, 204 for county boroughs and 220 for smaller towns. In 1939 the rate was 361 for rural residents compared with 250, 276 and 266 respectively. This rural excess is chiefly due to motor-cycle accidents (causing a male rural mortality of 98 per million in each year compared with about 55 in small towns and about 45 in large towns), but partly also to motor cars, horse-vehicles and pedal cycle and miscellaneous vehicles. For females, residence in rural districts does not impose so large an excess of mortality from road accidents (81 compared with about 65 in towns in 1938 and 79 compared with about 75 in 1939).

Table LXXXVIIa.—Deaths of Pedestrians, Pedal Cyclists, Motor Cyclists and Occupants of Other Vehicles in Road Accidents, according to sex, class of area of residence and type of vehicle involved, 1938.

Area of residence of deceased and type of vehicle(s) causing accident	Pedestrians		Pedal cyclists		Motor cyclists		Occupants of vehicles (not cycles)		Not stated		Totals		Deaths per million population	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
England and Wales :—														
Motor cycle	124	80	—	—	383	48	—	—	—	—	507	128	26	6
,, ,, and pedal cycle	—	—	36	5	25	3	—	—	—	—	61	8	3	0
,, ,, ,, motor car	—	—	—	—	322	26	2	—	—	—	324	26	16	1
,, ,, ,, motor van, lorry	—	—	—	—	200	4	1	—	—	—	201	4	10	0
,, ,, ,, motor 'bus	—	1	—	—	53	2	—	—	—	—	53	3	3	0
Motor car*	826	505	438	66	6	—	262	106	3	—	1,535	677	78	32
Motor van or lorry*	520	250	253	37	3	—	126	1	—	—	902	288	46	13
Motor or trolley 'bus	177	87	—	—	—	—	40	28	—	—	217	115	11	5
Motor charabanc or coach	7	16	—	—	—	—	2	3	—	—	9	19	0	1
Other motor vehicles	19	8	—	—	—	—	7	—	1	—	27	8	1	0
Collisions of motor vehicles	2	1	74	8	18	1	150	44	1	—	245	54	12	3
Horse vehicles	36	5	—	—	—	—	30	2	—	—	66	7	3	0
Pedal cycles, other or undefined vehicles	105	67	228	54	1	—	1	—	—	—	335	121	17	6
Total	1,816	1,020	1,029	170	1,011	84	621	184	5	—	4,482	1,458	226	68
Greater London residents :—														
Motor cycle	27	16	—	—	53	12	—	—	—	—	80	28		
,, ,, and pedal cycle	—	—	6	—	4	—	—	—	—	—	10	—		
,, ,, ,, motor car	—	—	—	—	62	8	1	—	—	—	63	8	48	8
,, ,, ,, motor van, lorry	—	—	—	—	36	1	—	—	—	—	36	1		
,, ,, ,, motor 'bus	—	—	—	—	7	—	—	—	—	—	7	—		
Motor car*	150	102	65	8	1	—	44	23	—	—	260	133	64	29
Motor van or lorry*	107	56	54	11	1	—	14	—	—	—	176	67	43	14
Motor or trolley 'bus	30	18	—	—	—	—	4	10	—	—	34	28	8	6
Motor charabanc or coach	1	7	—	—	—	—	—	—	—	—	1	7		
Other motor vehicles	5	4	—	—	—	—	—	—	—	—	5	4	16	5
Collisions of motor vehicles	1	—	15	3	7	—	36	9	—	—	59	12		
Horse vehicles	1	1	—	—	—	—	4	—	—	—	5	1	1	0
Pedal cycles, other or undefined vehicles	18	12	19	6	—	—	—	—	—	—	37	18	9	4
Total	340	216	159	28	171	21	103	42	—	—	773	307	190	66
County Borough residents† :—														
Motor cycle	34	25	—	—	88	13	—	—	—	—	122	38		
,, ,, and pedal cycle	—	—	9	—	3	2	—	—	—	—	12	2		
,, ,, ,, motor car	—	—	—	—	73	6	—	—	—	—	73	6	44	7
,, ,, ,, motor van, lorry	—	—	—	—	43	—	—	—	—	—	43	—		
,, ,, ,, motor 'bus	—	1	—	—	18	—	—	—	—	—	18	1		
Motor car*	259	165	94	11	—	—	70	30	1	—	424	206	70	31
Motor van or lorry*	170	78	70	6	—	—	43	—	—	—	283	84	46	13
Motor or trolley 'bus	70	35	—	—	—	—	19	9	—	—	89	44	15	7
Motor charabanc or coach	2	4	—	—	—	—	1	—	—	—	3	4		
Other motor vehicles	4	1	—	—	—	—	1	—	—	—	5	1	15	3
Collisions of motor vehicles	1	—	34	2	3	—	43	10	1	—	82	12		
Horse vehicles	12	1	—	—	—	—	3	1	—	—	15	2	2	0
Pedal cycles, other or undefined vehicles	25	22	50	14	1	—	1	—	—	—	77	36	13	5
Total	577	332	257	33	229	21	181	50	2	—	1,246	436	204	65
Urban District residents† :—														
Motor cycle	39	21	—	—	120	12	—	—	—	—	159	33		
,, ,, and pedal cycle	—	—	9	3	8	1	—	—	—	—	17	4		
,, ,, ,, motor car	—	—	—	—	88	9	1	—	—	—	89	9	55	7
,, ,, ,, motor van, lorry	—	—	—	—	49	—	—	—	—	—	49	—		
,, ,, ,, motor 'bus	—	—	—	—	17	2	—	—	—	—	17	2		
Motor car*	249	158	117	17	3	—	87	34	1	—	457	209	76	32
Motor van or lorry*	156	70	64	7	2	—	38	—	—	—	260	77	43	12
Motor or trolley 'bus	58	23	—	—	—	—	12	7	—	—	70	30	12	5
Motor charabanc or coach	3	4	—	—	—	—	1	2	—	—	4	6		
Other motor vehicles	4	1	—	—	—	—	3	—	1	—	8	1	13	4
Collisions of motor vehicles	—	—	14	2	7	1	44	16	—	—	65	19		
Horse vehicles	6	1	—	—	—	—	9	1	—	—	15	2	2	0
Pedal cycles, other or undefined vehicles	37	17	78	13	—	—	—	—	—	—	115	30	19	3
Total	552	295	282	42	294	25	195	60	2	—	1,325	422	220	65

* Including collisions with pedal cycles.
† Outside Greater London.

Table LXXXVIIa—*continued.*

Area of residence of deceased and type of vehicle(s) causing accident	Pedestrians		Pedal cyclists		Motor cyclists		Occupants of vehicles (not cycles)		Not stated		Totals		Deaths per million population	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Rural District residents † :—														
Motor cycle	24	18	—	—	122	11	—	—	—	—	146	29		
,, ,, and pedal cycle ...	—	—	12	2	10	—	—	—	—	—	22	2		
,, ,, ,, motor car ...	—	—	—	—	99	3	—	—	—	—	99	3	98	10
,, ,, ,, motor van, lorry	—	—	—	—	72	3	1	—	—	—	73	3		
,, ,, ,, motor 'bus ...	—	—	—	—	11	—	—	—	—	—	11	—		
Motor car*	168	80	162	30	2	—	61	19	1	—	394	129	110	36
Motor van or lorry*	87	46	65	13	—	—	31	1	—	—	183	60	51	17
Motor or trolley bus	19	11	—	—	—	—	5	2	—	—	24	13	7	4
Motor charabanc or coach ...	1	1	—	—	—	—	—	1	—	—	1	2		
Other motor vehicles	6	2	—	—	—	—	3	—	—	—	9	2	14	4
Collisions of motor vehicles ...	—	1	11	1	1	—	27	9	—	—	39	11		
Horse vehicles	17	2	—	—	—	—	14	—	—	—	31	2	9	1
Pedal cycles, other or undefined vehicles	25	16	81	21	—	—	—	—	—	—	106	37	30	10
Total	347	177	331	67	317	17	142	32	1	—	1,138	293	317	81

Table LXXXVIIb.—Deaths of Pedestrians, Pedal Cyclists, Motor Cyclists and Occupants of Other Vehicles in Road Accidents, according to sex, class of area of residence and type of vehicle involved, 1939.

Area of residence of deceased and type of vehicle(s) causing accident	Pedestrians		Pedal cyclists		Motor cyclists		Occupants of vehicles (not cycles)		Not stated		Totals		Deaths per million population	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
England and Wales (including non-civilians) :—														
Motor cycle	144	74	1	—	391	23	3	1	—	—	539	98	27	5
,, ,, and pedal cycle ...	—	—	44	8	17	2	—	—	—	—	61	10	3	0
,, ,, ,, motor car ...	1	—	3	—	341	28	4	1	1	—	350	29	18	1
,, ,, ,, motor van, lorry	1	—	—	—	244	7	—	—	—	—	245	7	12	0
,, ,, ,, motor 'bus ...	4	—	—	—	28	1	2	—	—	—	34	1	2	0
Motor car*	1,283	552	393	62	3	—	277	105	3	3	1,959	722	100	33
Motor van or lorry*	716	302	232	42	2	—	142	6	—	1	1,092	351	55	16
Motor or trolley 'bus	536	174	3	2	1	—	50	27	—	—	590	203	30	9
Motor charabanc or coach ...	22	8	—	—	—	—	2	—	—	—	24	8	1	0
Other motor vehicles	39	14	—	—	1	—	9	1	—	—	49	15	2	1
Collisions of motor vehicles ...	2	1	81	12	15	1	197	85	3	1	298	100	15	5
Horse vehicles	47	4	1	—	—	—	30	—	—	—	78	4	4	0
Pedal cycles, other or undefined vehicles	197	72	241	44	—	—	5	4	1	—	444	120	23	6
Total	2,992	1,201	999	170	1,043	62	721	230	8	5	5,763	1,668	293	77
Greater London residents :—														
Motor cycle	22	20	—	—	40	4	1	1	—	—	63	25		
,, ,, and pedal cycle ...	—	—	5	—	4	—	—	—	—	—	9	—		
,, ,, ,, motor car ...	—	—	1	—	49	6	2	—	—	—	52	6	44	7
,, ,, ,, motor van, lorry	—	—	—	—	44	1	—	—	—	—	44	1		
,, ,, ,, motor 'bus ...	1	—	—	—	4	—	—	—	—	—	5	—		
Motor car*	226	120	70	9	—	—	38	18	1	1	335	148	85	33
Motor van or lorry*	138	78	58	8	2	—	18	2	—	—	216	88	55	20
Motor or trolley 'bus	94	34	1	1	1	—	9	3	—	—	105	38	27	9
Motor charabanc or coach ...	6	1	—	—	—	—	—	—	—	—	6	1		
Other motor vehicles	14	5	—	—	—	—	1	—	—	—	15	5	20	6
Collisions of motor vehicles ...	1	1	22	3	2	1	31	16	3	1	59	22		
Horse vehicles	9	—	—	—	—	—	1	—	—	—	10	—	3	—
Pedal cycles, other or undefined vehicles	37	15	26	4	—	—	2	1	—	—	65	20	17	5
Total	548	274	183	25	146	12	103	41	4	2	984	354	250	80

* Including collisions with pedal cycles.
† Outside Greater London.

Table LXXXVIIb—*continued.*

Area of residence of deceased and type of vehicle(s) causing accident	Pedestrians		Pedal cyclists		Motor cyclists		Occupants of vehicles (not cycles)		Not stated		Totals		Deaths per million population	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
County Borough residents † :—														
Motor cycle	37	23	—	—	78	7	1	—	—	—	116	30		
,, ,, and pedal cycle ...	—	—	13	4	3	1	—	—	—	—	16	5		
,, ,, ,, motor car ...	1	—	—	—	87	5	1	1	—	—	89	6	44	6
,, ,, ,, motor van, lorry	—	—	—	—	39	1	—	—	—	—	39	1		
,, ,, ,, motor 'bus ...	1	—	—	—	5	—	—	—	—	—	6	—		
Motor car*	431	202	65	14	—	—	77	33	1	1	574	250	96	37
Motor van or lorry*	212	98	53	7	—	—	40	—	—	—	305	105	51	16
Motor or trolley 'bus	219	81	2	—	—	—	21	12	—	—	242	93	40	14
Motor charabanc or coach ...	5	4	—	—	—	—	1	—	—	—	6	4		
Other motor vehicles	13	5	—	—	—	—	1	1	—	—	14	6	16	6
Collisions of motor vehicles ...	1	—	26	5	5	—	46	27	—	—	78	32		
Horse vehicles	13	2	1	—	—	—	8	—	—	—	22	2	4	0
Pedal cycles, other or undefined vehicles	91	36	52	8	—	—	3	1	—	—	146	45	24	7
Total	1,024	451	212	38	217	14	199	75	1	1	1,653	579	276	86
Urban District residents † :—														
Motor cycle	54	21	—	—	123	5	—	—	—	—	177	26		
,, ,, and pedal cycle ...	—	—	11	3	7	1	—	—	—	—	18	4		
,, ,, ,, motor car ...	—	—	—	—	81	13	1	—	—	—	82	13	56	7
,, ,, ,, motor van, lorry	1	—	—	—	57	4	—	—	—	—	58	4		
,, ,, ,, motor 'bus ...	—	—	—	—	7	1	—	—	—	—	7	1		
Motor car*	345	146	120	14	2	—	78	30	—	—	545	190	90	28
Motor van or lorry*	213	81	59	11	—	—	43	2	—	1	315	95	52	14
Motor or trolley 'bus	156	38	—	—	—	—	16	8	—	—	172	46	28	7
Motor charabanc or coach ...	5	3	—	—	—	—	1	—	—	—	6	3		
Other motor vehicles	7	3	—	—	1	—	4	—	—	—	12	3	18	5
Collisions of motor vehicles ...	—	—	26	3	3	—	63	24	—	—	92	27		
Horse vehicles	9	2	—	—	—	—	5	—	—	—	14	2	2	0
Pedal cycles, other or undefined vehicles	43	12	71	16	—	—	—	1	1	—	115	29	19	4
Total	833	306	287	47	281	24	211	65	1	1	1,613	443	266	66
Rural District residents † :—														
Motor cycle	27	10	—	—	125	7	1	—	—	—	153	17		
,, ,, and pedal cycle ...	—	—	14	1	3	—	—	—	—	—	17	1		
,, ,, ,, motor car ...	—	—	1	—	105	4	—	—	—	—	106	4	98	6
,, ,, ,, motor van, lorry	—	—	—	—	72	1	—	—	—	—	72	1		
,, ,, ,, motor 'bus ...	2	—	—	—	10	—	1	—	—	—	13	—		
Motor car*	259	85	136	25	1	—	72	24	—	1	468	135	127	36
Motor van or lorry*	136	45	62	16	—	—	31	2	—	—	229	63	62	17
Motor or trolley 'bus	53	21	—	1	—	—	4	4	—	—	57	26	16	7
Motor charabanc or coach ...	6	—	—	—	—	—	—	—	—	—	6	—		
Other motor vehicles	4	1	—	—	—	—	2	—	—	—	6	1	18	5
Collisions of motor vehicles ...	—	—	7	1	4	—	42	18	—	—	53	19		
Horse vehicles	16	1	—	—	—	—	16	—	—	—	32	1	9	0
Pedal cycles, other or undefined vehicles	25	9	91	16	—	—	—	1	—	—	116	26	32	7
Total	528	172	311	60	320	12	169	49	—	1	1,328	294	361	79
England and Wales (non-civilians only) :—														
Motor cycle	4	—	1	—	25	—	—	—	—	—	30	—	—	—
,, ,, and pedal cycle ...	—	—	1	—	—	—	—	—	—	—	1	—	—	—
,, ,, ,, motor car ...	—	—	1	—	19	—	—	—	1	—	21	—	—	—
,, ,, ,, motor van, lorry	—	—	—	—	32	—	—	—	—	—	32	—	—	—
,, ,, ,, motor 'bus ...	—	—	—	—	2	—	1	—	—	—	3	—	—	—
Motor car*	22	—	2	—	—	—	12	—	1	—	37	—	—	—
Motor van or lorry*	17	—	—	—	—	—	10	—	—	—	27	—	—	—
Motor or trolley 'bus	14	—	—	—	—	—	—	—	—	—	14	—	—	—
Motor charabanc or coach ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other motor vehicles	1	—	—	—	—	—	1	—	—	—	2	—	—	—
Collisions of motor vehicles ...	—	—	—	—	1	—	15	—	—	—	16	—	—	—
Horse vehicles	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Pedal cycles, other or undefined vehicles	1	—	1	—	—	—	—	—	—	—	2	—	—	—
Total	59	—	6	—	79	—	39	—	2	—	185	—	—	—

* Including collisions with pedal cycles.
† Outside Greater London.

199, 200. **Ill-defined Diseases.**—These headings in the International List of Causes of Death, to which 1,083 deaths were allocated in 1938 and 923 in 1939, exclude the ill-defined diseases of infancy and old age, Nos. 158 and 162(*b*). In the more comprehensive sense resulting from their inclusion, the deaths from ill-defined causes in 1938 numbered 16,763 or 3·50 per cent. of the total, and in 1939 they numbered 18,555 or 3·72 per cent., compared with 3·67 in 1937, 4·09 in 1931 and 9·67 per cent. in 1911.

Inquiries sent to medical practitioners and coroners requesting further information as to indefinitely certified deaths amounted to 9,015 in 1938 and 11,341 in 1939 and to these 7,831 and 9,702 replies were received. The most important of the results to classification are indicated in Tables LXXXVIII(*a*) and LXXXVIII(*b*).

The total additions to certain definite headings which resulted from these inquiries in 1938 were as follows :—To influenza, 26 ; encephalitis lethargica, 100 ; cerebro-spinal fever, 57 ; tuberculosis of the respiratory system, 188 ; other forms of tuberculosis, 57 ; venereal diseases, 121 ; cancer, 944 ; diseases of the spinal cord, 24 ; disseminated sclerosis, 12 ; arteriosclerosis, 73 ; ulcer of the stomach and duodenum, 155 ; appendicitis, 70 ; gall-stones, 71 ; chronic nephritis, 136 ; diseases of the prostate, 260 ; puerperal sepsis, 21 ; congenital malformations, 54.

In addition to the foregoing, inquiries were addressed to medical practitioners who had initialled statement " B " on the back of the 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 a result of a " post-mortem " or laboratory examination which was not available at the time of signing the certificate. In 1938 these numbered 3,792, and 3,234 replies were received, amending the original certification in 1,655. In 1939 they numbered 3,643, 3,068 replies being received, with amendment in the case of 1,290.

Special enquiries regarding deaths from causes connected with childbearing numbered 1,813 in 1938 and 1,587 in 1939.

Table LXXXVIIIa.—Replies to Inquiries respecting Indefinitely Certified Causes of Death, 1938.

Subject of inquiry	Replies received	Replies amplifying previous information	Deaths allocated as the result of inquiry to certain headings
Croup	6	5	Diphtheria 1, Laryngismus stridulus 3, Laryngitis 1.
Pyæmia, septicæmia, etc.	161	120	Measles 1, Scarlet fever 1, Diphtheria 1, Diseases of the teeth and gums 7, Diseases of the tonsils 27, Diseases of the skin 7.
Tuberculosis ...	83	80	Tuberculosis of the respiratory system 41, Tuberculosis of the central nervous system 3, Tuberculosis of intestines and peritoneum 2, Tuberculosis of vertebral column 1, Tuberculosis of other bones and joints 1, Tuberculosis of lymphatic system 5, Tuberculosis of genito-urinary system 3, Other forms of tuberculosis 8.
Cancer (part or organ not stated) ...	1,247	1,173	Part or organ stated in 1,155 cases.
Cerebral tumour (P.M. cases)	320	299	Tuberculosis of central nervous system 3, Syphilis 2, Cancer 151, Glioma 115.
Tumour of other sites	805	753	Syphilis 3, Cancer 606.
Rheumatism ...	592	589	Rheumatic fever 114, Chronic rheumatism 3, Rheumatoid arthritis 1, Rheumatic heart disease 443.

Table LXXXVIIIa—*continued.*

Subject of inquiry	Replies received	Replies amplifying previous information	Deaths allocated as the result of inquiry to certain headings
Encephalitis ...	173	141	Influenza 3, Polioencephalitis 5, Encephalitis lethargica 79, Syphilis 4, Other forms of encephalitis 23, Meningitis 4.
Basal or basic meningitis	18	14	Cerebro-spinal fever 3, Tuberculosis of central nervous system 4, Meningitis—other forms 5.
Posterior or post basal or post basic meningitis	17	14	Cerebro-spinal fever 8, Tuberculosis of central nervous system 1, Meningitis—other forms 3.
Cerebro-spinal meningitis	51	49	Influenza 2, Cerebro-spinal fever 43, Tuberculosis of central nervous system 1.
Spinal sclerosis ...	7	7	Disseminated sclerosis 5, Other diseases of the spinal cord 2.
Cerebral sclerosis ...	4	4	Disseminated sclerosis 1.
Paraplegia	29	25	Syphilis 5, Disseminated sclerosis 2, Other diseases of the spinal cord 6.
General paralysis (outside asylums)	9	9	General paralysis of the insane 6.
Paralysis	13	9	Other diseases of the spinal cord 2, Paralysis agitans 2, Disseminated sclerosis 1.
Aortitis, arteritis and endarteritis	99	89	Syphilis 50, Aneurysm 2, Arteriosclerosis 2.
Fibroid phthisis ...	59	59	Tuberculosis of the respiratory system 49, Chronic interstitial pneumonia 3.
Hæmoptysis ...	8	5	Chronic interstitial pneumonia 1.
Stomatitis	4	4	Thrush, aphthous stomatitis 1.
Stricture of œsophagus	12	7	Cancer 6.
Hæmatemesis ...	41	33	Cancer 3, Ulcer of stomach or duodenum 17.
Pyloric obstruction, stenosis, etc. ...	48	45	Cancer 6, Ulcer of stomach or duodenum 33.
Jaundice	35	28	Cancer 5, Biliary calculi 4, Other diseases of the gall bladder 5.
Peritonitis	106	74	Tuberculosis of intestines and peritoneum 1, Cancer 5, Ulcer of stomach or duodenum 8, Appendicitis 20, Hernia 3, Intestinal obstruction 10, Diseases of the female genital organs 6.
Pemphigus of infants	67	60	Syphilis 10.
Hydrocephalus ...	43	41	Congenital hydrocephalus 31.
Violence	343	335	Precise form of suicide 88, Injury by fall 56, Injury in mines and quarries 16, Injury by crushing 72.
Syncope, heart failure	257	232	Influenza 3, Tuberculosis of the respiratory system 2, Syphilis 1, Cancer 1, Diseases of the heart 170, Arteriosclerosis 7, Bronchitis 10, Nephritis 8.
Operation	785	765	Cancer 57, Tumours of female genital organs 60, Ulcer of stomach or duodenum 62, Appendicitis 16, Hernia, intestinal obstruction 54, Biliary calculi 52, Other diseases of the gall bladder 30, Diseases of the prostate 195, Diseases of the female genital organs 54, Congenital malformations 3, Violence 11.
Other indefinite forms of certification	2,389	2,166	
Total	7,831	7,234	

In addition 1,813 inquiries were made in connection with parturition.

Table LXXXVIIIb.—Replies to Inquiries respecting Indefinitely Certified Causes of Death, 1939.

Subject of inquiry	Replies received	Replies amplifying previous information	Deaths allocated as the result of inquiry to certain headings
Croup	10	9	Laryngismus stridulus 1, Laryngitis 4.
Pyæmia, septicæmia, etc.	156	122	Diseases of the tonsils 14, Puerperal sepsis 1, Diseases of the skin, 22.
Tuberculosis ...	78	74	Tuberculosis of the respiratory system 43, Tuberculosis of the central nervous system 3, Tuberculosis of intestines and peritoneum 3, Tuberculosis of the vertebral column 1, Tuberculosis of other bones and joints 3, Tuberculosis of skin and subcutaneous tissue 1, Tuberculosis of lymphatic system 1, Tuberculosis of genito-urinary system 1, Disseminated tuberculosis 5.
Cancer (part or organ not stated)	1,272	1,139	Part or organ stated in 1,125 cases.
Cerebral tumour (P.M. cases)	258	238	Tuberculosis of central nervous system 2, Syphilis 2, Cancer 118, Glioma 52.
Tumour of other sites	929	825	Syphilis 3, Cancer 625.
Rheumatism ...	543	537	Rheumatic fever 85, Chronic rheumatism 5, Rheumatoid arthritis 2, Rheumatic heart disease 425.
Encephalitis ...	191	144	Measles 1, Influenza 6, Polioencephalitis 4, Encephalitis lethargica 78, Tuberculosis of central nervous system 2, Syphilis 1, Other forms of encephalitis 22, Meningitis 7.
Basal or basic meningitis	17	14	Cerebro-spinal fever 2, Tuberculosis of central nervous system 3, Meningitis—other forms 5.
Posterior or post basal or post basic meningitis	18	18	Cerebro-spinal fever 12, Tuberculosis of central nervous system 1, Meningitis—other forms 5.
Cerebro-spinal meningitis	46	45	Cerebro-spinal fever 38, Meningitis—other forms 4.
Spinal sclerosis ...	10	10	Disseminated sclerosis 6, Other diseases of the spinal cord 3.
Cerebral sclerosis ...	3	3	Disseminated sclerosis 1.
Paraplegia	49	38	Syphilis 4, Other diseases of the spinal cord 9, Disseminated sclerosis 1.
General paralysis (outside asylums)	11	11	General paralysis of the insane 11.
Aortitis, arteritis and endarteritis ...	101	93	Syphilis 44, Arteriosclerosis 15.
Fibroid phthisis ...	61	55	Tuberculosis of the respiratory system 49, Chronic interstitial pneumonia 3.
Paralysis	16	10	Other diseases of the spinal cord 3.
Stomatitis	21	16	Thrush, aphthous stomatitis, etc. 1.
Stricture of œsophagus	26	19	Cancer 8.
Hæmatemesis ...	36	29	Cancer 6, Ulcer of stomach or duodenum 19.
Pyloric stenosis, obstruction, etc.	66	59	Cancer 10, Ulcer of stomach or duodenum 41.
Jaundice	52	33	Syphilis 1, Weil's disease 2, Cancer 3, Biliary calculi 2.
Peritonitis	87	64	Tuberculosis of intestines and peritoneum 2, Cancer 4, Ulcer of stomach or duodenum 2, Appendicitis 19, Intestinal obstruction 11, Diseases of the female genital organs 3.
Pemphigus of infants	42	39	Syphilis 10.

Table LXXXVIIIb—*continued.*

Subject of inquiry	Replies received	Replies amplifying previous information	Deaths allocated as the result of inquiry to certain headings
Hydrocephalus ...	43	38	Congenital hydrocephalus 29.
Violence	398	389	Precise form of suicide 78, Drowning 2, Injury by fall 51, Injury in mines and quarries 9, Injury by machinery 8, Injury sustained in vehicular accidents 123, Injury by other crushing 2.
Syncope, Heart failure	492	458	Influenza 4, Diseases of the heart 340, Arteriosclerosis 22, Bronchitis 26, Nephritis 8.
Operation	732	701	Cancer 53, Tumours of female genital organs 57, Ulcer of stomach or duodenum 43, Appendicitis 11, Hernia, intestinal obstruction 39, Biliary calculi 64, Diseases of the prostate 192, Diseases of the female genital organs 50, Congenital malformations 5, Violence 12.
Other indefinite forms of certification	3,938	3,494	
Total ...	9,702	8,724	

In addition 1587 inquiries were made in connection with parturition.

Anæsthetics.—The usual 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, classifies all such deaths to the disease or injury on account of which the anæsthetic was administered.

The total number of deaths in 1938, as detailed in Table LXXXIXa, was 916, compared with 894 in 1937. 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 in the next two years, rose to 446 in 1923 and remained about that level to 1925. They then increased rapidly to 730 in 1929, fell back slightly in the next two years and then increased to the high level of 916 in 1938. In 1939 the total fell to 843 (Table LXXXIXb), and 2 of non-civilians.

For years before 1911 the record is contained in the tables of accidental deaths, but certain causes—strangulated hernia and cancer—were at that time preferred in tabulation to the anæsthetic used. In 1938 the 916 deaths included 116 associated with cancer and 64 with hernia; and in 1939 the 843 deaths included 118 with cancer and 59 with hernia. For comparison with years prior to 1911 the numbers of deaths should be reduced, therefore, to 736 in 1938 and 666 in 1939. In Table XC, which records the deaths by sex and age since 1901 no correction for this change in 1911 has been made.

Table LXXXIXa.—Deaths under or connected with the Administration of various Anæsthetics, according to Sex and Age—1938.

Anæsthetic		All ages	Age 0–	1–	5–	10–	15–	20–	25–	30–	35–	40–	45–	50–	55–	65–
Anæsthesia by inhalation																
Chloroform	M.	18	—	5	—	1	1	—	1	—	1	2	3	2	1	1
	F.	32	—	1	2	—	1	1	7	4	6	2	2	2	2	2
Chloroform and nitrous oxide	M.	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1
	F.	4	—	—	—	—	1	—	1	—	—	1	—	1	—	—
Chloroform, nitrous oxide and percaine	F.	1	—	—	—	—	—	—	—	—	—	1	—	—	—	—
Chloroform, omnopon and paraldehyde	F.	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Chloroform and ether	M.	68	5	4	2	2	1	7	4	4	6	3	7	6	10	7
	F.	39	—	3	2	—	1	4	7	5	4	3	2	4	3	1
Chloroform, ether and atropine	F.	2	—	—	1	—	—	—	1	—	—	—	—	—	—	—
Chloroform, ether and nitrous oxide	M.	4	—	—	—	—	—	—	—	1	—	—	2	1	—	—
	F.	2	—	—	—	—	—	—	—	—	—	—	—	1	—	1
Chloroform, ether and ethyl and chloride	M.	2	—	—	1	—	—	1	—	—	—	—	—	—	—	—
	F.	4	—	2	—	—	—	—	1	—	—	—	1	—	—	—
Chloroform and ethyl chloride	M.	1	—	—	1	—	—	—	—	—	—	—	—	—	—	—
Ether	M.	88	5	16	7	2	3	5	4	6	7	2	6	5	12	8
	F.	64	4	5	6	5	2	3	5	2	6	2	3	3	9	9
Ether and nitrous oxide	M.	56	—	5	4	3	4	2	4	—	5	1	2	4	12	10
	F.	63	—	—	1	2	4	3	3	5	5	10	3	9	8	10
Ether and ethyl chloride	M.	60	4	15	14	6	4	—	2	2	2	1	2	1	2	5
	F.	35	—	7	15	—	2	3	2	—	1	2	—	1	1	1
Ether, ethyl chloride and nitrous oxide	M.	4	1	1	1	1	—	—	—	—	—	—	—	—	—	—
	F.	3	—	—	1	—	—	—	—	—	—	1	—	—	1	—
Ether, ethyl chloride, nitrous oxide, nembutal and atropine	F.	1	—	—	1	—	—	—	—	—	—	—	—	—	—	—
Ether and avertin	F.	3	—	—	—	—	1	—	—	—	—	—	—	1	—	1
Ether, nitrous oxide and avertin	M.	1	—	—	1	—	—	—	—	—	—	—	—	—	—	—
Ether, nitrous oxide and evipan	M.	3	—	—	—	—	—	—	—	1	—	—	—	1	—	1
	F.	3	—	—	—	—	—	—	1	—	—	2	—	—	—	—
Ether, nitrous oxide, hyoscine and morphia	F.	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—
Ether and novocaine	M.	2	1	—	—	—	—	—	—	—	—	—	—	—	—	1
Ether and paraldehyde	M.	1	—	1	—	—	—	—	—	—	—	—	—	—	—	—
Ether, nitrous oxide and paraldehyde	F.	2	—	—	—	—	—	—	1	—	—	—	1	—	—	—
Ether and percaine	F.	1	—	—	—	—	—	—	—	—	—	—	1	—	—	—
Ether and planocaine	M.	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—
Ether, nitrous oxide and planocaine	M.	1	—	—	—	—	—	—	—	—	—	—	—	—	1	—
Ether nitrous oxide and stovaine	F.	1	—	—	—	—	—	—	—	—	—	—	—	—	1	—
Ethyl chloride	M.	14	—	2	5	1	—	1	2	—	1	—	1	—	—	1
	F.	12	2	3	3	—	—	—	—	—	—	1	1	1	1	—
Ethyl chloride and nitrous oxide	F.	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—
Ethyl chloride, nitrous oxide and novocaine	M.	1	—	1	—	—	—	—	—	—	—	—	—	—	—	—
A.C.E.	M.	3	1	—	—	—	—	1	—	—	—	—	—	—	1	—
	F.	1	—	—	—	—	—	—	—	—	1	—	—	—	—	—
Nitrous oxide	M.	40	—	2	2	2	3	2	—	2	—	2	4	1	6	14
	F.	40	—	3	3	1	1	1	6	3	4	2	1	5	5	5
Nitrous oxide and avertin	M.	1	—	—	—	—	—	—	—	—	—	—	—	—	1	—
	F.	5	—	—	—	—	—	—	—	1	—	1	—	1	1	1
Nitrous oxide and cyclopropane	F.	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—
Nitrous oxide and evipan	M.	2	—	—	—	—	—	—	—	—	1	—	—	—	1	—

Table LXXXIXa.—*continued*

Anæsthetic		All ages	Age 0–	1–	5–	10–	15–	20–	25–	30–	35–	40–	45–	50–	55–	65–
Anæsthesia by inhalation—continued																
Nitrous oxide and morphine	M.	1	—	—	—	—	—	—	—	—	—	—	—	—	1	—
Nitrous oxide and novocaine	F.	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Nitrous oxide, pentothal and percaine	M.	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Nitrous oxide and percaine	M.	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1
	F.	4	—	—	—	—	—	—	—	—	—	—	—	2	1	1
Nitrous oxide and planocaine	M.	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Other forms of anæsthesia																
Avertin	M.	2	—	—	—	—	—	—	—	—	—	—	—	—	2	—
	F.	3	—	—	—	—	—	—	—	—	—	—	—	—	1	2
Avertin, heroin and morphia	F.	1	—	—	—	—	—	—	—	—	—	—	—	—	1	—
Cocaine	M.	3	—	1	—	1	—	—	—	—	—	—	1	—	—	—
	F.	2	—	—	—	—	—	1	—	—	—	—	—	—	1	—
Cocaine and novocaine	M.	2	—	—	—	—	—	—	—	—	—	—	—	—	1	1
Cocaine, novocaine, omnopon and scopolamine	M.	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Cyclopropane	M.	2	—	—	—	—	—	1	—	—	—	—	—	—	1	—
	F.	1	—	—	—	—	—	—	—	—	—	—	—	1	—	—
Decicaine	M.	3	—	—	—	—	—	—	—	1	—	—	—	—	—	2
	F.	4	—	—	—	—	—	—	—	—	—	—	—	1	2	1
Duracaine	F.	1	—	—	—	—	—	—	—	—	—	—	—	—	1	—
Evipan	M.	20	—	—	—	1	1	3	—	—	—	—	1	2	4	8
	F.	11	—	—	—	—	—	—	1	1	2	—	1	—	4	2
Evipan and percaine	F.	1	—	—	—	—	—	—	—	—	—	—	1	—	—	—
Evipan and planocaine	F.	1	—	—	—	—	—	—	—	—	—	—	—	—	1	—
Morphia and atropine	F.	1	—	—	—	—	—	—	—	—	—	—	—	—	1	—
Morphia and stovaine	M.	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Nembutal, omnopon and scopolamine	M.	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Neocaine	F.	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Neotrocain	M.	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—
Novocaine	M.	9	—	1	—	—	—	—	1	—	—	—	—	—	1	6
	F.	8	1	—	—	—	—	—	—	1	—	—	—	2	2	2
Novutox	M.	3	1	—	—	—	—	—	—	—	—	—	—	—	1	1
Parsetic	F.	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—
Pentothal	M.	3	—	—	—	—	—	—	1	—	—	—	—	—	2	—
	F.	1	—	—	—	—	—	—	1	—	—	—	—	—	—	—
Pentothal and percaine	M.	1	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—
Percaine	M.	37	—	—	—	—	2	1	1	2	—	—	3	2	12	14
	F.	28	—	—	—	—	—	—	—	1	—	1	—	3	11	12
Percaine, omnopon and scopolamine	F.	1	—	—	—	—	—	—	—	—	—	—	—	—	1	—
Planocaine	M.	3	—	—	—	—	—	—	—	—	—	—	—	1	1	1
Procaine	M.	2	—	—	—	—	—	—	—	1	—	—	—	—	—	1
Spinocaine	M.	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—
	F.	3	—	—	—	—	—	—	—	—	—	—	—	2	1	—
Stovaine	M.	4	—	—	—	—	—	—	—	—	—	—	—	1	1	2
	F.	13	—	—	—	—	2	1	—	2	—	—	—	2	5	1
Tropocaine	F.	1	—	—	—	—	—	—	—	—	1	—	—	—	—	—
Kind not stated	M.	16	—	1	1	—	1	—	2	2	2	—	—	2	3	2
	F.	15	1	1	—	—	—	—	—	—	2	—	1	—	4	6
Total	M.	491	19	55	39	20	20	25	22	23	25	11	32	31	76	93
	F.	425	9	25	35	8	15	19	37	26	32	29	19	41	69	61

Table LXXXIXb.—Deaths under or connected with the Administration of various Anæsthetics, according to Sex and Age, 1939.

Anæsthetic		All ages	Age 0–	1–	5–	10–	15–	20–	25–	30–	35–	40–	45–	50–	55–	65–
Anæsthesia by inhalation																
Chloroform	M.	17	1	1	—	1	1	2	2	1	1	—	1	1	2	3
	F.	21	—	—	1	—	—	1	8	3	1	3	—	2	1	1
Chloroform and nitrous oxide	M.	7	—	—	—	1	—	—	—	—	1	—	—	—	5	—
	F.	5	—	—	1	—	—	—	—	2	1	—	—	1	—	—
Chloroform and ether	M.	41*	2	2	2	—	—	2	3	2	4	3	1	5	11	4
	F.	29	—	—	1	—	1	1	9	5	1	3	3	1	2	2
Chloroform, ether and nitrous oxide	M.	3	—	—	—	—	—	—	—	—	—	—	1	—	—	2
	F.	2	—	—	—	—	—	—	—	—	—	1	1	—	—	—
Chloroform, ether and ethyl chloride	M.	4	1	—	—	—	—	—	—	1	1	1	—	—	—	—
Chloroform and ethyl chloride	F.	3	1	—	—	—	—	—	1	—	—	1	—	—	—	—
Ether	M.	73	5	16	13	5	3	3	2	1	4	3	—	4	7	7
	F.	92	1	12	12	6	3	3	10	3	4	5	9	5	14	5
Ether and nitrous oxide	M.	96	—	3	4	3	4	5	3	8	5	6	8	10	22	15
	F.	60	—	1	4	1	—	5	2	6	5	3	9	7	9	8
Ether and ethyl chloride	M.	45*	5	13	11	3	—	1	—	—	—	2	1	3	4	2
	F.	39	1	4	12	3	1	2	2	2	3	1	2	2	4	—
Ether and avertin	M.	1	—	—	1	—	—	—	—	—	—	—	—	—	—	—
Ether, nitrous oxide and avertin	M.	1	—	—	—	—	—	—	—	—	—	—	—	1	—	—
	F.	1	—	—	—	—	—	—	—	—	—	1	—	—	—	—
Ether, nitrous oxide and novocaine	F.	1	—	—	—	—	—	—	—	—	1	—	—	—	—	—
Ether and novocaine	F.	1	—	—	—	—	—	—	—	—	—	1	—	—	—	—
Ether and percaine	M.	1	—	—	—	—	—	—	—	—	1	—	—	—	—	—
Ether, nitrous oxide and percaine	M.	1	—	—	—	—	—	—	—	—	1	—	—	—	—	—
	F.	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Ethyl chloride	M.	9	1	4	2	—	—	—	—	—	—	—	—	—	2	—
	F.	8	2	2	—	—	—	1	—	—	—	—	—	—	2	1
Ethyl chloride and nitrous oxide	F.	1	—	—	—	—	—	—	—	—	—	1	—	—	—	—
A.C.E.	M.	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—
	F.	1	—	1	—	—	—	—	—	—	—	—	—	—	—	—
Nitrous oxide	M.	43	—	2	2	1	3	2	4	2	—	2	—	3	7	15
	F.	49	—	—	1	4	—	1	2	5	5	11	5	4	5	6
Nitrous oxide and avertin	F.	3	—	—	—	—	—	—	—	—	—	—	—	2	1	—
Nitrous oxide and evipan	F.	1	—	—	—	—	—	—	—	—	—	—	—	—	1	—
Nitrous oxide and morphia	M.	1	—	—	—	—	—	—	—	—	—	—	1	—	—	—
Nitrous oxide and percaine	M.	2	—	—	—	—	—	—	—	—	—	—	—	1	—	1
	F.	2	—	—	—	—	—	—	—	—	—	2	—	—	—	—
Nitrous oxide, morphia and percaine	M.	1	—	—	—	—	—	—	—	—	—	1	—	—	—	—
Nitrous oxide and stovaine	M.	1	—	—	—	—	—	—	—	—	—	—	—	—	1	—
	F.	1	—	—	—	—	—	—	—	—	—	1	—	—	—	—

* Excludes death of one non-civilian.

Table LXXXIXb.—*continued*

Anæsthetic		All ages	Ages 0–	1–	5–	10–	15–	20–	25–	30–	35–	40–	45–	50–	55–	65–
Other forms of anæsthesia																
Avertin	F.	1	—	—	—	—	—	—	—	—	—	—	—	—	1	—
Avertin and cocaine	F.	1	—	—	—	—	—	—	—	—	—	—	—	—	1	—
Avertin and cyclopropane	F.	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—
Cocaine	M.	2	—	—	—	—	—	—	1	—	—	—	—	1	—	—
Cocaine and novocaine	F.	1	—	—	—	—	—	—	—	—	—	—	—	—	1	—
Cyclopropane	F.	2	—	—	—	—	—	1	—	—	—	—	—	—	1	—
Cyclopropane and percaine	F.	1	—	—	—	—	—	—	—	—	—	—	—	—	1	—
Decicaine	F.	1	—	—	—	—	—	—	—	—	—	—	1	—	—	—
Duracaine	M.	2	—	—	—	—	—	—	—	—	—	—	—	—	1	1
Evipan	M.	15	—	—	—	—	1	—	—	1	—	2	—	—	4	7
	F.	10	—	1	—	—	—	1	—	—	—	—	—	—	3	5
Evipan and percaine	F.	3	—	—	—	—	—	—	—	—	—	—	—	2	1	—
Morphia and atropine	M.	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—
Morphia and hyoscine	M.	1	—	—	—	—	—	—	—	—	—	—	—	—	1	—
Nembutal	M.	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Neocaine	M.	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Novocaine	M.	10	—	—	—	—	—	—	—	—	2	—	1	—	4	3
	F.	5	1	—	—	—	—	—	—	—	1	1	—	—	—	2
Novol	F.	1	—	—	—	—	—	—	—	—	—	—	1	—	—	—
Novutox	M.	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1
	F.	1	—	—	—	—	—	—	—	—	1	—	—	—	—	—
Pentothal	M.	5	—	—	—	—	—	—	—	—	—	—	1	—	3	1
	F.	4	—	—	—	—	—	—	—	—	—	—	—	—	2	2
Percaine	M.	30	—	—	—	—	1	—	1	—	—	—	4	1	8	15
	F.	18	—	—	—	—	—	2	—	—	—	1	2	1	3	9
Phenocaine	M.	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1
	F.	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Planocaine	F.	2	—	—	—	—	—	—	—	—	—	1	—	—	1	—
Procaine	M.	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Spinocaine	M.	1	—	—	—	—	—	—	—	—	—	—	—	1	—	—
Stovaine	M.	11	—	—	1	—	—	—	—	1	1	—	1	—	2	5
	F.	8	—	—	—	—	—	1	—	1	—	—	—	1	2	3
Vinyl ether	F.	1	—	1	—	—	—	—	—	—	—	—	—	—	—	—
Others, unstated	M.	19	—	—	—	1	—	—	—	1	—	2	1	3	3	8
	F.	10	—	—	—	1	1	—	—	1	1	1	—	1	2	2
Total	M.	450†	15	41	36	15	13	15	16	20	21	22	21	34	87	94
	F.	393	6	22	32	15	6	20	34	28	24	37	33	30	58	48

† Excludes 2 deaths of non-civilians.

Table XC.—Deaths under or associated with Anæsthesia, 1901–39.

Year	All ages	Males								All ages	Females							
		0–	5–	15–	25–	35–	45–	55–	65–		0–	5–	15–	25–	35–	45–	55–	65–
Yearly average :—																		
1901–05* ...	95	14	20	9	13	16	11	7	4	53	6	9	7	11	8	8	3	2
1906–10* ...	125	26	20	12	16	18	16	9	8	77	7	14	9	18	11	10	4	3
1911–15... ...	167	30	23	14	20	28	24	16	10	116	14	17	15	16	22	18	10	5
1916–20... ...	188	36	25	25	27	22	20	19	13	119	11	16	14	21	22	17	7	9
1921–25... ...	229	40	28	20	18	27	36	37	24	169	20	17	17	30	29	25	17	12
1926–30... ...	361	56	47	30	26	37	50	62	53	288	29	29	29	44	51	49	34	23
1931–35... ...	432	63	48	37	33	43	56	80	71	353	34	40	36	60	55	50	43	35
1921	204	30	29	16	16	19	34	30	30	133	16	23	16	24	21	19	11	3
1922	185	29	21	16	9	27	30	35	18	151	16	15	12	29	31	26	12	10
1923	262	45	37	29	17	38	35	34	27	184	22	23	14	23	32	32	23	15
1924	245	51	30	21	25	21	42	39	16	184	26	11	30	29	31	21	18	18
1925	249	43	25	17	23	28	39	45	29	193	22	14	15	43	32	29	23	15
1926	306	57	43	23	29	34	39	43	38	250	32	22	29	35	44	51	23	14
1927	328	43	51	25	20	30	42	70	47	268	24	28	29	46	47	40	35	19
1928	384	63	41	30	23	43	55	67	62	272	29	21	27	44	45	44	33	29
1929	414	66	61	31	25	43	63	64	61	316	35	35	27	52	52	50	43	22
1930	375	51	41	39	34	34	52	68	56	332	27	39	33	45	66	58	35	29
1931	413	60	51	44	36	41	51	73	57	310	27	40	23	60	55	43	38	24
1932	416	66	49	37	29	45	58	68	64	333	24	40	33	60	58	42	36	40
1933	425	67	47	44	22	42	56	78	69	343	35	39	47	50	44	48	47	33
1934	440	66	45	29	37	43	48	91	81	374	43	43	38	67	45	53	46	39
1935	467	57	47	31	43	45	68	91	85	403	42	37	37	63	75	64	47	38
1936	453	69	53	39	44	39	57	73	79	386	41	33	31	69	59	54	55	44
1937	458	68	48	40	35	40	76	75	76	436	40	41	44	71	65	56	60	59
1938	491	74	59	45	45	36	63	76	93	425	34	43	34	63	61	60	69	61
1939	450	56	51	28	36	43	55	87	94	393	28	47	26	62	61	63	58	48

Deaths in later periods compared with those of 1911–15 taken as 100.

Yearly average :—																		
1911–15... ...	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
1916–20... ...	113	120	109	179	135	79	83	119	130	103	79	94	93	131	100	94	70	180
1921–25... ...	137	133	122	143	90	96	150	231	240	146	143	100	113	188	132	139	170	240
1926–30... ...	216	187	204	214	130	132	208	388	530	248	207	171	193	275	232	272	340	460
1931–35... ...	259	210	209	264	165	154	233	500	710	304	243	235	240	375	250	278	430	700
1931	247	200	222	314	180	146	213	456	570	267	193	235	153	375	250	239	380	480
1932	249	220	213	264	145	161	242	425	640	287	171	235	220	375	264	233	360	800
1933	254	223	204	314	110	150	233	488	690	296	250	229	313	313	200	267	470	660
1934	263	220	196	207	185	154	200	569	810	322	307	253	253	419	205	294	460	780
1935	280	190	204	221	215	161	283	569	850	347	300	218	247	394	341	356	470	760
1936	271	230	230	279	220	139	238	456	790	333	293	194	207	431	268	300	550	880
1937	274	227	209	286	175	143	317	469	760	376	286	241	293	444	295	311	600	1,180
1938	294	247	257	321	225	129	263	475	930	366	243	253	227	394	277	333	690	1,220
1939	269	187	222	200	180	154	229	544	940	339	200	276	173	388	277	350	580	960

* Excluding deaths from cancer and strangulated hernia.

The increase from 1911–15 to 1938 was relatively more rapid amongst females (266 per cent.) than amongst males (194 per cent.), and was greatest at ages over 55, and least for males aged 35–45. In 1939, despite the fall in total deaths, further increases were recorded for males over 55 and for females aged 5–15 and 45–55.

The anæsthetic agents recorded on death certificates have altered considerably in recent years, as may be seen from Table XCI. The numbers of fatalities in these tables depend, of course, 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, and it is not even possible to say whether, or to what extent, the increase in the number of deaths implies increasing mortality under anæsthetics. The number of administrations is known to be increasing but cannot be estimated. The deaths tabulated 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.

Table XCI.—Deaths under or associated with the Administration of Various Anæsthetics in each year, 1926 to 1939.

	Sex	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939
Anæsthetics of the methane series :—															
Chloroform (1)	M.	54	48	75	63	51	58	52	52	34	38	33	25	19	24
	F.	47	53	36	41	37	37	36	31	34	27	36	35	36	26
Ether (alone) (2)	M.	102	94	110	126	119	119	118	107	96	113	94	92	88	73
	F.	65	69	105	114	122	109	106	97	89	94	84	89	64	92
Ether and nitrous oxide (only) ...	M.	3	7	8	16	7	15	12	27	39	43	40	61	56	96
	F.	2	3	3	7	8	5	12	18	28	38	38	58	63	60
Chloroform and ether (1) ...	M.	89	100	120	116	115	126	103	91	104	80	88	56	72	44
	F.	78	69	80	93	87	79	68	87	76	56	62	54	41	31
A.C.E. mixture	M.	9	9	5	3	1	10	3	4	4	2	1	5	3	1
	F.	8	2	—	6	3	—	5	1	—	5	4	—	1	1
Ether and ethyl chloride (1) ...	M.	10	15	9	12	16	28	24	31	35	34	54	52	64	45
	F.	7	17	7	13	16	10	19	26	34	43	34	33	38	39
Other mixtures containing chloroform or ether (3)	M.	4	5	6	8	5	2	8	6	11	7	11	17	12	8
	F.	7	7	3	4	5	8	11	11	12	16	11	17	20	7
Ethyl chloride (1)	M.	4	8	6	7	6	3	7	8	13	9	11	15	14	9
	F.	3	6	3	3	4	11	7	4	5	7	12	11	13	9
Barbituric acid group :—															
Nembutal, pentothal, evipan (alone or with cocaine derivative)	M.	—	—	—	—	—	—	—	1	6	19	13	16	24	21
	F.	—	—	—	—	—	3	1	1	9	18	6	8	14	17
Avertin (alone or with cocaine derivative)	M.	—	—	—	1	1	2	5	5	3	12	2	2	2	—
	F.	—	—	—	1	1	4	6	4	6	5	8	1	3	2
Nitrous oxide (alone)...	M.	9	13	18	27	23	21	36	34	33	43	36	48	40	43
	F.	6	19	12	11	18	22	27	24	35	31	33	49	40	49
Opium or morphine and their preparations with or without atropine, hyoscine or cocaine derivative (4)	M.	—	1	—	—	1	—	1	—	—	—	—	1	3	2
	F.	—	—	—	—	1	1	1	—	—	1	—	3	3	—
Cocaine and its preparations and substitutes (without any of above) :—															
Cocaine	M.	1	2	1	2	1	1	3	4	2	4	2	1	3	2
	F.	1	—	1	—	—	—	2	—	1	3	2	3	2	—
Stovaine or synonyms (5) ...	M.	3	4	2	3	4	2	6	5	7	8	3	6	4	11
	F.	6	5	3	6	3	2	6	5	10	9	3	10	13	8
Novocaine and decicaine group (6) ...	M.	2	5	10	13	13	10	24	29	24	19	18	10	22	16
	F.	1	3	6	5	12	6	12	16	11	17	19	13	18	10
Percaine or synonyms (7) ...	M.	—	—	—	—	1	7	10	11	18	12	23	26	37	30
	F.	—	—	—	1	2	6	13	13	18	12	17	24	28	19
Phenocaine...	M.	—	—	—	—	—	—	—	—	—	—	—	—	—	1
	F.	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Others (including combinations of cocaine preparations) ...	M.	1	1	—	4	—	2	1	2	3	6	4	1	2	—
	F.	2	1	3	2	1	1	—	2	—	3	8	2	1	1
Miscellaneous, including combinations not specified above	M.	—	1	1	1	—	—	—	2	2	1	2	8	10	5
	F.	—	1	—	—	—	1	—	1	2	3	1	11	12	11
Kind not stated	M.	15	15	13	12	11	7	3	6	6	17	18	16	16	19
	F.	17	13	10	9	12	5	1	2	4	15	8	15	15	10
Total	M.	306	328	384	414	375	413	416	425	440	467	453	458	491	450
	F.	250	268	272	316	332	310	333	343	374	403	386	436	425	393

NOTES.—(1) Including combinations with nitrous oxide, as in the corresponding lines of this table in previous years.
(2) The corresponding line of this table in previous years included ether with nitrous oxide, now shown separately.
(3) Including combinations of chloroform or ether with morphia, atropine, nembutal or cocaine derivatives or substitutes.
(4) Includes omnopon.
(5) Amylocaine.
(6) Including derivatives: Planocaine, procaine, duracaine, spinocaine, neocaine, allocaine, syncaine, ethocaine, kerocaine, novutox, parsetic, amethocaine, paritocaine, anethaine.
(7) Nupercaine.

Table XCII.—Classification of Deaths under or Associated with Anæsthesia, 1938 and 1939.

	Cause to which death was assigned	1938 Males	1938 Females	1939 Males	1939 Females
24–32	Non-respiratory tuberculosis	8	4	5	5
45–53	Cancer	64	52	64	54
54a	Non-malignant tumours of female genital organs ...	—	24	—	17
54b, 55	Other tumours	9	10	13	8
66a	Simple goitre	2	4	—	3
66b	Exophthalmic goitre ...	1	19	5	20
88	Diseases of the eye ...	9	5	1	2
89	Diseases of the ear and mastoid sinus ...	20	13	11	10
98	Gangrene	4	2	5	2
104	Diseases of the nasal fossæ, etc. ...	6	4	6	2
110 : 1	Empyema	4	2	6	1
115 : 1(pt)	Extraction of teeth ...	9	13	11	13
115 : 3	Diseases of the tonsils ...	27	18	21	17
115 (pt)	Other diseases of buccal cavity	5	4	2	1
117	Ulcer of the stomach or duodenum	34	8	29	6
121	Appendicitis	48	35	54	34
122	Hernia	43	21	40	19
122b	Intestinal obstruction ...	19	14	24	12
123	Other diseases of the intestines	6	4	3	6
126	Biliary calculi	4	12	6	10
127	Diseases of the gall bladder	2	5	1	5
129	Peritonitis	4	4	4	2
130–133	Diseases of the kidney ...	5	6	2	2
134	Urinary calculi	2	5	5	3
135–136	Diseases of bladder or urethra	6	2	3	2
137	Diseases of the prostate	19	—	21	—
138 pt.	Circumcision	10	—	5	—
138 pt.	Other diseases of the male genital organs	7	—	4	—
139	Diseases of the female genital organs	—	11	—	23
140–150	Childbirth and abortion ...	—	61	—	46
154–156	Diseases of the bones and joints	8	8	6	5
157	Congenital malformations	9	7	7	6
163–198	Violence	57	21	58	27
	Other causes	40	27	31	29
	All Causes	491	425	450	393

Table XCII classifies the deaths in 1938 and 1939 under or associated with anæsthesia according to the causes to which they were classified, that is to say, the reasons for which the operations were performed. For cancer the totals in the five successive years 1935 to 1939 were 121, 92, 125, 116, 118 ; for appendicitis they were 82, 86, 96, 83, 88 ; for ulcer of the stomach and duodenum 35, 37, 30, 42, 35 ; for diseases of the tonsils 53, 47, 48, 45, 38 ; for extraction of teeth 27, 18, 25, 22, 24 ; for diseases of the prostate 23, 19, 17, 19, 21 ; for childbirth and abortion 55, 61, 61, 61, 46.

The numbers of deaths in 1938 reported from different classes of institutions, etc., in various regions of the country are stated in Table XCIII, 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 XCIII.—Deaths under Anæsthetics Registered in 1938. Distribution by part of Country and Place of occurrence.

		Greater London	South East excluding Greater London	North	Midland	East	South-West	Wales	Total England and Wales
Hospitals	M.	79	50	145	61	15	17	16	383
	F.	78	49	120	50	7	18	18	340
Public Assistance Institutions	M.	35	3	20	11	—	3	3	75
	F.	19	3	21	6	1	1	—	51
Mental Hospitals	M.	—	—	1	—	—	—	—	1
	F.	—	—	—	—	—	—	—	—
Nursing Homes	M.	7	1	3	1	1	1	—	14
	F.	5	—	4	2	—	1	2	14
Elsewhere	M.	2	4	4	4	2	1	1	18
	F.	2	4	10	1	1	1	1	20
Total	M.	123	58	173	77	18	22	20	491
	F.	104	56	155	59	9	21	21	425

There were 50 deaths under anæsthetics in 1938, and 25 in 1939, for which record was made of the presence of *status lymphaticus* 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 :—

Year	Sex	All Ages	0–	5–	10–	15–	20–	25–	35–	45–	55–
1938 ...	M	31	4	5	1	2	4	4	—	1	—
	F	19	8	3	—	2	2	3	1	—	—
1939 ...	M	14	7	3	1	—	2	1	—	—	—
	F	11	2	4	3	—	—	2	—	—	—

POPULATION. 1938 and 1939.

The total population as at 30th June, 1938, has been estimated at 41,215,000 persons, 19,792,000 being males and 21,423,000 females. The 1938 estimate is 184,000 in excess of that for mid 1937 and represents an estimated rate of growth of 0·45 per cent. per annum during the preceding year, a figure which may be compared with the 10-year increases of 5·53 per cent. and 4·93 per cent. in the decennia 1921–31 and 1911–21 respectively.

The mid 1938 population estimate is 1,263 thousands in excess of the 1931 census figure, of which excess about 839 thousands is assignable to natural increase and 424 thousands to a net inward balance of migration.

The method employed in the construction of the 1938 estimate was the same as that used for the preceding postcensal years, the projection from the basic 1931 census record being extended for a further year by modifying the 1937 estimates in respect of subsequent births and deaths together with such assessment of migration as was available from the contributory records available.

Before the corresponding material for the preparation of the 1939 figures became available, the war had intervened (3rd September, 1939), with its accompaniment within a month (29th September, 1939) of the emergency enumeration of the civilian element of the population under the National Registration Act of 1939. The population statistics derived from the enumeration have been published* in a separate volume.

In respect of females the enumeration was complete and thus provides for that sex a fresh datum point for the projection of future years estimates. In normal times it would also have provided a check upon the validity of the estimates hitherto used for the preceding intercensal years 1932–1938 but its value for this purpose is discounted by the abnormal and inadequately recorded migration which took place in the period immediately before and after the outbreak of war. Over the 8½ years between the 1931 census (25th April) and the date of the National Register, the net female gain by migration was 274 thousands and if this had been spread evenly over the period, 231 thousands would have occurred prior to the middle of 1938 in which event, the population at that date would have been 25 thousands greater than the projected estimate of 21,423 thousands indicated above ; it does not follow that the 1938 estimate was deficient to that extent since the test is quite empirical and the bulk of the 25 thousands may well be accounted for by excessive immigration in 1939 ; it mainly serves to suggest that any error there may have been in the earlier estimates was of a relatively trifling order. From the diagrammatic representation of the estimates, it will be seen that they lie on a reasonably continuous line between the terminal census points and there seems no reason to assume that any revision of the estimates at this stage would produce a series of demonstrably greater validity.

For males, no check upon the total population estimates of the years 1932–1938 was possible, since many men had joined the Armed Forces by the end of September, 1939 and a large and indeterminate proportion of them were excluded from the National Register count. The male estimates had however, been compiled throughout simultaneously with and on the same procedure as those for females ; from the parallelism of the two progressions (see diagram) and from such comparisons as it has been possible to make between the estimates and the enumeration record at ages outside those affected by military service,

* National Register—Statistics of Population on 29th September, 1939—H. M. Stationery Office.

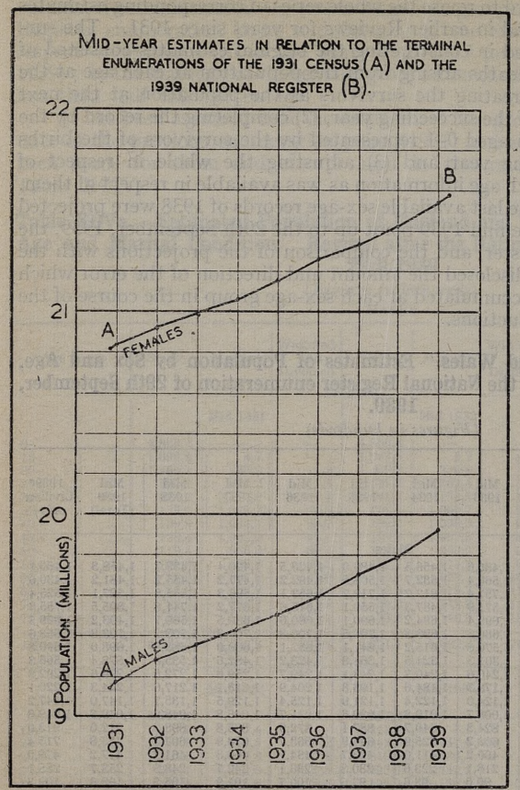


DIAGRAM I.

it is thought that the margin of error attaching to the male estimates need be regarded as no more significant than that suggested above for females.

The total population of England and Wales as at 30th June, 1939, determined in the light of the National Register record and of the distribution of births and deaths between June, 1938, and September, 1939, is estimated at 41,460,000 persons, 19,920,000 being males and 21,540,000 females.

The total is 1,508,000 in excess of the 1931 Census figure, of which excess 962,000 is accounted for by natural increase and a balance of 546,000 attributed to a net gain from migration.

The mid-1939 figures, which correspond in make up to the estimates of preceding years, purport to represent the total home population and are accordingly exclusive of the peace time element of non-civilians and seamen temporarily outside England and Wales, estimated to be of the order of about 180,000 at the middle of 1939. Total population estimates so constructed are appropriate for use with the marriage and birth records of 1939.

For the calculation of death rates in 1939 a slight modification to the total population was required. Following the practice adopted during the previous world war, it was decided to keep separate the deaths of civilians and non-civilians during the present war and to confine the main tabulations to those of civilians only, the ensuing rates being obtained by relating the numbers to the relevant civilian population exposed to risk. The composite 1939 population constructed for use with deaths comprising all classes during the first three quarters and civilians only during the final quarter is estimated at 41,246,000—19,687,500 males and 21,558,500 females.

National Sex-Age Estimates.

In preparing the estimates of the sex-age distribution of the national population for 1938 and 1939, advantage has been taken of the availability of

the National Register record to revise the whole series of corresponding estimates hitherto used and published in earlier Reviews for years since 1931. The survivorship method employed in constructing the original estimates consisted of (1) identifying the years deaths arising from the population at each age at the middle of one year and treating the survivors as the population at the next higher age at the middle of the succeeding year, (2) completing the record by the addition of the population aged 0–1 represented by the survivors of the births which occurred during the year and (3) adjusting the whole in respect of migrants in the light of such age information as was available in respect of them. For the present purpose the last available sex-age records of 1938 were projected in this manner through the mid-1939 point up to the 29th September, 1939, the date of the National Register, and the comparison of the projections with the enumerated at that date disclosed the amount and direction of the error which must be deemed to have accumulated at each sex-age group in the course of the successive estimate constructions.

Table XCIV.—England and Wales. Estimates of Population by Sex and Age, 1931-1939. Revised after the National Register enumeration of 29th September, 1939.

(*Figures in hundreds*)

Age group	1931 Census (graduated)	Mid 1931	Mid 1932	Mid 1933	Mid 1934	Mid 1935	Mid 1936	Mid 1937	Mid 1938	Mid 1939 (Total)	1939* (Civilian only)
					Males						
0– ...	1,524,2	1,522,7	1,507,8	1,486,6	1,456,5	1,439,0	1,423,5	1,420,4	1,433,7	1,458,3	1,460,1
5– ...	1,675,9	1,664,9	1,606,8	1,566,4	1,532,7	1,508,5	1,492,2	1,477,2	1,455,2	1,431,2	1,430,6
10– ...	1,624,2	1,634,8	1,692,0	1,757,4	1,812,2	1,719,7	1,653,1	1,596,3	1,555,8	1,527,1	1,525,4
15– ...	1,702,1	1,697,7	1,653,2	1,571,9	1,487,3	1,550,1	1,615,6	1,677,2	1,741,8	1,805,5	1,755,3
20– ...	1,703,9	1,706,2	1,706,9	1,699,4	1,694,2	1,690,1	1,660,6	1,630,5	1,560,7	1,493,2	1,399,5
25– ...	1,640,8	1,643,6	1,663,4	1,680,3	1,693,8	1,704,5	1,706,8	1,709,3	1,703,2	1,703,8	1,658,6
30– ...	1,434,6	1,445,5	1,512,2	1,570,8	1,615,2	1,641,1	1,652,1	1,669,0	1,683,3	1,698,0	1,670,8
35– ...	1,276,9	1,278,7	1,289,2	1,301,3	1,324,5	1,368,8	1,423,2	1,482,6	1,535,5	1,578,4	1,566,3
40– ...	1,233,2	1,234,3	1,239,1	1,240,6	1,240,7	1,243,1	1,249,7	1,259,6	1,272,5	1,299,6	1,292,8
45– ...	1,171,8	1,171,7	1,174,5	1,178,3	1,184,6	1,193,8	1,204,9	1,213,1	1,217,6	1,224,3	1,220,1
50– ...	1,115,3	1,116,1	1,122,2	1,124,0	1,122,4	1,121,9	1,125,4	1,129,5	1,135,1	1,147,0	1,147,2
55– ...	976,0	978,7	994,7	1,008,7	1,019,8	1,030,6	1,041,7	1,046,8	1,048.6	1,049,3	1,049,6
60– ...	784,2	787,6	806,2	824,3	840,7	857,1	872,9	885,8	898,3	912,0	913,0
65– ...	573,3	576,0	591,4	608,2	625,9	644,9	663,7	680,9	697,5	713,8	715 4
70– ...	377,2	379,3	389,9	400,2	411,0	423,7	434,7	446,3	461,2	477,2	479,0
75– ...	204,4	205,9	211,3	216,1	223,6	230,8	236,1	242,7	248,9	253,7	255,1
80– ...	84,7	85,6	87,9	90,0	93,6	97,6	100,7	101,9	105,3	108,6	109,3
85 and up ...	30,3	30,7	31,3	32,0	33,3	34,7	34,7	35,9	37,8	39,0	39,4
All ages	19,133,0	19,160,0	19,280,0	19,357,0	19,412,0	19,500,0	19,591,0	19,705,0	19,792,0	19,920,0	19,687,5
					Females						
0– ...	1,492,0	1,489,1	1,470,3	1,447,0	1,415,4	1,393,5	1,374,6	1,369,1	1,380,5	1,402,5	1,403,8
5– ...	1,645,2	1,633,9	1,578,4	1,538,5	1,505,5	1,482,3	1,463,8	1,445,4	1,425,0	1,398,8	1,397,4
10– ...	1,591,1	1,600,2	1,656,2	1,721,2	1,779,3	1,692,2	1,628,3	1,575,0	1,537,7	1,510,2	1,508,6
15– ...	1,721,7	1,712,5	1,659,8	1,573,4	1,482,5	1,538,7	1,603,0	1,662,1	1,730,9	1,797,2	1,795,9
20– ...	1,790,3	1,787,0	1,780,2	1,769,6	1,763,3	1,754,2	1,719,6	1,670,6	1,588,4	1,505,4	1,505,4
25– ...	1,732,7	1,733,5	1,751,8	1,769,5	1,780,7	1,784,2	1,787,0	1,778,6	1,766,0	1,763,0	1,763,5
30– ...	1,618,1	1,620,2	1,641,4	1,663,4	1,684,6	1,705,8	1,724,3	1,738,8	1,752,5	1,763,2	1,764,9
35– ...	1,517,8	1,519,3	1,532,1	1,545,5	1,559,9	1,577,0	1,598,1	1,616,5	1,635,1	1,655,4	1 658,8
40– ...	1,438,9	1,439,9	1,448,1	1,456,1	1,464,4	1,475,6	1,490,8	1,504,1	1,520,1	1,538,5	1,541,5
45– ...	1,363,8	1,364,7	1,371,7	1,378,3	1,385,2	1,395,0	1,406,2	1,416,2	1,428,0	1,441,2	1,443,5
50– ...	1,258,4	1,261,2	1,276,7	1,288,1	1,297,0	1,306,4	1,315,1	1,322,5	1,331,7	1,343,0	1,344,5
55– ...	1,080,1	1,084,3	1,106,5	1,128,6	1,149,9	1,171,9	1,191,4	1,207,5	1,220,6	1,232,0	1,233,3
60– ...	884,0	887,8	907,4	927,9	948,5	971,7	993.8	1,014,9	1,038,2	1,061,6	1,063,7
65– ...	687,7	690,6	707,1	725,5	744,4	764,1	784,9	805,7	828,5	852,1	854,0
70– ...	491,3	493,9	508,5	521,7	536,0	552,6	568,8	584,1	602,6	621,7	623,1
75– ...	297,5	299,4	308,9	318,2	328,7	339,5	350,6	360,5	371,3	379,8	381,1
80– ...	142,9	144,1	147,9	151,7	158,6	166,6	173,5	178,4	185,8	191,3	191,9
85 and up ...	65,8	66,4	68,0	68,8	71,1	73,7	74,2	76,0	80,1	83,1	83,6
All ages	20,819,3	20,828,0	20,921,0	20,993,0	21,055,0	21,145,0	21,248,0	21,326,0	21,423,0	21,540,0	21,558,5

* This is a composite population made up of 3/4ths of the mid-year estimate + 1/8th of the National Register population + 1/8th of the estimated civilian population at 31/12/39. It excludes non-civilian males from 3/9/39 and is appropriate for calculating death-rates.

The comparison is set out in some detail in the National Register Statistics volume, the maximum divergence amongst the groups identified by the National Register enumeration being a deficiency in the estimate of 2·3 per cent. in respect of women born in the years 1915–1919 (aged $19\frac{3}{4}$–$24\frac{3}{4}$ in September, 1939) ; in the majority of the sex-age groups identified the divergence was half or less than half this percentage.

It has been assumed that the divergences had grown continuously from the date of the previous enumeration point (1931) and allowance on this basis has been made for them and incorporated in the revised estimates set out in Table XCIV.

Table XCVa.—Estimated Population of England and Wales, 1931-1939, by Sex, Age and Marital Condition. Revised after the National Register enumeration, 29/9/1939

(*Figures in hundreds*)

MALES

Age group	Single	Married	Widowed and Divorced	Single	Married	Widowed and Divorced	Single	Married	Widowed and Divorced
	Mid 1931			Mid 1932			Mid 1933		
0–	4,822,4	—	—	4,806,6	—	—	4,810,4	—	—
15–	1,693,0	4,7	—	1,647,5	5,7	—	1,565,3	6,6	—
20–	1,469,1	235,9	1,2	1,465,8	240,0	1,1	1,460,1	238,2	1,1
25–	771,9	864,2	7,5	791,5	864,4	7,5	810,5	862,2	7,6
30–	314,2	1,115,9	15,4	341,6	1,154,8	15,8	368,2	1,186,4	16,2
35–	175,0	1,083,2	20,5	177,6	1,090,7	20,9	180,7	1,098,8	21,8
40–	139,9	1,064,7	29,7	139,2	1,070,3	29.6	139,2	1,071,5	29,9
45–	128,4	1,002,2	41,1	125,9	1,007,9	40,7	123,9	1,013,5	40,9
50–	119,4	936,3	60,4	119,2	943,0	60,0	118,6	946,1	59,3
55–	101,9	796,6	80,2	103,1	811,3	80,3	102,6	824,6	81,5
60–	78,8	607,8	101,0	80,9	623,1	102,2	83,0	638,1	103,2
65–	55,3	407,7	113,0	56,6	419,7	115,1	58,0	433,2	117,0
70–	32,2	235,7	111,4	34,2	242,9	112,8	36 2	251,0	113,0
75 and up ...	22,7	146,4	153,1	23,4	148,8	158,3	24.1	150,7	163,8
All ages ...	9,924,2	8,501,3	734,5	9,931,1	8,622,6	744,3	9,880,8	8,720,9	755,3
	Mid 1934			Mid 1935			Mid 1936		
0–	4,801,4	—	—	4.667,2	—	—	4,568,8	—	—
15–	1,479,9	7,4	—	1,541,7	8,4	—	1,606,1	8,9	—
20–	1,451,5	241,5	1,2	1,442,0	247,0	1,1	1,407,2	252,4	1,0
25–	815,6	870,8	7,4	810,9	886,3	7,3	802,7	896,4	7,7
30–	385,1	1,213,6	16,5	393,0	1,232,2	15,9	390,8	1,246,2	15,1
35–	186,4	1,115,5	22,6	195,0	1,150,5	23,3	207,5	1,192,3	23,4
40–	138,0	1,073,2	29,5	139,1	1,074,5	29,5	138,6	1,081,8	29,3
45–	122,6	1,021,4	40,6	120,5	1,032,6	40,7	119,6	1,044,6	40,7
50–	116,0	948,1	57,7	115,9	949,9	56,1	113,7	957,2	54,5
55–	103,1	835,4	81,3	101,8	848,4	80,4	103,8	857,6	80,3
60–	84,7	652,0	104,0	86,7	665,2	105,2	87,1	680,1	105,7
65–	59,3	447,3	119,3	61,1	463,4	120,4	62,7	477,8	123,2
70–	38,0	259,9	113,1	40,2	268,9	114,6	42,0	277,8	114,9
75 and up ...	25,1	155,5	169,9	25,9	161,0	176,2	27,2	163,6	180,7
All ages ...	9,807,3	8,841,6	763,1	9,741,0	8,988,3	770,7	9,677,8	9,136,7	776,5
	Mid 1937			Mid 1938			Mid 1939		
0–	4,493,9	—	—	4,444,7	—	—	4,416,6	—	—
15–	1,667,7	9,5	—	1,731,2	10,6	—	1,792,8	12,7	—
20–	1,370,8	258,7	1,0	1,297,1	262,5	1,1	1,232,8	259,5	9
25–	792,8	908,6	7,9	778,8	916,2	8,2	774,9	920,2	8,7
30–	387,8	1,266,7	14,5	380,8	1,289,3	13,2	373,1	1,312,7	12,2
35–	220,6	1,238,3	23,7	232,3	1,280,2	23,0	238,4	1,317,1	22,9
40–	140,2	1,090,0	29,4	142,2	1,102,0	28,3	147,6	1,123,3	28,7
45–	118,2	1,054,4	40,5	117,5	1,060,1	40,0	115,9	1,069,3	39,1
50–	111,7	963,5	54,3	110,0	970,7	54,4	109,5	982,5	55,0
55–	103,6	863,7	79,5	103,3	868,1	77,2	101,8	871,8	75,7
60–	88,0	690,6	107,2	88,2	702,9	107,2	89,5	715,8	106,7
65–	64,1	491,9	124,9	65,8	506,2	125,5	67,1	520,8	125,9
70–	43,3	287,3	115,7	44,8	300,5	115,9	46,1	313,0	118,1
75 and up ...	28,7	165,3	186,5	29,8	169,5	192,7	30,6	172,6	198,1
All ages ...	9,631,4	9,288,5	785,1	9,566,5	9,438,8	786,7	9,536,7	9,591,3	792,0

The average ages according to the latest (1939) distribution are 33·4 and 35·4 for males and females respectively, figures which compare with averages of 31·8 and 33·5 in 1931 or 29·9 and 31·2 in 1921.

A supplementary estimate for 1939 allowing for the exclusion of non-civilians from the outbreak of war has been included for use with the corresponding records of civilian deaths and is shown in the final column of the table.

The 1939 (civilian) estimate is that published in Table 1 of Part 1 of the Annual Review for that year.

Table XCVb.—Estimated Population of England and Wales, 1931-1939, by Sex, Age and Marital Condition. Revised after the National Register enumeration, 29/9/39.

(*Figures in hundreds*)

FEMALES

Age group	Single	Married	Widowed and Divorced	Single	Married	Widowed and Divorced	Single	Married	Widowed and Divorced
	Mid 1931			Mid 1932			Mid 1933		
0–	4,723,2	—	—	4,704,9	—	—	4,706,7	—	—
15–	1,681,4	31,0	1	1,626,9	32,9	—	1,539,7	33,7	—
20–	1,326,7	458,1	2,2	1,314,9	463,1	2,2	1,305,1	462,3	2,2
25–	703,8	1,018,0	11,7	718,1	1,022,7	11,0	730,9	1,027,8	10,8
30–	402,2	1,188,2	29,8	411,2	1,201,3	28,9	422,6	1,212,3	28,5
35–	313,0	1,146,9	59,4	314,7	1,161,1	56,3	315,8	1,175,3	54,4
40–	261,0	1,079,0	99,9	263,1	1,086,4	98,6	265,8	1,093,7	96,6
45–	228,7	1,000,4	135,6	229,8	1,004,2	137,7	230,3	1,007,3	140,7
50–	201,0	891,4	168,8	203,3	900,9	172,5	205,0	907,3	175,8
55–	170,4	710,8	203,1	173,7	724,5	208,3	176,6	738,9	213,1
60–	137,9	510,1	239,8	141,3	521,9	244,2	144,2	535,4	248,3
65–	109,4	317,9	263,3	112,1	329,1	265,9	114,7	340,9	269,9
70–	77,2	169,0	247,7	81,5	174,9	252,1	85,1	180,9	255,7
75 and up ...	74,8	89,3	345,8	78,2	91,8	354,8	82,1	94,0	362,6
All ages ...	10,410,7	8,610,1	1,807,2	10,373,7	8,714,8	1,832,5	10,324,6	8,809,8	1,858,6
	Mid 1934			Mid 1935			Mid 1936		
0–	4,700,2	—	—	4,568,0	—	—	4,466,7	—	—
15–	1,447,4	35,1	—	1,503,6	35,1	—	1,568,3	34,7	—
20–	1,290,9	470,0	2,4	1,268,2	483,8	2,5	1,220,9	496,4	2,3
25–	726,2	1,043,7	10,8	707,8	1,065,9	10,5	686,4	1,089,9	10,7
30–	432,9	1,223,9	27,8	442,2	1,236,3	27,3	447,5	1,249,9	26,9
35–	317,4	1,190.3	52,2	316.8	1,209,5	50,7	318,2	1,230,5	49,4
40–	267,7	1,102,9	93,8	269,6	1,115,7	90,3	271,9	1,132,1	86,8
45–	231,7	1,011,5	142,0	234,3	1,019,6	141,1	236,9	1,029,7	139,6
50–	206,5	911,5	179,0	207,7	916,1	182,6	209,6	919,6	185,9
55–	180,2	751,8	217,9	183,4	767,5	221,0	186,0	780,4	225,0
60–	147,5	548,7	252,3	152,0	561,8	257,9	155,3	575,2	263,3
65–	117,4	353,4	273,6	120,6	367,3	276,2	123,9	377,6	283,4
70–	88,9	187,2	259,9	92,4	193,8	266,4	95,4	200,3	273,1
75 and up ...	86,2	98,4	373,8	91,2	103,3	385,3	95,9	106,4	396,0
All ages ...	10,241,1	8,928,4	1,885,5	10,157,8	9,075,4	1,911,8	10,082,9	9,222,7	1,942,4
	Mid 1937			Mid 1938			Mid 1939		
0–	4,389,5	—	—	4,343,2	—	—	4,311,5	—	—
15–	1,626,7	35,4	—	1,693,4	37,5	—	1,745,8	51,4	—
20–	1,160,5	507,9	2,2	1,071,5	514,8	2,1	987,0	516,2	2,2
25–	657,3	1,110,3	11,0	619,9	1,134,9	11,2	600,3	1,151,5	11,2
30–	446,6	1,265,5	26,7	440,4	1,285,3	26,8	426,2	1,310,4	26,6
35–	321,6	1,245,7	49,2	325,6	1,261,0	48,5	329,0	1,277,4	49,0
40–	273,0	1,147,8	83,3	273,8	1,166,7	79,6	275,7	1,184,2	78,6
45–	239,7	1,039,0	137,5	243,5	1,051,4	133,1	246,3	1,066,7	128,2
50–	210,9	923,3	188,3	213,1	927,9	190,7	215,4	936,6	191,0
55–	188,1	789,5	229,9	190,4	797,5	232,7	192,5	802,7	236,8
60–	158,6	586,0	270,3	162,2	599,3	276,7	165,8	612,8	283,0
65–	127,7	387,4	290,6	131,5	399,5	297,5	135,0	411,6	305,5
70–	97,8	208,6	277,7	100,4	218,5	283,7	103,4	228,4	289,9
75 and up ...	100,1	109,5	405,3	104,8	114,0	418,4	108,7	116,5	429,0
All ages ...	9,998,1	9,355,9	1,972,0	9,913,7	9,508,3	2,001,0	9,842,6	9,666,4	2,031,0

National Sex-Age-Condition estimates.

To meet the increased need for population estimates distinguishing marital condition—a need which has been stimulated by the production of new material under the operation of the Population Statistics Act of 1938—the sex-age estimates given for ages over 15 in Table XCIV have been approximately analysed to show their component sub-divisions of Single, Married and Widowed (including Divorced). The sub-division, which has involved the use of assumptions regarding rates of widowhood and the marital condition of male deaths and migrants, will have increased the margin of error attached to the figures but they have been reconciled as far as possible with the terminal enumeration data and should suffice for most purposes for which they are required. The estimates are shown in Table XCV.

A supplementary analysis for the years 1938 and 1939 showing estimates of the mean numbers of married women exposed to risk of child bearing at specific intervals of marriage duration and appropriate for use therefore with the recorded legitimate maternities at those durations given in Table OO of the new fertility data (Statistical Review, Part II, 1938 and 1939) is provided in Table XCVI. The figures for separate individual year durations have been derived from the marriages† which have been successively recorded since 1931 and the remainder columns, i.e. ' 7 and over ' for 1938 and ' 9 and over ' for 1939 have been taken as the balance at each age group necessary to make up the total married women in the age group from Table XCV.

Table XCVI.—Estimated Populations of Married Women by Age and Duration of Marriage, England and Wales, 1938 and 1939.

(*Figures in hundreds*)

Age group	Duration of Marriage in years: All durations	Under 1	1–	2–	3–	4–	5–	6–	7	8	9 and over
	1938										
									7 & over		
15–50	6,451,6*	351,0	343,4	335,4	329,9	311,2	284,5	285,4	4,210,8		
15– ...	37,5*	25,5	9,3	2,4	3	—	—	—	—		
20– ...	514,8*	150,6	129,0	99,3	66,6	39,0	19,5	8,3	2,5		
25– ...	1,134,9*	110,1	130,4	144,4	154,3	147,7	127,8	112,5	207,7		
30– ...	1,285,3	36,6	45,4	56,4	70,7	82,5	91,1	108,5	794,1	not available for 1938	
35– ...	1,261,0	15,2	16,0	18,6	21,7	24,7	27,9	35,2	1,101,7		
40– ...	1,166,7	7,9	8,2	9,0	10,5	11,4	11,6	13,5	1,094,6		
45–50	1,051,4	5,1	5,1	5,3	5,8	5,9	6,6	7,4	1,010,2		
	1939										
15–50	6,557,8*	369,9	348,9	340,3	332,2	324,7	306,0	282,3	279,7	277,2	3,696,6
15– ...	51,4*	34,5	13,0	3,4	5	—	—	—	—	—	
20– ...	516,2*	155,9	127,9	98,3	65,5	38,7	19,7	7,7	2,2	3	—
25– ...	1,151,5	112,1	130,2	146,7	156,0	153,8	135,2	108,7	85,7	58,5	64,6
30– ...	1,310,4	37,7	45,9	57,3	71,7	87,9	101,0	109,7	123,3	133,8	542,1
35– ...	1,277,4	15,8	17,6	19,7	22,6	27,0	31,4	36,3	45,6	57,7	1,003,7
40– ...	1,184,2	8,3	8,7	9,2	10,0	11,1	12,1	12,9	15,1	18,0	1,078,8
45–50	1,066,7	5,6	5,6	5,7	5,9	6,2	6,6	7,0	7,8	8,9	1,007,4

*These figures have been revised since the publication of Parts II and differ slightly from those shown in Table EE.

†The number of married women exposed to risk at age x (last birthday) and marriage duration 0–1 in a given calendar year has been provisionally taken as :—

$\frac{1}{4}$ of the women who married at age x (l.b.d.) in the 2nd half of the calendar year.
$+\frac{3}{4}$,, ,, ,, ,, ,, ,, 1st ,, ,, ,,
$+\frac{3}{4}$,, ,, ,, x—1 ,, ,, 2nd ,, preceding ,,
$+\frac{1}{4}$,, ,, ,, ,, ,, ,, 1st ,, ,, ,,

The same estimate after modification for mortality, widowhoods and migration is used as the exposed to risk at age x+1 and duration 1—2 in the next succeeding calendar year, etc.

Local Populations.

The 1938 and 1939 mid-year estimates of the total 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 respective Statistical Reviews; the figures in respect of areas which have been subject to boundary changes during the year being further amplified in the Appendices to Part II where the changes are set out in detail.

As for the country as a whole, so for each of the component areas within the country, the mid-year estimates have 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. 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 earlier estimates, and for their fuller discussion reference may be made to the population section of the text portion of the Statistical Review for 1936.

For 1939, the mid-year series of population estimates were modified for use with the local numbers of deaths from which those of non-civilians were excluded after the outbreak of war. The supplementary series of estimates prepared for this purpose is shown in Table 29 of Pt. I of the Statistical Review for 1939. The data for their construction were obtained from the National Registration system under the maintenance provisions of which all changes in the numbers of local civilian populations due to births, deaths, migration, enlistments into and discharges from the Armed Forces, are continuously recorded and on the basis of which quarterly estimates of local civilian populations are being regularly constructed during the emergency period. The special 1939 death rate populations were obtained by suitably compounding the mid-year estimates for the pre-war portion of the year with the mean of the National Register and December civilian populations for the war portion of the year.

Local Age Distributions.

Sex and age distributions for large geographical regions of the country are shown in Table 2 of Part I of the 1938 and 1939 Statistical Reviews. The method of constructing the 1938 figures was the same as that adopted for preceding years. For 1939, however, the only published figures are those compiled for use with deaths, and as such, are compounded of normal mid-year figures for the pre-war portion of the year, obtained by projecting the previous years' estimates forward for a year and of mean civilian records for the war portion of the year, the latter being derived from the National Register and from such age records as could be obtained or inferred in respect of the varied local population movements that occurred in the final quarter of the year. The heavy evacuation from London and other large towns which occurred before the National Register was set up, rendered the latter quite ineffective as a check upon the intercensal series of local estimates. And the further recurrent flow and ebb of evacuation in response to the varying phases of the war, involving large and capricious movements of population of abnormal sex and age incidence, has increased the difficulty of identifying these features in different regions of the country so that this section of the population estimates must be expected to become increasingly hypothetical as time goes on.

Natural Increase.

As already stated on pages 154 and 155, the total excess of births over deaths since the 1931 census was approximately 839 thousands at mid-1938 and 962 thousands at mid-1939.

The corresponding excesses derived from the births and deaths registered in each calendar year from 1930 to 1939 are as follows :—

1930	193,384	1935	121,355
1931	140,451	1936	109,528
1932	129,843	1937	100,983
1933	83,948	1938	142,208
1934	120,832	1939	119,450

A comparable series of rates per 1,000 population from 1876–1939 is given in Table R from which it will be observed that, except for the war year 1918, the rate of natural increase reached its lowest level of 2.1. in 1933. Since that date it has fluctuated at a slightly higher level reaching 3·5 in 1938 and 2·9 in 1939.

Over the whole series of years the fall from 14·5 in the period 1876–1880 when the birth rates were at their highest level indicates that while birth and death rates have both been falling, the birth rate had fallen more rapidly thar the death rate, resulting in lessening differences between them.

Table XCVII. Natural Increase per 1,000 living, 1931-1939

(*Decreases are indicated by* —)

Regions, etc.	1931	1932	1933	1934	1935	1936	1937	1938	1939
England and Wales ...	3·5	3·3	2·1	3·0	3·0	2·7	2·5	3·5	2·9
Regional Summary									
South-East	3·4	3·0	2·0	2·6	3·2	2·9	2·8	3·6	3·2
Greater London ...	3·9	3·5	2·3	2·9	3·6	3·2	3·1	4·0	3·6
Remainder of South-East	2·9	2·3	1·7	2·2	2·6	2·4	2·4	3·1	2·6
North	3·2	3·4	1·9	3·2	2·7	2·5	2·1	3·2	2·5
North I	6·1	6·4	4·9	5·2	5·0	4·5	3·9	4·7	4·2
North II	4·2	4·5	3·0	4·1	3·9	3·6	3·4	4·3	3·7
North III	2·7	2·7	1·6	2·9	2·4	1·9	1·9	3·3	2·2
North IV	2·3	2·5	0·8	2·4	1·8	1·8	1·2	2·5	1·7
Midland	4·6	4·1	2·9	3·9	3·9	3·7	3·6	4·8	4·4
Midland I	4·7	4·2	3·0	4·0	4·0	4·0	3·9	5·1	4·8
Midland II	4·6	4·2	2·8	3·7	3·4	3·3	3·1	4·3	3·6
East	3·4	2·9	1·9	3·0	2·9	2·3	2·3	2·9	2·2
South-West	1·0	0·8	0·4	0·8	0·9	0·4	—0·1	0·7	0·3
Wales	3·4	3·2	2·3	3·2	2·7	2·1	1·6	2·4	1·7
Wales I...	4·5	4·2	3·0	4·2	3·6	2·9	2·3	3·0	2·3
Wales II	0·7	0·8	0·1	0·4	0·4	—0·1	—0·4	0·8	—0·0
Density Summary of all Areas outside Greater London									
County Boroughs ...	3·4	3·5	1·9	3·2	2·9	2·7	2·4	3·4	2·7
Other Urban Districts ...	3·1	2·9	1·7	2·7	2·6	2·4	2·2	3·2	2·7
Rural Districts	3·7	3·4	2·6	3·2	3·0	2·6	2·4	3·4	2·7

Rates for the Regions and Density Aggregates for the years 1933–39 are given in Table XCVII and show how the differences between birth and death rates fluctuate in the different sections of the country. The lowest rates occur consistently in Wales II, where in 3 recent years increase has been changed to decrease, with those for South West only slightly higher. Until the last three years North I has held the highest place but Midland I reached the same level in 1937 and attained the highest rate in 1938 and 1939. The rates for Greater London tend to be above average and in recent years those for the other three aggregates slightly below, with little or no difference between them.

On the first page of Table E the rates for natural increase and migration

since the census of 1931 are shown for the regions and aggregates. In 1939 the former range in the regions from 2·4 per 1,000 population in Wales II to 40·5 in North I but in the four density aggregates only from 20.8 in Urban districts to 27·7 in Greater London. Migration shows an outward balance in the four regions of the North, in the East and in the two Welsh regions. In North I and both divisions of Wales outward migration is greater than natural increase resulting in a reduction in population of 17·5 per 1,000 in North I, 62·6 in Wales I and 10·8 in Wales II since the 1931 Census.

MARRIAGES.

The marriages registered in England and Wales during the years 1938 and 1939 numbered 361,768 and 439,694 corresponding to rates of 17·6 and 21·2 per thousand population of all ages and conditions in the respective years.

The 1938 total was 2,608 or 0·7 per cent. in excess of that of the 1937 figure and continued the steady and uninterrupted increase which has been recorded in this series of events since 1932 and which has raised the general marriage level to a point amongst the highest peace time rates recorded since the commencement of civil registration in 1837.

In 1939, the further quite phenomenal increase of 77,926 raised the total from the already high peace time level of 1938 to a point not hitherto recorded in this country either in respect of numbers or of the rate per thousand population (21·2) which they represent. The only occasions on which the scale of the present rise has been paralleled were between 1914 and 1915 and between 1918 and 1919, periods marking the beginning and ending of the previous world war. The latest increase must be similarly associated with the onset of the present war though it is notable in itself from the facts that the 1938 point from which it is measured was already far higher than those of 1914 and 1918, and that the absolute point reached in 1939, viz. 21·2 per thousand population is materially in excess either of that of 1915 (19·4 per 1,000) or 1919 (19·8 per 1,000).

The following table shows the general marriage rate by calendar years and by the separate quarters of the years since the 1921–30 decennium during which the incidence underwent comparatively little change.

Marriage Rates per 1,000 *population*

	Whole Year	March Quarter	June Quarter	September Quarter	December Quarter
1921–30	15·5	10·7	16·6	18·7	16·1
1931	15·6	9·4	17·1	19·7	16·0
1932*	15·3	12·5	13·8	18·8	16·0
1933	15·8	8·9	17·0	20·3	16·8
1934	16·9	11·8	16·8	21·4	17·5
1935	17·2	10·3	19·4	21·6	17·4
1936	17·4	9·8	19·8	22·5	17·3
1937*	17·5	14·0	15·7	23·5	16·8
1938	17·6	10·3	19·9	22·4	17·5
1939	21·2	9·2	19·9	29·3	26·2

It will be seen that the increase in the latest year 1938–39, which is nearly twice as great as that in the whole of the 6 preceding years, occurred in the second half of 1939 ; more precise location is not available from the records of England and Wales but from the comparable figures for Scotland, which are recorded by

* In years so marked, Easter fell in the first quarter.

months, it may be inferred that up to August, the incidence retained its peace time character and that the sudden acceleration may be associated almost precisely with the outbreak of the war at the beginning of September.

It is of interest in this connection to compare the recent behaviour of the marriage rate with that experienced at the outbreak of the previous world war. It will be remembered that the 1914 war fell unexpectedly upon an unprepared world and it will be seen from the following quarterly record of marriages about that period that the first evidence of reaction in regard to increased marriage frequency did not appear until well into the second quarter of 1915, 9 months or so after the declaration of war in August, 1914.

Marriages in England and Wales (*thousands*)

	March Quarter	June Quarter	September Quarter	December Quarter
1912	45	75	84	81
1913*	61	66	84	76
1914	51	81	82	80
1915	55	97	103	106

In respect of the present war, advance apprehension and a greater awareness of what was likely to be involved led to a much more rapid adjustment to war conditions when they arose, the marriages of the 3rd quarter of 1939 being more than 30 per cent., and those of the 4th quarter 50 per cent. in excess of their counterparts of 1938.

The general preference for the 3rd quarter noticeable in the records since the beginning of the present century has been well maintained over recent pre-war years, that quarter accounting for about one third of each year's total. The rates for the first quarter, which include the period of Lent, are likewise consistent in being the lowest of the four. The deferment of marriages during Lent and their concentration at Easter influences their distribution as between the first two quarters of the year. In the more frequent circumstances when Easter falls in April, the marriages of the second quarter are nearly twice as numerous as those of the first quarter but when Easter happens to fall in March as in 1932 and 1937 the distribution is much more nearly equal.

Marriage Frequencies in different Sections of the Country.—Table XCVIII summarizes the marriage-rates shown in Table F (Part II) for geographical regions during the years 1936–1939. Although the marriage-rates for localities are not wholly satisfactory as 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, the difficulty is of less moment in comparisons between large sections of the country than between smaller areas. The rates for the South East are, however, undoubtedly affected by the exceptionally high rates prevailing in London where about a third of the marriages registered in the South East region take place.

The slow but regular increase from 1936 to 1938 in the country as a whole is generally reflected in the rates for the regions, the only exceptions being small decreases in North III and IV and in Wales II and a relatively larger increase in the South West. Midland I maintained the highest rates and Wales II the lowest.

The abnormal rise in 1939, attributable to the outbreak of war, was shared by all the regions but in varying degree, the increases ranging from 1·8 per 1,000 population in North I to 4·7 in the South East. The result has been to place

* In years so marked, Easter fell in the first quarter.

South East with the highest rate, 8·0 per cent. above average, while Midland I, which was 5·7 per cent. above average in 1938 and 6·3 in 1937, was only 4·2 per cent. above in 1939. Wales II retains the lowest rate, its relative position, 17 per cent. below average, being worse than it was in 1937 (10·3 per cent. below) and 1938 (14·2 per cent. below) but the East and South West which furnished the lowest English rates, have risen to third and fourth place, which may possibly be due to the concentration of naval, military and air forces in those two regions.

Table XCVIII.—Marriage rates per 1,000 population in the Geographical Regions of England and Wales and the ratios of those rates to that for the whole country taken as 1,000. 1936-39.

Region	Persons married per 1,000 population				Ratio of regional to nationa rate taken as 1,000			
	1936	1937	1938	1939	1936	1937	1938	1939
England and Wales	17·4	17·5	17·6	21·2	1,000	1,000	1,000	1,000
South East	17·8	18·0	18·2	22·9	1,023	1,029	1,034	1,080
North	17·1	17·1	17·0	19·6	983	977	966	925
North I	16·5	16·4	16·8	18·6	948	937	955	877
North II	16·5	16·5	16·5	19·3	948	943	938	910
North III	17·7	17·8	17·6	20·6	1,017	1,017	1,000	972
North IV	17·2	17·2	16·9	19·5	989	983	960	920
Midland	18·0	18·3	18·3	21·6	1,034	1,046	1,040	1,019
Midland I	18·3	18·6	18·6	22·1	1,052	1,063	1,057	1,042
Midland II	17·4	17·6	17·6	20·7	1,000	1,006	1,000	976
East	16·4	16·4	16·5	21·0	943	937	938	991
South West	15·9	16·1	16·6	20·8	914	920	943	981
Wales	16·2	16·4	16·2	19·0	931	937	920	896
Wales I	16·4	16·7	16·7	19·5	943	954	949	920
Wales II	15·5	15·7	15·1	17·6	891	897	858	830

Rates for individual Counties and the County Boroughs for which figures are available are to be found in Table F. With one exception, Blackburn County Borough, all are affected by the increase between 1938 and 1939. The extent of the rise, however, varies considerably, ranging from a 0·9 per cent. increase in Warrington, which already had the highest rate among Lancashire County Boroughs, to an increase of 44·2 per cent. in the case of Suffolk.

London, however, still has the highest rate among the counties with 27·1 per 1,000 population in 1939, 27·8 per cent. above average, and within London, the City with 102·3, Westminster with 43·3, St. Marylebone with 42·6 and Holborn with 40·2 show rates far in excess of those experienced in other parts of the country. As has been pointed out in previous reports these areas contain a high proportion of population living in hotels, etc. They also contain many special Churches, etc., to which persons normally living in the provinces or abroad come to be married. The County Boroughs of West Ham, East Ham and Croydon share the high rates of the London Boroughs generally while outside the London area the highest County Borough rates are those of Portsmouth, 26·2, Coventry, 25·9, Southampton, 25·8 and Chester, 25·7.

The lowest County rates are to be found, as in previous years, in North Wales and low County Borough rates in Durham and Lancashire.

Marriage analysis by Sex, Age, etc.—The bulk of marriages occur amongst the younger adult section of the population, and for a truer appreciation of the intensity and changes in intensity of marriage than that provided by the aggregate rates based on the total population, it is necessary not only to have regard

to the ages at which the marriages take place but to relate them to the corresponding age sections of the unmarried portion of the population since it is only amongst the latter that new marriages can occur.

In connection with the age analyses, it should be observed that, by the Age of Marriage Act, 1929, any marriage between persons either of whom is under 16 is void ; even before 1929, however, marriages of persons under 16 were quite insignificant and the use of 15 as the commencing age of the series has been retained largely as a matter of statistical convenience.

Table XCIX.—Annual Marriage-rate per 1,000 Bachelors, Widowers, Spinsters and Widows respectively at each of several Age Periods, 1921 and 1931-1939.

Year	Annual marriage-rate per 1,000 in each age group						Marriage-rate per 1,000 popula-tion over 15 in each class	Ratio to corre-sponding rate for 1921 taken as 1,000	Marriage-rate which would have resulted had the 1921 age rates been in opera-tion	Ratio of actual marriage rate (col. 8) to rate in previous column (10)
	15–	20–	25–	35–	45–	55 and over				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
				BACHELORS						
1921 ...	3·4	94·4	160·8	60·2	19·0	5·3	62·3	1,000	62·3	1,000
1931 ...	3·2	72·6	141·3	49·8	16·3	5·5	56·0	899	67·2	833
1932 ...	3·4	69·8	135·0	48·6	15·4	4·8	55·1	884	68·8	801
1933 ...	3·4	70·3	138·1	48·8	16·5	5·0	57·6	925	70·7	815
1934 ...	3·6	75·0	148·7	52·1	16·7	4·9	63·0	1,011	72·1	874
1935 ...	3·2	76·8	151·9	54·7	16·5	4·8	63·5	1,019	71·2	892
1936 ...	2·7	80·3	154·9	56·0	16·8	4·8	64·0	1,027	69·9	916
1937 ...	2·8	83·3	157·1	57·0	17·1	5·0	64·3	1,032	68·7	936
1938 ...	3·2	87·0	160·6	57·0	18·5	4·8	64·8	1,040	67·0	967
1939 ...	4·6	120·3	191·8	64·5	19·8	5·1	79·7	1,279	65·7	1,213
				WIDOWERS						
1921 ...	—	156·8	232·5	160·0	74·4	15·9	46·4	1,000	46·4	1,000
1931 ...	—	131·7	185·9	133·5	67·3	15·0	35·9	774	40·9	878
1932 ...	—	159·1	181·5	133·8	64·6	14·1	34·5	744	40·6	850
1933 ...	—	138·2	180·1	131·9	67·2	14·4	34·8	750	40·6	857
1934 ...	—	129·2	183·3	135·2	70·6	14·6	35·5	765	40·3	881
1935 ...	—	139·1	194·2	131·3	71·7	14·7	35·4	763	39·8	889
1936 ...	—	165·0	193·2	137·7	71·8	14·6	35·4	763	39·4	898
1937 ...	—	135·0	204·4	140·6	75·2	15·5	36·7	791	39·1	939
1938 ...	—	153·6	219·8	152·6	79·1	15·9	38·1	821	38·4	992
1939 ...	—	173·3	241·4	167·2	84·0	16·2	40·2	866	38·1	1,055
				SPINSTERS						
1921 ...	14·8	114·4	99·6	25·0	8·8	2·0	54·0	1,000	54·0	1,000
1931 ...	17·0	106·4	96·6	21·3	7·8	2·2	51·6	956	53·8	959
1932 ...	17·8	105·2	94·5	20·9	7·5	2·0	51·2	948	54·1	946
1933 ...	18·8	109·1	98·1	21·2	7·7	2·2	53·7	994	54·6	984
1934 ...	20·3	118·9	106·8	22·7	7·9	2·1	58·6	1,085	54·9	1,067
1935 ...	19·1	124·7	109·8	23·4	8·1	2·0	59·4	1,100	54·0	1,100
1936 ...	18·3	132·6	111·8	24·3	7·9	1·9	59·9	1,109	52·7	1,137
1937 ...	19·4	139·5	114·5	25·2	8·2	2·0	60·6	1,122	51·1	1,186
1938 ...	22·5	147·0	118·0	25·7	8·6	2·0	61·3	1,135	49·2	1,246
1939 ...	32·1	196·0	141·5	28·7	9·3	2·0	75·5	1,398	47·4	1,593
				WIDOWS						
1921 ...	—	195·2	124·5	52·1	17·8	2·5	18·7	1,000	18·7	1,000
1931 ...	—	121·9	107·0	36·5	14·1	2·2	9·8	524	12·5	784
1932 ...	—	145·5	105·3	35·9	12·6	2·1	9·2	492	12·2	754
1933 ...	—	140·5	107·1	36·5	12·4	2·1	9·0	481	11·9	756
1934 ...	—	138·3	112·8	38·8	12·9	2·2	9·3	497	11·7	795
1935 ...	—	139·2	115·2	41·2	12·7	2·2	9·3	497	11·4	816
1936 ...	—	165·2	116·5	42·7	12·8	2·3	9·3	497	11·1	838
1937 ...	—	191·4	123·9	46·0	13·8	2·5	9·8	524	10·9	899
1938 ...	—	197·1	131·2	50·1	14·7	2·5	10·2	545	10·7	953
1939 ...	—	190·9	144·3	56·1	16·0	2·4	10·8	578	10·5	1,029

The customary analysis distinguishing the marriage frequencies of Bachelors, Widowers, Spinsters and Widows is given in Table XCIX.

In 1938, the greatest increase in the rate was experienced at spinster ages 20–25 thus continuing a feature noticed over recent years and marking a point nearly 40 per cent. in excess of the rate recorded in 1932 from when the recent rise began. For bachelors and spinsters increases in the rates were generally prominent at ages below rather than above 35 while for widowers and widows the rise was significant up to age 55.

The distribution of the much larger increase of 1939 was very similar, the most prominent increases going to young spinsters and bachelors ; the rates for these classes at ages 20–25 were as much as 86 per cent. and 72 per cent. higher than they were in 1932. Exceptions to the general rise were located amongst spinsters aged 55 and over and amongst widows under 25 and over 55.

In both years the rate of remarriage amongst widowers was greatly in excess of that of first marriage amongst bachelors of the same age whereas for widows the excess over spinsters though consistent was of a lower order in 1938 and in 1939 gave place to a deficit in the age group 20–25.

From the last column of Table XCIX 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 populations, it will be seen that the standardized rate shows a continuous increase since 1932 for each of the four classes. In comparison with the standard year 1921 the percentage excesses of 1939 were, in order, spinsters 59, bachelors 21, widowers 5·5 and widows 2·9 ; in relation to 1932 the year in which the general rise began the corresponding percentage excesses in 1939 were spinsters 68, bachelors 51, widowers 24 and widows 36. The age analysis serves to call attention to the weakness of comparisons based on aggregate marriage rates in which the age incidence is disregarded ; 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 (col. 8) for the single of each sex appears to be vastly in excess of that of the widowed, whereas, if allowance be made for this difference in their age constitutions, the relative positions are entirely changed and for all the male age groups and a majority of the female age groups are markedly in favour of the widowed.

Marriages of Minors.—Of the males married during 1938 and 1939, 12,164 and 19,543 or 3·36 and 4·44 per cent. of the total were under the age of 21 and of the females 59,268 and 86,609 or 16·4 and 19·7 per cent. respectively. Females, as usual, greatly outnumber the males in this class—the ratio in each of the two latest years being between 4 and 5 to 1. In relation to the unmarried population aged 15–21 Table C shows that the male rate for 1938 was slightly higher than that of 1937 but not markedly different from the level more or less maintained since 1911, the first census year at which the age group 15–21 was identified ; for the females however the rising tendency was accelerated. In 1939 much more notable rises were registered for each sex, in this respect conforming to the experience already referred to for higher ages.

Analysis of New Marriages and Proportions married of Females at Reproductive Ages 1851-1939.

With the apprehension now widely expressed concerning the possibility of a future decline in population, interest in the behaviour of the marriage rate will be focussed more particularly upon its influence on fertility, and now that the birth statistics have themselves been extended by the identification, under the new Population Statistics Act of 1938, of the age and date of marriage of the mothers, it will be appropriate to include a brief

review of the past changes that have taken place both in female marriage rates and in the proportions of married females in the community in the several sections of their reproductive age field. The occasion is the more opportune since with the outbreak of war at the end of 1939, normal peace time continuity in these events will for the time being have come to an end and may not be resumed for many years to come.

Table C.—Marriages of Minors. Proportions to all Marriages, Marriage-Rates and Ratio of those rates to that for 1921. 1901, 1911, 1921, 1931 and each year 1932 to 1939.

Year	Marriages of minors per 1,000 marriages at all ages		Marriage-rates per 1,000 unmarried and widowed population aged 15–21*		Ratio of marriage-rates in columns 4 and 5 to corresponding rate in 1921 taken as 100	
	Males	Females	Males	Females	Males	Females
1	2	3	4	5	6	7
1901	49·6	159·9	6·7	21·6	87	92
1911	39·3	133·3	5·5	18·8	71	80
1921	48·2	149·2	7·7	23·4	100	100
1931	43·5	158·5	6·7	24·8	87	106
1932	43·6	160·4	6·7	25·3	87	108
1933	40·8	157·9	6·7	26·6	87	114
1934	39·1	153·0	7·1	28·8	92	123
1935	37·3	149·3	6·8	28·4	88	121
1936	33·0	144·3	6·0	27·7	78	118
1937	32·0	148·3	5·9	28·8	77	123
1938	33·6	163·8	6·3	32·3	82	138
1939	44·5	197·0	9·5	43·7	123	187

* The rates for 1932–1937 are based on populations revised after the national Register enumeration in September 1939, and differ slightly from those published in previous reports.

The basic data have been assembled in an Appendix, in the form of individual year's records back to 1911 and records at decennial intervals back to 1851, the first census year at which marital conditions of the population were distinguished. The two sections of immediate interest are II (*b*) on page 234, which shows for each year the rates of marrying amongst non-married women at successive ages, and I (*d*) on page 233, which shows the proportions of married women in the total female community at similar ages.

Marriage rates. Dealing first with the incidence of new marriages, the general range and nature of the changes which have taken place between 1851 and 1939 will be understood from the following extract from section II (*b*) of the appendix in respect of those years in which the rates were maximal or minimal from time to time.

Speaking generally, it may be stated, that of the total marriages taking place at any time, about 98 per cent. fall within the compass of the data, viz., those in which the age of the woman is under 50.

Taking the age period 15–50 as a whole, the annual rate of female marriage was rising slightly prior to 1871 or thereabouts when it reached a maximum of between 67 and 68 per 1,000 non-married women, following which it fell more or less continuously to a minimum of 54 about 1911. Thereafter the trend became obscured over the years 1915–1922 owing to the first world war but

† Women Marrying per 1,000 Non-married Women at each age, England and Wales.

Year	Age							Aggregates	
	15–20	20–25	25–30	30–35	35–40	40–45	45–50	20–40	15–50
1851	21·8	127·2	97·4	68·0	46·8	32·5	20·7	101·9	65·1
1871	22·5	138·1	106·9	67·4	46·6	32·5	22·3	109·2	67·4
1881	19·6	123·4	98·4	62·9	41·9	27·2	19·9	99·8	60·6
1911	11·2	95·9	109·8	62·6	35·5	22·0	14·8	86·9	54·0
1932	17·8	105·3	117·0	58·6	30·4	17·4	11·9	91·4	57·7
1938	22·6	147·2	154·5	69·8	37·9	21·4	13·8	118·7	71·1
1939	32·1	196·0	186·4	81·3	42·2	24·1	15·3	148·3	87·8

† Refers to marriages of all women, whether spinsters, widows or divorced.

there was little change of any significance until 1932 from which is dated the recent rapid and continuous rise to 71·1 in 1938, the last completely pre-war experience and 87·8 in 1939. Thus at the outbreak of the present war, the rates at which women were marrying were already materially higher than at any recorded period in the 19th century and gave every promise of going higher still. The initial effect of the war has been to accelerate the rise, as has already been more specifically brought out in the reference to the quarterly records discussed on a previous page.

Since marriage is less frequent below the age of 20, and after 40 contributes little to fertility, a more objective expression of the changing tendencies from the point of view of fertility might be sought from the movements within the rather narrower section of the age field. Appreciation of the successive changes in trend will be assisted by their display in Diagram II.

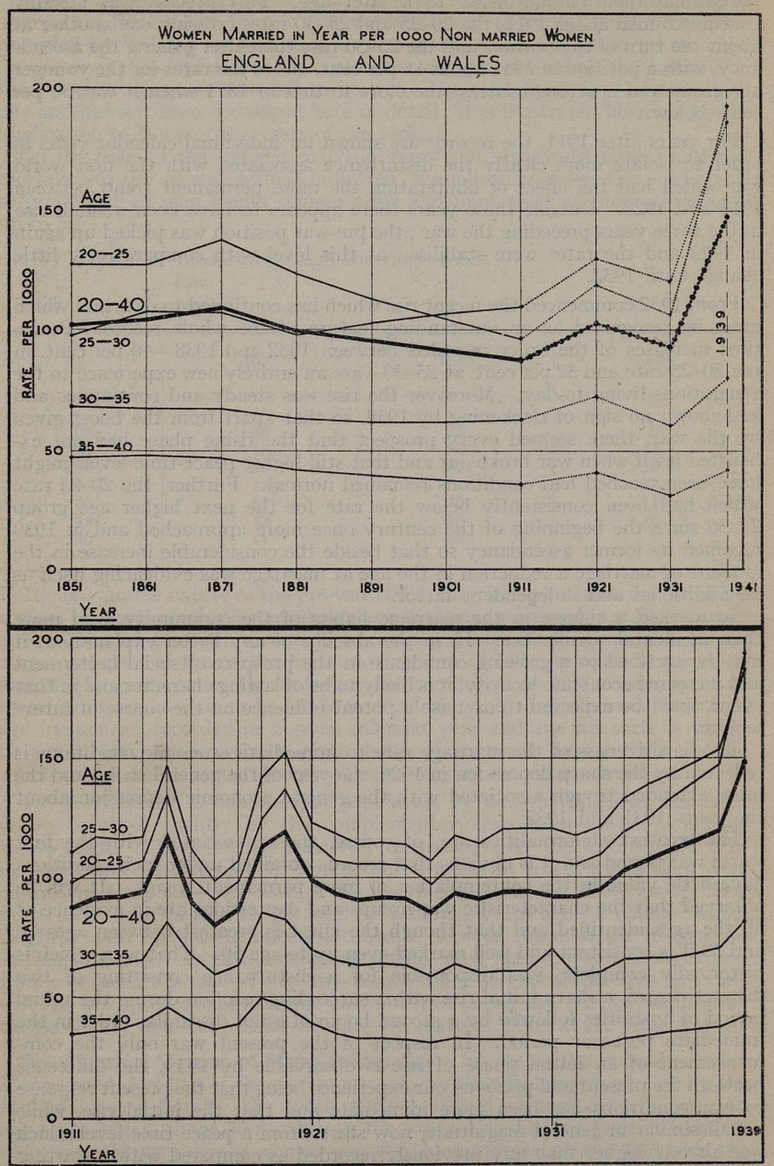
The general pattern of the changes within the 20–40 field is not essentially different from that already described for the more extended age range 15–50, and this is clearly due to the fact that both are dominated by the movements in the 20–25 and 25–30 age groups. Not only are the rates here much higher than at other ages but the non-married population on which they operate is at a maximum at the youngest age and rapidly declines as age advances, the result of the combination being that the marriages occurring between 20 and 30 have always accounted for between two-thirds and three-quarters of the total marriages and have thus exercised a predominating influence upon the whole.

The long range picture is impaired to some extent by imperfection* in the early data but there seems to be little doubt that the rates both at 20–25 and 25–30 were rising when registration was first imposed reaching a maximum about 1871. The marriage frequencies were high as a whole at this time and the age at marriage was relatively low, a characteristic of the period being the predominance of the 20–25 rate which was about thirty per cent. in excess of the 25–30 rate.

From 1871 commenced a fall which was continued more or less uninterruptedly for 40 years or thereabouts. At first, the rates fell at all ages, accompanied by a slight increase in the average age at marriage. After 1881 however the character of the fall changed ; while the overall frequency continued to decline, the rate at 25–30 increased, the rise here being achieved at the expense of a greater decline at the younger 20–25 group suggesting that the increase in the age at marriage which, prior to 1881, had been but an incidental feature in the

* Registration requirements were originally satisfied with a declaration that the person was " of full age " or a " minor," etc., and in the marriage records of 1851 no less than 67 per cent. of the age statements were in this indefinite form. From then on the quality of the returns rapidly improved, the indefinite statements being about 37, 29, 16, 3 and 1 per cent. at successive decennial points up to 1901 with further continuous improvement up to date. In the data now presented, the indefinitely stated ages have been rateably distributed and included with the stated ages.

DIAGRAM II



first phase of the decline, was now a more positive factor, and that many women who would formerly have married before reaching 25 were deliberately postponing their commitments to a later age. This process was steadily continued until about 1911, the 20–25 and 25–30 rates crossing one another at about the turn of the century and the 25–30 rate thereafter gaining the ascendancy, with a position in 1911 about 15 per cent. above the rates for the younger age group and in strong contrast therefore to that of 1871 when it was 30 per cent. below.

For years after 1911, the records are shown for individual calendar years in order to isolate more clearly the disturbance associated with the first world war which had the effect of obliterating the more permanent trend between 1914 and 1922. Outside these years there appears to have been a small rise in the three years preceding the war ; the pre-war position was picked up again in 1922 and the rates were stabilised at this level with comparatively little change until 1932.

From 1932 commenced the recent rise which has continued to date and which must be recognised as an outstanding feature of the whole record. Peace-time increases of the order recorded between 1932 and 1938—40 per cent. in the 20–25 rate and 32 per cent. at 25–30—are an entirely new experience to the generations living to-day. Moreover the rise was steady and continuous and had shown no sign of slackening by 1938, so that apart from the boost given by the war, there seemed every prospect that the rising phase had not exhausted itself when war broke out and that still higher peace-time levels might have been reached had conditions remained normal. Further, the 20–25 rate which had been consistently below the rate for the next higher age group 25–30 since the beginning of the century once more approached and in 1939 regained its former ascendancy so that beside the considerable increase in the amount of marriage a reduction in the age at marriage was evidencing itself as an additional and independent factor.

So marked a change in the marriage habits of the community is of more than incidental significance. If, in the absence of any better explanation, it may be ascribed to a growing confidence in the prospect of social betterment and increased economic security, it is likely to be of lasting character and in that event, must be expected to exercise a potent influence on the course of future fertility.

The sensitiveness of the marriage rate to immediate economic conditions is reflected by the sharp depression in 1926, the year of the general strike and the more extended trough associated with the general economic depression about the years 1931 and 1932.

The greatest abnormalities are, of course, those associated with the first world war period and it is obvious that records obtained under such conditions have little value in the contemplation of more permanent trends. It will be observed that the characteristic war humps and depressions are in evidence at all the ages identified and that though the effect is greatest between ages 20 and 30 it is consistent and well marked even up to age 50. That war, which is historically complete, was responsible for a disturbance consisting of two distinct phases, a sharp initial rise with a succeeding reaction during the actual period of hostilities followed by a second boom of a not dissimilar order in the immediate post-war period. In respect of the present war only the commencement of an initial phase of rise is observable by 1939, the difference between the present and previous war experience being that the present response to war conditions has been more immediate and that the initial rise, while not dissimilar in general magnitude, now starts from a peace-time level which was already higher than any previously recorded as compared with a starting point for the 1915 rise which was only slightly above the minimum of the series.

As on the earlier occasion, the war rise is associated with all age groups and is particularly marked between 20 and 30.

A more theoretical indication of marriage tendencies from time to time which approaches the subject from a different and more restricted point of view is provided by limiting consideration to first marriages as expressed by the successive age rates experienced in a calendar year and evaluating the position in the terms of spinsters who fail to marry. The conception is a hypothetical one and has not been developed here in detail ; it is illustrated however by its application to three of the years of the series.

On the basis of the spinster marriage rates (not separately shown) and the mortality of the several periods indicated, the following shows the percentage of girls aged 15 who would remain alive and unmarried at progressive ages up to 50.

1871 a year of moderately high marriage rates.
1911 ,, ,, low ,, ,,
1938 ,, ,, high ,, ,,

Age	1871	1911	1938
20	85	93	88
25	43	56	41
30	26	32	19
35	19	24	13
40	15	20	11
45	13	18	10
50	11	16	9

The favourable nature of the pre-war (1938) marriage position is indicated by the low proportions of spinsters shown as remaining unmarried, *e.g.* 19 per cent. at age 30 or 11 per cent. at age 40 as compared with 26 per cent. and 15 per cent. in respect of the earlier high marriage era of 1871, or with 32 per cent. and 20 per cent. under the unfavourable conditions of 1911. In respect of these comparisons, it is to be borne in mind that they are indexes of marriage age frequencies recorded in a given calendar year and are not such as would be actually experienced by a given body of spinsters during their lifetime which might well traverse periods of very varying marriage conditions.

The recruitment to the married population by new marriages as discussed above, is offset slightly by the complementary loss from contemporaneous widowhoods. These are not relatively important over the fertility age field in peace time, but it may be noted that whereas in recent years they were equivalent to about 4 per cent. of the marriages within the 20–40 group, they must have been nearer 15 per cent. a hundred years ago—a change which heightens still further the effective contrast between the marriage frequencies of then and now. In the immediately forthcoming period, widowhoods arising from war casualties may at any time assume more serious proportions and they will fall with predominant weight on women of young age but, beyond noting the possibility, it is not possible to carry the matter further at the present stage.

Total Married Women of Reproductive Age. So far as the marriage factor is concerned, fertility of the community at any time is determined, not by the new marriages, but by the total married women of reproductive age ; an aggregate which, if age 50 is taken as the conventional upper limit of fertility, represents the survivors of women who may have married at any time over the preceding 35 years or so. This primary stock of potentially child-bearing

women is continuously replenished by new marriages, but it is being depleted at the same time, fractionally by widowhoods and divorces, but in the main by the numbers passing out of the reproductive period by the normal process of age, and it is only to the extent of the difference between the increments and decrements that the total level will be affected.

In relation to the total married the annual increment of new marriages never represents more than a small fraction ; between ages 15 and 50 for example the proportions in 1871, 1911 and 1938 were 6·2, 5·4 and 5·5 per cent. respectively ; within the narrower age range 20–40 the corresponding proportions were 7·5, 7·1 and 7·2 per cent. Changes in the marriage rate will accordingly be diluted in their effect upon the proportions of total of married women and the fluctuations of the latter over the past century have thus been on a far smaller scale than those relating to new marriages.

The total proportions married are shown on page 233, the figures for selected representative years being as follows :—

Married Women per 1,000 total Female Population at each age, England and Wales.

Year	Age							Aggregates	
	15–20	20–25	25–30	30–35	35–40	40–45	45–50	20–40	15–50
1851	25	308	584	712	758	756	739	563	496
1871	32	343	624	735	766	758	740	594	519
1881	25	331	620	754	775	754	737	593	514
1911	12	242	558	711	752	755	729	552	502
1932	20	260	584	732	758	750	732	574	534
1938	22	324	643	733	771	768	736	622	565
1939	29	343	653	743	772	770	740	636	572

The final column shows the proportion of women married in the reproduction period 15–50 as a whole, or, from the aspect more directly bearing on fertility, the proportion of the reproductive period spent in the married status and subject therefore to the contingency of legitimate fertility. Between 1851 and 1921 such proportion varied little from 50 per cent. (51·9 per cent. maximum in 1871 and 49·2 minimum in 1901) : in 1932 it rose slightly to the then record figure of 53·4 per cent. but since then has jumped to 57·2 per cent., an increase greater than the maximum variation in the whole of the preceding 81 years. The contrast is distorted to some extent on account of the ageing of the population which has taken place within the 15–50 field and which itself tends towards a steady increase in the proportion over the succeeding experiences.

The middle years 20–40 of the reproductive period are but slightly affected by changing age distortion and as they are responsible for more than 90 per cent. of legitimate births it is these ages that will be mainly looked to in the contemplation of future fertility movements and whose past history will be of most direct interest. The last but one column of the table shows that of this narrower but more critical 20 year field, the proportion spent by the average female in the married status rose to 59·4 per cent. in 1871 and then fell to 55·2 per cent. in 1911 after which it rose again reaching 57·4 per cent. in 1932, and thereafter to 62·2 per cent. in 1938 and 63·6 per cent. in 1939. The 1939 figure represents the position as at the middle of the year and takes no account therefore of the acceleration of the new marriage rate which commenced towards the end of the year.

At all periods the proportions mount with advancing age to a maximum about age 40 after which recruitment by new marriages is offset by widowhoods and mortality with a consequent decline at later ages which, however, is not of great significance up to age 50. The maximum percentages reached have not varied greatly over the whole of the 88 years covered by the records. Both in respect of the maximum and of the several age proportions the general level prior to the outbreak of war in 1939 is markedly higher than it has been during the present century and broadly corresponds to the position reached at the height of the earlier favourable marriage tendencies prior to 1881.

It is to be observed that the maintenance of the proportions married—even at the present comparatively high level—does not necessarily require a high intake of new marriages. Ever since 1933, and to a lesser degree from some years before then, the new marriages have been in excess of those required by a maintenance condition and it is to the surplus that the marked rise in the proportions themselves has been due. The maintenance of the 1938 proportion in 1939 for example would have been secured by 282 thousands new marriages between July, 1938, and June, 1939, a number less by 75 thousands than the 357 thousands which were actually recorded.

From immediate pre-war tendencies, it might be inferred that high proportions married were likely to be a feature of future conditions ; though whether any set back must now be anticipated will depend partly on the extent to which any further increase in the marriage rate may be more than offset by the increased widowhoods imposed by war casualties and secondly on the rapidity of the post-war rehabilitation necessary to enable natural tendencies to be realized. It may be recalled that in the Housing Report of the 1931 Census, attention was drawn to the restraint imposed upon the growth of families by the shortage of dwellings after the last war ; the evidence related primarily to the setting up of new and separate families rather than to restraint on marriage but it is exceedingly likely that the adverse effects involved both marriage and its resulting fertility.

An excess of new marriages over and above those required to maintain a previous proportion married not only increases that proportion but would tend also to reduce the average marriage duration of the group ; and since in respect of any age, fertility is at a maximum soon after marriage and declines with increasing duration, the rise in fertility potential ensuing from the increase in proportion married should be supplemented at the same time with an additional increment due to the shortening of the marriage duration. From the examination of these contributory factors to the 1933/38 change in fertility referred to on page 192 it would appear that the influence of the reduction in duration has been small in relation to that arising from the increase in the proportion married.

Divorces and Remarriages of Divorced Persons.

The annual numbers of marriages dissolved or annulled are shown in Table O and again in Table CI in terms of the persons involved for individual years since 1931 and for quinquennia in the period 1876–1935.

Divorces, i.e., decrees *nisi* made absolute, in 1938 and 1939 numbered 6,092 and 7,793 and annulments 158 and 162, the numbers of persons involved being twice those figures or totals of 6,250 and 7,955 of each sex in the successive years.

The 7,793 divorces of 1939 are the highest so far recorded, the numbers being nearly double the average of the five years 1931–5. Compared with that average, which was approximately maintained in 1936, the percentage excesses in the succeeding years have been 21 in 1937, 56 in 1938 and 99 in 1939, the comparatively sudden rise being due in the main to the operation,

as from the 1st January, 1938, of the Matrimonial Causes Act, 1937, and to acceleration in the disposal of the cases which had accumulated from previous years.

From Table CI it will be seen that the number of persons who on remarriage described themselves as divorced likewise showed considerable increases in the years 1938 and 1939, the latter, as in the case of divorces, recording the maximum so far attained. The said marriages in any year do not, of course, proceed solely from the divorces of that year but a general similarity in the trend of the two series would be expected and it is of interest to note that the rates of divorced persons remarrying to the total number of divorces, which was about 19 per cent. in 1876–80, rose to 56 per cent. in 1921–5 and 80 per cent. in 1936 since when it has fallen to 67 per cent. Substantial increases are recorded in each of the categories distinguished. The numbers may understate the facts owing to mis-description of status in the registers.

In Table P are given certain particulars concerning the marriages in respect of which suits for dissolution or annulment were commenced during the year. In 1938 and 1939 petitions filed at the Principal Registry in London numbered 8,202 and 6,509 and 2,031 and 2,193 at District Registries. In respect of the petitions filed at the Principal Registry in London in the two years, the most frequent duration of marriage at the date of the commencement of the proceedings is from 5–10 years with an average of 396 for each of those years of duration, but the maximum is not of particular significance, for this period only accounts for 27 per cent. of the cases, there being 8 per cent. of shorter duration, while in 65 per cent. the marriages had subsisted for 10 years or more. Forty-two per cent. of the marriages in question were childless, and in a further 33 per cent. there was one child only. These figures are substantially similar to those recorded in the years 1931 to 1937.

Table CI.—Annual Number of Persons Divorced, and of Divorced Persons who Remarried, 1876–1939.

Period	Number of Persons Divorced	Actual Number of Divorced Persons who remarried.							
		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 (Average)	554	104	56	48	42	12	4	31	15
1881–85 (Average)	671	128	68	60	53	12	6	42	15
1886–90 (Average)	707	169	80	89	65	11	8	65	20
1891–95 (Average)	744	214	110	104	89	15	12	75	23
1896–1900 (Average)	980	345	172	173	138	24	20	126	37
1901–05 (Average)	1,126	509	262	247	205	38	38	181	47
1906–10 (Average)	1,247	693	356	337	276	53	54	253	57
1911–15 (Average)	1,312	820	411	409	330	50	62	309	69
1916–20 (Average)	3,019	1,264	683	581	525	127	62	439	111
1921–25 (Average)	5,467	3,050	1,708	1,342	1,316	295	194	976	269
1926–30 (Average)	6,716	3,917	2,128	1,789	1,662	270	392	1,225	368
1931–35 (Average)	8,022	5,154	2,777	2,377	2,179	302	592	1,597	484
1931	7,528	4,668	2,517	2,151	1,963	299	510	1,456	440
1932	7,788	4,824	2,537	2,287	2,011	259	534	1,539	481
1933	8,084	5,068	2,747	2,321	2,135	318	588	1,571	456
1934	8,574	5,545	3,026	2,519	2,378	321	654	1,662	530
1935	8,138	5,662	3,056	2,606	2,407	312	674	1,758	511
1936	8,114	6,468	3,507	2,961	2,788	354	730	2,009	587
1937	9,772	6,988	3,759	3,229	2,964	374	842	2,192	616
1938	12,500	8,179	4,404	3,775	3,467	471	932	2,576	733
1939	15,910	10,698	5,715	4,983	4,558	550	1,214	3,480	896

Buildings in which Marriages may be Solemnized.

At the end of the years 1938 and 1939 the numbers of churches or chapels of the Established Church and of the Church in Wales and of registered buildings of other religious denominations in which marriages could legally be solemnized were as follows :—

	Number at the end of		Number added in		Increase per cent. since 1921	
	1938	1939	1938	1939	1938	1939
Established Church and Church in Wales ...	16,591	16,620	15	29	2·7	2·7
All other religious denominations	21,597	21,788	201	191	19·3	20·3
Total	38,188	38,408	216	220	11·5	12·1

Table CII.—Buildings certified as places for Worship and registered for Marriages, 1938 and 1939, England and Wales.

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	
	1938	1939	1938	1939	1938	1939
Roman Catholics ...	2,115	2,151	1,941	1,972	35·6	37·9
Methodist Church‡ ...	13,536	13,519	8,758	8,799	−3·1	−3·2
Congregationalists ...	3,535	3,556	3,274	3,290	5·1	5·7
Baptists	3,485	3,494	3,135	3,150	9·3	9·4
Calvinistic Methodists ...	1,394	1,400	1,139	1,149	7·3	7·8
Presbyterians	471	465	464	459	5·1	3·8
Unitarians	186	188	196	196	1·1	2·2
New Church	60	60	63	63	9·1	9·1
Catholic Apostolic Church	61	61	50	50	−12·9	−12·9
Countess of Huntingdon's Connexion	45	44	40	39	−4·3	−6·4
Salvation Army	1,539	1,549	394	409	35·5	36·4
Society of Friends ...	418	417	†	†	−3·0	−3·2
Jews	349	360	†	†	34·7	39·0
Other Denominations ...	6,161	6,358	2,143	2,212	84·7	90·6
All Denominations ...	33,355	33,622	21,597	21,788	13·7	14·6

* 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.

The number of these buildings belonging to the various denominations is shown for the several geographical regions in Table N, which thus provides some indication of the relative strength of the various religious bodies in different parts of the country.

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 numbers of places of meeting for religious worship on the official register on the 31st December, 1938 and 1939 respectively, and the numbers of buildings registered for the solemnization of marriages are shown in Table CII.

The increases of 247 and 197 in 1938 and 1939 respectively in the numbers of buildings certified as meeting places for religious worship under the heading " other denominations " in Table CII were made up as follows :—

	1938	1939
Apostolic Church	6	7
Assemblies of God	13	17
Baha'is	—	1
Brethren	17	18
British Mazdaznan Association	1	—
Calvary Holiness Church	2	—
Christadelphians	5	9
Christians	13	4
Christians gathered in the Name of the Lord	1	—
Christians—not otherwise designated	60	46
Christian Scientists	11	12
Christian Spiritualists	25	11
Church of the Nazarine	1	—
Elim Foursquare Gospel Alliance	9	6
Evangelical Catholic Communion	1	—
Evangelical Lutheran Church of England	2	—
Fellowship of Independent Evangelical Churches	1	—
Full Gospel Testimony	4	5
Guild of St. Francis	1	—
Independent Methodists	1	—
Interdenominational	2	—
International Bible Students' Association	3	—
Jehovah's Witnesses	15	37
Latter Day Saints	2	1
Liberal Catholic Church	1	—
Liberal Jews	2	—
London City Mission	1	—
Moslems	1	—
New and Latter House of Israel	1	—
Pentecostal Mission	2	—
Pleasant Sunday Afternoon Society	1	—
Railway Mission	1	—
Seventh Day Adventists	7	5
Social Service Mission	1	—
Spiritualists	32	12
Theosophists	—	1
Undenominational Christians	1	1
Others (not specified)	—	4
	247	197

The Marriage Act, 1898, provided that under specified conditions marriages might be solemnized in registered buildings in the presence of duly authorized 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 years 1938 and 1939 the respective numbers of such buildings which had been brought under the operation of the Act, and so remained, were 7,377 and 7,506 out of the totals of 21,597 and 21,788. The principal denominations to which those buildings belonged together with the numbers of such buildings were as follows :—

	1938	1939
Methodist Church	4,818	4,881
Congregationalists	1,058	1,085
Baptists	774	794
Calvinistic Methodists	170	170
Other Denominations and Unsectarian	557	576
All Denominations	7,377	7,506

BIRTHS AND FERTILITY

Since 1937, the last year for which the Text Volume of the Registrar General's Annual Review has been issued, the scope of vital registration and the records ensuing therefrom in respect of Great Britain have been greatly enlarged as a result of the Population (Statistics) Act, 1938, which was passed on the 1st February, 1938, and came into operation four months later on the 1st July, 1938. Under this Act, additional information regarding marital history and previous children is now required in respect of every birth (live or still) and of certain deaths registered from and after the 1st July, 1938.

Detail of the new information and the precise form in which it is compiled by the registrars in England and Wales is as follows :—

At birth registrations

IN ALL CASES.

1. Mother's Age. Birthday—Day.....Month .....
   Age last Birthday.....

IF PARENTS MARRIED TO EACH OTHER.

2. Date of Marriage :—Month .....Year.....
3. Mother's Previous* Children by Present Husband :—
   (*a*) Total of living, stillborn and dead .....
   (*b*) Number still living .....
4. Mother's Previous Children by any Former Husband :—
   (*a*) Total of living, stillborn and dead .....
   (*b*) Number still living .....

* Excluding birth or births now being registered.

At death registrations

BOTH SEXES NOT UNDER 16 YEARS OF AGE.

1. State whether at the date of death Deceased (*a*) was Single, (*b*) was Married, or (*c*) was Widowed or had otherwise ceased to be married
2. If Married at the date of death, state Age last birthday of Deceased's surviving Widow or Widower. .....

FEMALES WHO WERE OR WHO HAD BEEN MARRIED.

3. Year of Marriage* Year .....
4. If Married at the date of death, duration of marriage* in years and months. Years .....Months.....
5. If Widowed or if marriage otherwise terminated before the date of death, duration of marriage* in completed years. Completed years .....
6. Had the deceased any children by her husband or any former husband ? (Yes or No).....

* If the deceased was married more than once, this relates to the last marriage.

The information thus obtained is not entered in the public registers but, in accordance with the Act, is treated as confidential and used only for statistical purposes.

Considerable care was given to the way in which the new data should be assembled and presented. Skeleton tables were drawn up in the first place within the office and these were then submitted to independent experts having a special interest in the subject ; as a result of the combined suggestions, tables in the form of AA to YY shown in Parts II (already published) of the Annual Reviews for 1938 and 1939 were adopted and will be maintained as the basis of presentation until experience of the demands made on the material or other circumstances indicate a need for revision.

A special consideration associated with the introduction of this new range of demographic data may be referred to. Though fertility statistics of like type have been available for many years in respect of other countries, it was felt that for some readers the subject would be unfamiliar and that much of the purport of the new analyses would be missed without some adequate explanatory matter. To meet this situation it was decided as an exceptional measure to depart from the established arrangement of issuing the tables and the related report in separate volumes and to publish the two together in respect of the first issue of statistics obtained under the new Act. In accordance with this decision, a comprehensive description and commentary relating to the fertility records for the second half of 1938 was included and published in Part II of the 1938 Review. Besides dealing explicitly with the records themselves and with the conventions and limitations attaching to them, the report provides a wider survey of the more general features of the fertility structure in relation to this country. The notes which follow are intended to be read as a supplement to the primary report already published, extending its range so as to bring in the experience of the year 1939 and developing or modifying it in minor instances on the basis of the further examination which has since been possible.

A further circumstance which has arisen since the publication of the 1938 report needs to be mentioned. The widely expressed fears regarding the possibility of a serious decline in the population of this country, to which the Population (Statistics) Act of 1938 primarily owes its existence, were not allayed by this initial step which did nothing more than sanction a much needed addition to the information bearing on the situation. Apprehension continued to grow and following debates in both Houses of Parliament, the deputy Prime Minister on the 1st December, 1943, announced the setting up of a Royal Commission " to examine the facts relating to the present population trends in Great Britain ; to investigate the causes of these trends and to consider their probable consequences ; to consider what measures, if any, should be taken in the national interest to influence the future trend of population ; and to make recommendations." At the same time, to assist the Commission in its work, three ancillary Committees were appointed to deal respectively with the statistical, economic and biological and medical aspects of the matter, the terms of reference of the Statistics Committee being " to formulate . . . . particulars necessary for the Commission's enquiry and generally to advise on the statistical aspects of the enquiry." The Royal Commission, through its Statistics Committee has naturally had access to all the data, published and unpublished, available from the registration records under the 1938 Act. In addition it has itself independently obtained comprehensive fertility records of the whole of the existing married and widowed women in Great Britain by means of a special sample census taken in January, 1946 and covering 10 per cent. of the population in question. From the combined Registration and Census material thus secured the report on the statistical aspects of the Commission's investigations may be expected to be of a wide and authoritative character and until it is published,

final judgment must be largely withheld in respect of the more partial inferences that might otherwise have been drawn from the registration data alone.

To facilitate comparisons with the records of earlier years, female populations at reproductive ages and the numbers of births for decennial intervals back to 1841 and for individual years back to 1911, with distinction of marital status in the case of populations and of legitimacy in the case of births from 1851, are assembled and shown in an Appendix (pages 232–235.)

Live Births

The live births registered in 1938 and 1939 numbered 621,204 and 619,352 respectively corresponding to crude rates of 15·1 and 14·9 per 1,000 population (Part II, Tables B and C) ; the figures compare with 610,557 (14·9 per 1,000) in 1937 and 598,532 (14·7 per 1,000) the average of the 5 years 1933–37.

The 1939 experience may be regarded as the last complete peace year record, since the whole of the births must have been conceived prior to the war ; and though the slight fall between 1938 and 1939 may not be altogether unassociated with the growing apprehension of war which was making itself felt prior to its actual outbreak in September, 1939, neither the amount of that fall or of the rise in the preceding year are of great significance in themselves alone, being within the range of casual variation which experience shows must be expected to attend an annual series of this nature.

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 thousand population. From that time it fell practically continuously, first to 23·8 in 1914 and later, after six or more years of considerable disturbance arising from the 1914–18 war, to a minimum of 14·4 in 1933, when the long decline appears to have been arrested. From 1933 to 1939 the rate has been little more than stationary, but such movement as there has been, has been upward rather than downward, and having been more or less maintained for six years, is of significance in its contrast with the serious and virtually uninterrupted decline of the preceding half century.

As discussed later in the examination of the reproduction rate, recruitment by births on the pre-war scale, is far below that which is necessary if a future decline in the population is to be avoided.

The general trend in the birth rate since 1911 may be compared with that of other countries for which particulars are at hand by reference to Table Q, Part II, a record covering not only the period of the first world war in respect of which the movements were quite abnormal, but a number of earlier as well as later years. Amongst the countries for which records are shown, six only returned a birth rate in 1939 below 16 per thousand, amongst which this country with its rate of 14·9 achieved the dismal distinction of ranking the lowest but one ; France (14·6) being lowest and Switzerland (15·2), Sweden (15·3), Belgium (15·3), Norway (15·9) next higher in ascending order. With those may be contrasted the eight countries returning rates in excess of 20 per 1,000, viz., Germany, Canada, Netherlands and Austria with rates between 20 and 21, Italy (23·5), South Africa (whites) (25·3), Portugal (26·4) and Rumania (28·3) at the top. The outstanding changes since 1937 are a reported increase in the Austrian rate from 12·9 to 20·9, a further rise in the German rate from 18·8 to 20·3 and a marked fall in the rate for Spain from 21·4 to 16·2 ; other than these the movements have in the main been of a minor order. In all the countries listed there has been a general decline of substantial magnitude since the period preceding the last war, the bulk of which fell mainly in the decade prior to 1931 since when it has tended to slacken and in a number of countries to be reversed by a slight upward change, the outstanding case being that of Germany where the rate having fallen steadily to 14·7 in 1933 was suddenly increased as a result of

vigorous pro-natalist measures to 18·0 in 1934 with a further improvement to 20·3 in 1939.

Illegitimate Births. Of the live births registered in 1938 and 1939, 26,379 and 25,942 respectively were those of illegitimate children, representing an increase of 4·1 per cent. between 1937 and 1938 and a decrease in the following year of 1·7 per cent., coincident with the successive increase of 1·6 per cent. and decrease of 0·2 per cent. in the numbers of legitimate births. Per 1,000 single and widowed women aged 15–45 the rates were 5·6 and 5·7 respectively, comparing with 5·4 in 1937 and 5·5 in the quinquennium 1931–1935. The proportion of illegitimate to total births which was 4·15 per cent. in 1937 rose slightly to 4·24 per cent. in 1938 and receded to 4·19 in 1939 ; these changes are not of great significance, the general level expressed in this way, being little different from that recorded over the past 50 years apart from the 1914–18 war and immediate post-war period.

Table CIII.—Birth-rates by Geographical Regions, 1938 and 1939

(*For the constitution of the several regions, see page 23.*)

Region.	All Births		Illegitimate Births		All Births		Illegitimate Births	
	Birth-rate per 1,000 Total Population.	Ratio to Rate for England and Wales, taken as 1,000 (Crude Rates).	Birth-rate per 1,000 Total Population.	Ratio to Rate for England and Wales taken as 1,000 (Crude Rates).	Birth-Rate per 1,000 Total Population.	Ratio to Rate for England and Wales taken as 1,000 (Crude Rates).	Birth-rate per 1,000 Total Population.	Ratio to Rate for England and Wales taken as 1,000 (Crude Rates).
	1938				1939			
England and Wales	15·1	1,000	0·64	1,000	14·9	1,000	0·63	1,000
Regional Summary—								
South-East	14·3	947	0·67	1,047	14·2	953	0·65	1,032
Greater London	14·3	947	0·68	1,063	14·0	940	0·64	1,016
Remainder of South-East	14·5	960	0·67	1,047	14·5	973	0·67	1,064
North	15·6	1,033	0·64	1,000	15·3	1,027	0·63	1,000
North I	16·8	1,113	0·61	953	16·5	1,108	0·62	984
North II	16·6	1,099	0·85	1,328	16·3	1,094	0·84	1,333
North III	15·3	1,013	0·64	1,000	14·8	993	0·61	968
North IV	15·1	1,000	0·59	922	15·0	1,007	0·60	952
Midland	16·1	1,066	0·59	922	16·1	1,080	0·58	921
Midland I	16·4	1,086	0·58	906	16·5	1,108	0·57	905
Midland II	15·4	1,020	0·60	938	15·2	1,020	0·60	952
East	14·7	974	0·72	1,125	14·7	987	0·71	1,127
South-West	13·6	901	0·59	922	13·7	920	0·59	937
Wales	15·3	1,013	0·59	922	15·2	1,020	0·57	905
Wales I	15·4	1,020	0·52	813	15·3	1,027	0·50	794
Wales II	14·8	980	0·78	1,219	14·7	987	0·76	1,206
Density Summary of all Areas outside Greater London—								
County Boroughs	15·7	1,040	0·69	1,078	15·4	1,034	0·68	1,079
Other Urban Districts ...	15·0	993	0·56	875	15·1	1,014	0·57	905
Rural Districts	15·0	993	0·63	984	15·0	1,007	0·62	984

Birth Rates of Different Parts of the Country. The birth rates of individual administrative areas tabulated in Table E are summarized by geographical regions and large density aggregates in Table CIII which distinguishes all births and illegitimate births and shows each in the form of a ratio of the local crude rate to that of the country as a whole.

The geographical incidence in 1938 and 1939 corresponds in general respects with that of recent preceding years, the total rate being highest in North I and North II and lowest in the South West and South East with the Midlands above and the East and Wales II below the national average. In respect of illegitimate births the crude rates of both years were highest in North II and lowest in Wales I.

Sex Proportions at Birth. The sex distribution of the births registered in 1938 and 1939 together with the relative proportions of males per 1,000 females was as follows :—

	Live Births		Males per 1,000 females		
	Males	Females	Total	Legitimate	Illegitimate
1938 ...	318,387	302,817	1,051	1,052	1,047
1939 ...	317,250	302,102	1,050	1,051	1,039

Corresponding proportions for total births in each year from 1899 and for groups of years since 1841 are shown in Table C (Part II). The extreme range over the whole period has been from 1,032 males per 1,000 females in 1898 to 1,060 in 1919 the highest ratios prior and subsequent to 1919 being 1,054 in 1843 and 1844 and 1,056 in 1935 and 1937.

The extent to which different classes of area or portions of the country contribute to the preponderance of male births is shown for the last five years in Table CIV.

Table CIV.—Male Births per 1,000 Female Births, 1935–1939.

Region	1935	1936	1937	1938	1939
England and Wales	**1,056**	**1,054**	**1,056**	**1,051**	**1,050**
Regional Summary—					
South-East	1,056	1,054	1,059	1,057	1,050
Greater London	1,057	1,052	1,060	1,054	1,049
Remainder of South-East ...	1,054	1,056	1,056	1,060	1,052
North	1,055	1,057	1,050	1,055	1,047
North I	1,043	1,055	1,056	1,067	1,041
North II	1,069	1,052	1,036	1,057	1,072
North III	1,064	1,043	1,057	1,060	1,043
North IV	1,053	1,066	1,047	1,047	1,046
Midland	1,050	1,055	1,057	1,047	1,056
Midland I	1,046	1,062	1,058	1,050	1,062
Midland II	1,057	1,039	1,055	1,041	1,045
East	1,057	1,036	1,074	1,032	1,045
South-West	1,072	1,046	1,046	1,032	1,042
Wales	1,069	1,059	1,069	1,045	1,058
Wales I	1,065	1,064	1,069	1,046	1,059
Wales II	1,081	1,044	1,069	1,041	1,058
Density Summary of all Areas outside Greater London—					
County Boroughs	1,050	1,051	1,054	1,048	1,046
Other Urban Districts	1,065	1,057	1,053	1,057	1,056
Rural Districts	1,052	1,058	1,062	1,046	1,050

The range of variation there shown is from 1,032 to 1,067 in 1938 and from 1,041 to 1,072 in 1939. The scale of variation, though not its incidence, within the regions for the two latest years is in accordance with that of preceding

experience, the proportions ranging from 1,032 (East and South West) to 1,067 (North I) in 1938 and from 1,041 (North I) to 1,072 (North II) in 1939, and showing extreme differences of 35 and 31 in 1938 and 1939 as compared with 38, 30 and 38 in the years 1935–1937. There is, however, a marked lack of consistency in their incidence ; North I for example ranked highest in 1938 whereas it was lowest in 1939 and also in 1935, and East similarly was lowest in 1938 following 1937 when it was highest. In the grading by degree of urbanization, the position in the County Boroughs is more frequently lower than that of Greater London or of the smaller towns and rural districts ; as between the latter two categories the smaller towns ranked the higher in 1935, 1938 and 1939 but lower in 1936 and 1937.

Ratios showing the sex incidence at birth with distinction of the age of the mother are shown in Tables GG and HH (Part II) in the alternative form of females per 1,000 total births. From these, the following comparable figures for 1938 (2nd half) and 1939 are taken.

	All Live Births	All Still Births	Illegitimate Live Births	Illegitimate Still Births
All ages of mother { 1938 (2nd half)	487	463	495	498
All ages of mother { 1939	488	461	491	460

All live births by age of mother :—

	under 20	20-24	25-29	30-34	35-39	40-44
1938 (2nd half)	485	487	487	487	488	496
1939	485	485	488	487	492	494

The significance of the proportions as shown by the 1938 experience is discussed on pages 115 and 116 of the special report (1938 Statistical Review, Part II) the only difference of note in the added 1939 record being the change shown for illegitimate still births in which the recorded masculinity is now higher than amongst the corresponding class of live births and more in accordance therefore with the much larger experience of legitimate births, and with what would be expected having regard to the higher mortality exhibited by live born males in the period immediately following birth.

Birth Occurrences and Registration Time Lag. Up to the 1st July, 1938, the date of operation of the new Act, the births tabulated in respect of any calendar period have always been the numbers registered in the period ; and the numbers so identified will have differed, in greater or less degree, from the numbers actually occurring in the period by reason of the not inconsiderable time interval which elapses in practice between the occurrence of a birth and its subsequent registration.

The statutory period allowed for registration is 42 days but provision also exists for registration after this period and though most births are registered reasonably promptly, the numbers subject to greater delay are not negligible even within the third month after the date of occurrence. From sample tests made from time to time it has been indicated that in normal times the average time lag has been about a month and where this is the case the registrations will be out of phase with the occurrences to that extent. Where the numbers of births at the beginning and end of a period are similar, a constant phase difference will not have any material effect on the numbers involved and for most calendar years taken as a whole, the numbers registered will be little different from the number of occurrences. At the same time, where either (*a*) the time lag is subject to change, *e.g.*, as between 1914 and 1921 when it first diminished with progressive food restrictions imposed by rationing and later increased again when the restraints were removed—or (*b*) where the numbers of births vary as in successive calendar quarters, the differences between registrations and occurrences are not negligible, though until now, the issues involved

have not been such as to necessitate their separate examination and identification.

For the analysis required of the new fertility data, precision of assignment becomes more significant and provision has accordingly been made for the regular tabulation of births, etc., by the month of occurrence in Table YY, (Pt. II).

Comparison of the registrations and occurrences for the second half of 1938 and the whole of the calendar year 1939 are as follows :—

	1938 (2nd Half)			1939		
	Registrations	Occurrences	Ratio of Occurrences to Registrations	Registrations	Occurrences	Ratio of Occurrences to Registrations
Maternities						
Legitimate ...	297,290	297,645	1·0012	609,136	604,713	·9927
Illegitimate ...	12,674	12,992	1·0251	26,924	26,569	·9868
Live Births						
Legitimate ...	289,624	289,910	1·0010	593,410	588,909	·9924
Illegitimate ...	12,209	12,545	1·0275	25,942	25,570	·9857
Still Births						
Legitimate ...	11,295	11,375	1·0071	23,034	23,048	1·0006
Illegitimate ...	610	610	1·0000	1,275	1,272	·9976

For the second half of 1938, occurrences were slightly in excess of registrations, the contrary effect that might have been anticipated from the higher incidence of births in the summer months having been more than offset by the greater delay attending the registration of December births owing presumably to winter conditions and interruption associated with Christmas. In 1939 occurrences were rather less than registrations, the effect in this case being probably explained by the reduction in births as between the fourth quarters of 1938 and 1939 and possibly also to some shortening of the lag in response to the introduction of food rationing though the latter may well have been offset by the excessively inclement weather at that time and by the evacuation of many expectant mothers from their normal homes. In both periods the result of the registration lag was more pronounced in respect of illegitimate births.

The birth and fertility analyses presented in Parts II of the Annual Reviews for 1938 and 1939 are based throughout on the registered events and the ratios of occurrences to registrations given above will serve as multipliers with which to convert the registration records to a form approximately representative of the corresponding occurrences.

Seasonal Distribution of Births.—The quarterly incidence of live births, in the form of both registrations and occurrences and the relationship between them is as follows :—

	1938			1939		
	Registrations	Occurrences	Ratio of Occurrences to Registrations	Registrations	Occurrences	Ratio of Occurrences to Registrations
1st Quarter ...	155,187	—	—	153,382	152,729	·9957
2nd ,, ...	164,179	—	—	164,306	163,126	·9928
3rd ,, ...	158,082	154,203	·9755	161,023	155,458	·9654
4th ,, ...	143,756	148,252	1·0313	140,641	143,166	1·0180

The experience of both years exhibits the same type of seasonal distribution that has been observed since about 1923 with a maximum incidence in the 2nd quarter. Prior to 1923 the second quarter rate was frequently exceeded in the 1st quarter. The minimum of the annual cycle of variations has always been associated with the fourth quarter. The effect of registration time lag as shown by the difference between occurrences and registrations is significant in the third and fourth quarters but it is not sufficient to alter the general picture of the seasonal incidence.

The annual cycle is displayed more completely by the monthly occurrences of Tables YY, when expressed in the form of daily averages to avoid the irregularities proceeding from the different lengths of the calendar months.

	Daily Averages			Ratio to Daily Average of Calendar year taken as 1,000		
	Legitimate Live Births	Illegitimate Live Births	Legitimate Still Births	Legitimate Live Births	Illegitimate Live Births	Legitimate Still Births
July, 1938 ...	1,645	71·5	66·1	1,009	990	1,033
Aug.	1 561	65·9	61·7	958	912	965
Sept.	1 620	64·8	59·7	994	896	933
Oct.	1 550	65·0	59·7	951	900	934
Nov.	1 527	68·2	62·4	937	944	975
Dec.	1,550	73·5	61·3	951	1,017	959
Jan., 1939 ...	1,581	75·4	65·8	980	1,076	1,043
Feb.	1,605	72·9	66·0	995	1,041	1,045
Mar.	1,679	75·7	68·1	1,041	1,080	1,078
Apr.	1,731	73·3	67·4	1,073	1,046	1,068
May	1,738	79·7	66·9	1,078	1,138	1,060
June	1,682	73·1	63·3	1,043	1,044	1,002
July	1,654	72·7	62·2	1,025	1,038	984
Aug.	1,589	67·2	61·4	985	960	972
Sept.	1,619	67·9	60·8	1,004	969	963
Oct.	1,515	60·2	59·2	939	859	938
Nov.	1,474	59·7	58·8	914	853	932
Dec.	1,495	62·9	57·9	927	898	917

From this arrangement it would appear that legitimate live births rose steadily from a minimum in the month of November (corresponding to conceptions of the preceding February) to a maximum in April and May (conceptions of July and August) from which the decline to the following November was likewise continuous except for the month of September when a temporary subsidiary rise is shown both in 1938 and 1939. Conceptions for September births would have occurred in December and accordingly may not be unassociated with the Christmas period. The maximum conception rate at the height of the summer would thus appear to have been about 16 per cent in excess of that in the minimum winter month.

In respect of illegitimate births the seasonal rise and fall is generally similar but with a wider difference between the extremes (28 per cent.) and a more pronounced weight of conceptions in the Spring and Summer months.

With stillbirths the maximum occurs rather earlier than amongst live births but this is probably a reflection of the higher fatality incidence associated with winter births which has also been observed in the experience of infant mortality.

Multiple Births.

Table AA shows that during 1939, 643,661 births (live and still) were registered from 636,060 maternities,* the excess of 7,601 being the additional children born in multiple births. Table CC and DD give full details of the 7,539 maternities with multiple births and show that 7,477 were productive of twins, 61 of triplets, and 1 set of quadruplets, the total children so born being 15,141 (=2×7,477+3×61+4) consisting of 14,136 live and 1,005 still born children.

The frequencies of multiple maternities and births in 1938 (2nd half) and in 1939 are summarised as follows :—

	All Multiple		Twins		Triplets	
	1938	1939	1938	1939	1938	1939
Multiple Maternities per 1,000 Total Maternities	12·1	11·9	12·0	11·8	·087	·096
Multiple Births per 1,000 Total Births	24·0	23·5	23·7	23·2	·258	·284
Live Born Children	23·0	22·8	22·8	22·6	·235	·260
Still Born Children	48·3	41·3	47·5	40·4	·840	·905

The probability of a multiple event occurring will be the reciprocal of a rate shown above so that when mothers of all ages are taken together the chance of a maternity being a multiple one was 1 in 84 in 1939 as compared with 1 in 83 in 1938. Likewise 2 out of every 88 children born in 1939 were twins or triplets (87 in 1938) the proportion being about twice as great amongst still born children.

Table GG (Pt. II) shows that in both 1938 and 1939, the proportion of multiple maternities increased steadily with the age of the mother from 6 per 1,000 at ages under 20 to a maximum of 17 or 18 in the age group 35–39. Owing, however, to a greater rise in the age incidence of still births, the proportion of live born children per maternity steadily declines with the age of the mother after age 20. The proportions for the legitimate section of the experience are as follows :—

Ratio of Legitimate Live Born Children to Legitimate Maternities by Age of Mother.

	Under 20	20 –	25 –	30 –	35 –	40 –	45 and up	Not Stated	All Ages
1938 ...	·9790	·9815	·9783	·9767	·9636	·9428	·9006	·8029	·9742
1939 ...	·9793	·9811	·9794	·9738	·9650	·9446	·9110	·8173	·9742

The maternity is employed as the basic unit in the presentation of the legitimate fertility analyses of Tables II to SS (Part II) and the foregoing proportions will furnish the necessary multipliers when it is desired to convert the maternities to the corresponding equivalent in terms of live born children.

The influence of the mothers age and the more detailed features of the multiple birth experience are fully discussed in the special 1938 report (Statistical Review, Pt. II, pages 117–124 and 134).

Fertility. By Age of Mother.

Table AA classifies the maternities according to legitimacy and the births according to sex, legitimacy and whether live or still at each age of mother. The actual ages at which such events were registered for the legitimate section

*The term 'Maternity' means a pregnancy which terminates in the delivery of one or more live or still-born child(ren), a still birth being that defined in the Births and Deaths Registration Act, 1926. Thus a multiple delivery is counted as a single maternity.

extended from 16 to 52 in both 1938 and 1939 and for the illegitimate section from 13 to 50 in 1938 and 13–49 in 1939. In each year the age was not given in 5 per 1,000 of the legitimate cases and a proportion rather more than four times as great in the illegitimate section.

The age distributions of the mothers for whom legitimate or illegitimate births were registered are shown in the following table where the numbers in each age group are expressed as percentages of the totals with stated age.

Percentage Distribution of Maternities by mother's age, 1938 and 1939.

Mother's Age	1938 (2nd half)			1939		
	Legitimate	Illegitimate	All Maternities	Legitimate	Illegitimate	All Maternities
Under 20 ...	3·5	18·0	4·0	3·9	19·8	4·6
20 —	23·1	31·4	23·4	22·3	29·9	22·6
25 —	32·5	22·0	32·1	32·8	21·5	32·3
30 —	23·7	14·4	23·4	23·8	14·7	23·4
35 —	12·7	10·0	12·6	12·8	9·9	12·7
40 —	4·1	3·9	4·1	4·0	3·8	4·0
45 and over ...	0·4	0·3	0·4	0·4	0·4	0·4
All (stated) ages	100·0	100·0	100·0	100·0	100·0	100·0

It will be seen that practically one third of the total maternities are attributable to mothers in the 25–29 age period and between 78 and 79 per cent. within the ages of 20 to 35. The percentage distribution is strikingly different as between the legitimate and illegitimate sections, particularly at the younger ages but it has to be remembered that the age distributions of the married and non-married women (*i.e.* single, widowed and divorced) in the population are similarly very different and for a proper appreciation of the true maternity or birth incidence either between the legitimate and illegitimate sections or in the separate age sections of either, reference must be made to Table EE (Pts. II) in which the events are expressed in the form of annual rates based upon estimates of the respective populations of married or non-married population in each age group.

Comparable annual rates in this form for the two years 1938 and 1939 in respect of live births are shown in Table CV, it being noted that the figures differ slightly from those already published in Parts II (Tables EE) owing to revision of the female population estimates at the young ages and also to the substitution in 1939 of the numbers of births which actually occurred in the year instead of the numbers registered.

Table CV.—Annual Live Birth Rates 1938 and 1939.

Age of Mother	Legitimate and Illegitimate combined per 1,000 females		Legitimate per 1,000 married women		Illegitimate per 1,000 non-married women	
	1938	1939	1938	1939	1938	1939
15–49	**54·4**	**53·6**	**92·2**	**89·8**	**5·31**	**5·21**
15–19	14·7	16·0	551·5	459·9	2·8	2·9
20–24	92·3	92·7	268·7	255·6	7·8	7·6
25–29	113·2	113·4	171·0	168·7	9·2	9·1
30–34	82·9	81·4	110·1	106·7	8·1	8·2
35–39	47·3	46·6	59·2	58·4	7·0	6·7
40–44	16·1	15·3	20·1	19·0	2·8	2·7
45–49	1·5	1·5	1·9	1·9	0·2	0·2

From the first two columns of the table which express the position for all women as a whole, irrespectively of whether they were married or not, it will be seen that the rates increased between 1938 and 1939 in the age groups below 30 where more than half the births occur but decreased at higher ages, so that while the younger women had relatively more children in 1939, the older women had fewer, the net effect for all women of reproductive ages as shown in the top line of the table being a reduction from 54·4 to 53·6 live births per 1,000 women, *i.e.* a fall of 0·8 per 1,000 women or of 1·5 per cent. of the 1938 rate. The aggregate change expressed in this way tends to overstate the fall owing to the age change in the population, the numbers above 30 for whom the birth rate declined having increased proportionately more than those at younger ages and thus overweighted the element of decline. A better method of comparison which avoids the changing age distortion is to compare the actual number of births of 1939 with those which would have occurred had the 1939 women been subject to the 1938 age rates; by this test the "expected" births in 1939 would have been only 0·3 per cent. above those which actually occurred so that when measured in relation to all women combined, the fertility of 1939 may be said to have been only fractionally lower that that of the preceding year.

Fertility so measured, however, is dependent not only upon the birth rates severally experienced by separate classes of married and non-married women but also upon the proportion of married and non-married in the community and changes in the combined rate will be influenced by changes in the proportions married no less than by changes in the several rates.

When the changes in the legitimate and illegitimate sections are examined separately, the table shows that in respect of married women, to whom the bulk (96 per cent.) of children are born, the legitimate rates declined at all ages of mother, moderately at ages over 30 but very considerably at the youngest ages, with an over-all aggregate fall from 92·2 to 89·8 per 1,000 (2·6 per cent.) for the 15–50 age period as a whole. If the preferable method of estimating the aggregate fall by comparing the actual legitimate births of 1939 with those expected on the basis of the 1938 experience is employed the fall is increased to 3·4 per cent. showing that age change in the married population between 1938 and 1939 was favourable to fertility and until allowed for, masked the full extent of the decline.

In respect of the relatively minor class of illegitimate births, such little change as is recorded is downward on the whole but when the 1939 numbers are expressed as a proportion of those expected by the 1938 rates, no significant change is indicated.

The changes between 1938 and 1939, both in the legitimate and illegitimate experiences, are subject to two elements of possible distortion arising from the circumstances of the war which need to be mentioned, both being associated with the incidence of pregnancy at the date of marriage, in respect of which the proportion of marriages affected is shown in the 1938 report to be considerable, approaching the high figure of 50 per cent. at the youngest marrying ages. In the first place, the calling up of large numbers of young men at the outbreak of war may have resulted in preventing a number of marriages of pregnant women which otherwise would have taken place and have legitimized some of the illegitimate children born at the latter end of 1939; the effect of this would have been to increase the illegitimate class at the expense of the legitimates though it could hardly have been sufficient to affect the rates materially except perhaps for the illegitimate section at the youngest ages. The other element of distortion arises from the sudden rise in the number of marriages which took place immediately following the outbreak of war; whether these are regarded as proceeding from the emotional or economic impulses set up by the war, or both,

it seems certain that they could not have been materially influenced by the existence of pregnancies dating from some months earlier, so that the statistical effect would have been to increase the numbers in the married woman class without any corresponding addition to the legitimate births, thereby abnormally lowering the legitimate birth rate of 1939, and overstating the fall in the rate as compared with 1938 or earlier years—particularly at the younger ages which would be particularly sensitive to this type of disturbance. The complementary effect upon the illegitimate rates would hardly be significant since the population so transferred from the single to the married class was a negligible fraction of the total unmarried population.

It is shown later that though the fall in the legitimate rates was at a maximum in respect of recently married women, it was significant at all marriage durations so that the above mentioned disturbances, which could only affect durations of less than 4 months, could only suffice to account for a small part of the total decline which, as is shown in Table CVI, was more than the total fall registered over the preceding 4 years. Later records show that conceptions materially declined following the actual outbreak of the war in September, 1939, and it seems not unlikely, therefore, that the anticipation of war may have exercised a similar depressing effect in the preceding months sufficient to account for the fall in the legitimate births of 1939, though whether this is the true and only explanation or whether any part was due to a resurgence of the more deep-seated tendencies operating prior to 1932 it is not possible to say.

Table CVI.—Comparative Fertility 1841-1939.—Ratio per 1,000 of Actual Live Births to those which would have occurred if the respective populations had been subject to the fertility age rates of 1938.

(Based on the populations and births shown in the Appendix).

Year	All Women and all births	Married Women and legitimate births	Non-married Women and illegitimate births	Year	All women and all births	Married women and legitimate births	Non-married women and illegitimate births
1840–2 ...	2,302	Not available		1921	1,446	1,613	1,359
1850–2 ...	2,348	2,404	3,349	1922	1,314	1,458	1,194
1860–2 ...	2,391	2,331	3,307	1923	1,279	1,426	1,109
1870–2 ...	2,464	2,376	3,040	1924	1,225	1,370	1,063
1880–2 ...	2,346	2,322	2,509	1925	1,185	1,327	1,010
1890–2 ...	2,053	2,190	1,841	1926	1,152	1,294	1,028
1900–2 ...	1,792	1,999	1,452	1927	1,079	1,212	1,003
1910–2 ...	1,546	1,796	1,342	1928	1,083	1,212	1,024
1920–2 ...	1,470	1,640	1,380	1929	1,050	1,170	1,010
1930–2 ...	1,022	1,124	979	1930	1,054	1,165	1,024
1911 ...	1,542	1,790	1,353	1931	1,022	1,125	972
1912 ...	1,539	1,769	1,364	1932	989	1,083	938
1913 ...	1,555	1,779	1,378	1933	931	1,018	888
1914 ...	1,531	1,743	1,344	1934	956	1,033	912
1915 ...	1,386	1,547	1,286	1935	953	1,018	890
1916 ...	1,347	1,489	1,359	1936	962	1,011	896
1917 ...	1,134	1,273	1,301	1937	974	1,002	927
1918 ...	1,097	1,253	1,391	1938	1,000	1,000	1,000
1919 ...	1,252	1,431	1,526	1939	997	966	1,000
1920 ...	1,654	1,857	1,594				

Experienced age fertilities are not directly available for years earlier than 1938, but indexes of aggregate fertilities for years in respect of which the age and marital condition of the population is known can be constructed by comparing the actual births of such years with the numbers which would have occurred had the population been subject to a series of standard age fertility frequencies ; and this procedure has been employed in the construction of Table CVI in which such indexes are set out for individual years back to 1911 and at decennial intervals back to 1841. The standard age rates used are those of 1938 as shown in Table CV, the experience of 1938 being preferred for this purpose to that of 1939 which for reasons already explained cannot be regarded as unaffected by influences of the present war circumstances.

Indexes in this form are free from distortion arising from changes in the age distribution of the population and give as reliable a picture of the way in which fertility has changed over the past century as the available records in this form permit. The most important section of the Table is that dealing with the legitimate fertility of married women and the measure it provides of the successive changes that have been recorded, notably the long continued and practically unbroken fall that took place between about 1876 and 1933. The extent of these changes and their more important variations from time to time are more easily seen in the following summary which excludes the quite abnormal years affected by the 1914–18 war and which limits the intervals to the more critical periods of change.

Period	Percentage fall in legitimate fertility	Equivalent annual percentage fall
1851–1871 ...	1·16 in 20 years	0·07
1871–1881 ...	2·27 in 10 years	0·23
1881–1891 ...	5·68 in 10 years	0·58
1891–1901 ...	8·72 in 10 years	0·92
1901–1914 ...	12·81 in 13 years	1·05
...	...	...
1922–1933 ...	30·18 in 11 years	3·21
1933–1938 ...	1·77 in 5 years	0·37

From the last column it will be seen that the rates of decline accelerated rather than diminished with the passage of the years and that the acceleration was apparently maintained right up to 1933 when the fall was suddenly arrested. Since that date the movement has still been downward rather than the reverse but it has been relatively insignificant, the reduction in the five years 1933–1938 being only 1·77 per cent. as compared with falls of 16·0 and 15·0 per cent. in the immediately preceding quinquennia 1928–33 and 1923–28. Though there was no actual reversal of the fall in marital fertility up to the outbreak of war in 1939, there was some contemporaneous evidence in the rapidly rising marriage rates of an increased willingness on the part of women to accept the responsibilities of childbearing, so that a possible future improvement seemed no less feasible than a renewed resumption of the earlier decline. It was in accordance with this argument that the Registrars-General of England and Wales and Scotland in submitting their population forecasts to the Royal Commission on the Geographical Distribution of the Industrial Population in 1939—since published as a Government paper (Cmd. 6358)—adopted the view that future departure from the then level of fertility seemed no more likely to be in one direction than the other.

Legitimate Fertility by Duration of Marriage. Legitimate maternities are classified according to the mother's age and by duration of marriage in Table OO. The features of the duration analysis are fully discussed in the special 1938 report in which is included a table of rates at successive durations obtained by relating the births corresponding to the recorded maternities of 1938 to the appropriate sections of the population of married women estimated to have been responsible for them.

Similar rates for 1939, computed in a like manner are shown for quinary age groups of mother in Table CVII the separate duration categories identified being extended to cover the first 9 years of marriage instead of 7 as in 1938.

Table CVII.—Fertility rates of Married Women in 1939 according to Age in 1939 and Duration of Marriage

Marriage duration in years	Estimated numbers of births (live and still) per 1,000 married women at each of the following ages in 1939							Increase or decrease (—) as compared with 1938						
	16–19	20–24	25–29	30–34	35–39	40–44	45–49	16–19	20–24	25–29	30–34	35–39	40–44	45–49
0—	533	279	189	185	142	58	8	—119	—24	—11	—16	— 8	— 5	4
1—	331	281	228	216	154	58	4	— 38	—14	— 9	— 2	—16	— 5	— 1
2—	347	246	197	173	127	47	5	— 57	—11	—	— 2	— 7	—	1
3—	356	237	180	149	108	44	4	—199	—12	3	— 1	— 3	2	—
4—	—	237	166	135	99	36	4	—	2	— 2	— 6	— 7	— 3	—
5—	—	240	154	122	89	33	4	—	10	— 2	— 2	— 6	— 1	—
6—	—	256	145	108	81	31	4	—	5	1	— 2	— 4	— 2	1
7—	—	307	141	97	74	28	4							
8—	—	559	144	90	67	26	2	—	20	—	— 4	1	— 1	—
9 and over	—	—	154	88	53	18	2							

The main features disclosed by this arrangement, notably the decline (with unimportant exceptions) of fertility with increasing duration of marriage after the first year, are in no important sense different from those dealt with in respect of 1938, the change now shown for 1939 being little more than the general lowering of the frequencies in conformity with the total fall in legitimate fertility already described. Examination of the 1938 and 1939 rates shows that the fall in the year was most marked at durations 0, 1, 2 and 3 in respect of women under 25 and at durations 0 and 1 for women above that age. A convenient way of measuring the successive duration changes is to compare the 1939 births recorded against each duration with the numbers which would have occurred if the 1939 married women had been subject to the 1938 age rates for that duration. The ratios of actual to expected ascertained in this way are as follows :—

Years Duration	0—	1—	2—	3—	4—	5—	6—	7 and over	Aggregate of all durations	Aggregate of all durations except 0
Ratio ...	·906	·957	·981	·993	·983	·991	·999	·985	·969	·982

thus disclosing a fall of 9·4 per cent. for durations of less than 1 year and of 4·3 per cent. for durations of between 1 and 2 years as compared with falls of less than 2 per cent. for durations over 2 years. It has already been explained how the absence of pre-nuptial pregnancies amongst the large number of war brides included in the marriages of the latter months of 1939 would have been responsible for a diminution of the frequency of births in the first few months after marriage and this no doubt accounts for some of the apparently excessive fall in 1939 at duration 0 — ; but it could not have affected durations from 1 — onwards and, since these in the aggregate show a decline of 1·8 per cent. as compared with 3·1 per cent. for all durations inclusive of the first year, other explanation must be sought, as earlier indicated, for the major part of the total decline.

It is of interest to observe that the amount of the fall for all married women when measured by aggregating the separate duration records comes out at 3·1 per cent., a figure which is only fractionally different from the 3·4 per cent. fall indicated by the standardization test of Table CVI in which the differential duration incidence of fertility was not taken into account. This equality may be surprising in view of the increase in the number of newly married women in respect of whom the fertility decline was at a maximum but reference to Table XCVI shows that the numbers of married women at later durations were also growing and the lower fertility decline in their case was more than sufficient to offset the excess decline at the shortest durations.

An illusion of this kind seems to have been responsible for some misunderstanding concerning the arrest of the fall in the birth rate after 1933. It has frequently been asserted that the arrest in the decline was more apparent than real, the effect being due to the increase in new marriages, which, by increasing the numbers of married women at the shorter marriage durations where fertility is at a maximum, artificially stepped up the average fertility and thus masked an inherent continuing decline. Examination on the lines above shows that this is not the case and that changes in marriage duration contributed little to the contrast between the steepness of the fall in fertility prior to 1933 and its practical stability since that time. If, for example, the married women of 1938 had been distributed by marriage duration as they were in 1933, that is, before the rapid rise in marriage rates, the number of children produced on the basis of the 1938 fertility rates at the several durations would have been rather more than 1 per cent. less than those actually registered ; and such percentage may be regarded as an approximate measure of the understatement of the fall caused by disregarding duration incidence. Instead, therefore, of fertility having declined by 1·77 per cent. between 1933 and 1938 as shown by Table CVI the alternative decline taking change of marriage duration into account would be nearer 3 per cent. ; but whichever measure is taken, such fall for a five years period cannot be regarded other than in very sharp contrast to the heavy downward movements amounting to 16 and 15 per cent. in the two preceding quinquennia, 1928–33 and 1923–28.

Maternities conceived out of wedlock. Particular importance attaches to the maternities occurring during the first year of marriage for the numbers here are greater than those recorded for any later year of marriage duration and a large proportion of them must have been conceived before marriage. Though public discussion of this subject has been invested with a certain amount of taboo in the past, the revelation, made possible by the new records, that one seventh of all the children now born in this country are products of extra marital conceptions, or to go further, that nearly 30 per cent of all mothers today conceive their first borns out of wedlock, is sufficiently startling to render the matter of more than statistical significance. These are records of sexual irregularities which actually result in the birth of children. It is desirable that the facts should be seen in their proper perspective, the more so in view of the ignorance which prevails concerning them.

The following analysis deals with the records of 1938 and 1939, regarding which it should be noted that the figures for 1939 represent occurrences, and are therefore slightly less than the corresponding records of registrations published in Part II of the 1939 Review (see page 184). The figures now suggested for 1938 likewise differ from those in the tables or the special report in Part II of the 1938 Review ; the latter refer only to the events of the second half of 1938, of which the births would be the product of winter conceptions

and in which therefore the incidence of illegitimacy would be under-represented ; it has been deemed more appropriate here to attempt to portray the whole of 1938 by increasing both illegitimate and pre-maritally conceived legitimates of the second half of the year in the ratio of illegitimate births registered in the whole year to the corresponding numbers registered in the second half. In respect of both years, cases in which mother's age, marriage duration etc., were not stated have been rateably distributed and included ; and the few maternities occurring to mothers over age 45 have for statistical convenience been included in the 40- group.

The total legitimate maternities occurring within the first year of marriage are recorded for each age of mother in Table OO and these can be apportioned* according to successive months of duration on the basis of the monthly duration records shown in respect of first maternities in Table QQ which comprise 97 per cent of the total. Taking the figures for the first 9 months recorded durations (representing maternities within 8½ months of marriage) as the statistical representation of the pre-maritally conceived cases the numbers may be set out as follows :—

Age of Mother		15–45	15–	20–	25–	30–	35–	40–
(i) No. of legitimate maternities pre-maritally conceived	1938	62750	14920	31330	11450	3490	1220	340
	1939	59780	15820	28670	10530	3300	1140	320

The total number of such maternities is in the neighbourhood of 60,000 each year, and about a half of them are credited to mothers between 20 and 25 years of age, the remaining half being almost evenly divided between mothers under 20 and over 25. The maternities so scheduled for mothers of a given age will have occurred amongst the brides of an age 4¼ months younger on average who married during the calendar period 4¼ months earlier than that to which the maternities relate. The number of brides for each age group have been computed with due regard to the seasonal and duration distribution of their marriages, and the numbers of maternities compared with them, with the following results :

Age of Mother		15–45	15–	20–	25–	30–	35–	40–
(ii) Pre-maritally conceived legitimate maternities per 1,000 related brides	1938	182	514	206	109	99	83	44
	1939	160	418	175	96	90	72	38

It is from these rates that it is possible to say that, for the age period 15—45 as a whole, 16·0 per cent of the wives concerned in the 1939 experience must have been pregnant at their dates of marriage and that so far as comparison is

* The presence of second maternities in the first year of duration in Table OO can be disregarded in view of the smallness of first maternities occurring within the first three months.

possible the proportion was rather higher (18·2 per cent) in 1938. The percentage is maximal at ages under 20 where it is of the order of between 40 and 50 per cent, a record which is in strong contrast to the corresponding figures for all later ages. The somewhat sensational height of the "Under 20" proportion has evoked some public comment as though it were evidence of excessive immorality among adolescents, an interpretation which completely misrepresents the situation, for as is shown below (v) the incidence of sexual irregularity is below average at those ages and is far higher at all early adult ages. The highness of the proportion here should be regarded as a sign of grace rather than a matter for reproach, since it is, in the main, a reflection of the willingness on the part of the parents concerned to legitimate their offspring by marriage before birth takes place (vi).

The proportions for 1939 are considerably lower at all ages than they were for 1938. As is shown later, however, this is not due to any material change in the intrinsic originating factors but must be ascribed mainly to the two war features that have already been referred to, viz., the exclusion from the married class on the one hand of some pregnant women whose marriages were frustrated by the calling up of men to the Armed Forces and the inclusion in the class on the other hand of a large addition of war brides whose marriages are not associated with a state of pregnancy.

Since the mothers of the pre-nuptially conceived children were unmarried at the date of conception, their conception conditions were in no material sense different from those of other unmarried mothers and for the best measure of the incidence of sexual irregularity (resulting in child birth) the births of the two classes must be combined and related to the unmarried section of the female population (to which the mothers of pre-maritally conceived legitimate children should be restored).

Age of Mother		15–45	15–	20–	25–	30–	35–	40–
(iii) Number of illegitimate maternities	1938	27450	4930	8620	6040	3950	2740	1170
	1939	26570	5270	7940	5720	3890	2640	1110
(iv) Numbers of pre-maritally conceived and illegitimate maternities combined	1938	90200	19850	39950	17490	7440	3960	1510
	1939	86350	21090	36610	16250	7190	3780	1430
(v) Do. per 1,000 unmarried women of each age	1938	19·4	11·6	36·2	27·2	15·8	10·6	4·3
	1939	18·8	12·0	36·0	26·1	15·8	10·0	4·0

The combined numbers which are rather more than three times those pertaining to the illegitimate class alone represent an annual rate of irregular conceptions of just under 20 per 1,000 unmarried women for the 15—45 age period in the aggregate. The rate is maximal in the 20—24 age group at 36 per 1,000 but though it steadily declines thereafter it is significant throughout and is still as high as 10 per 1,000 between 35 and 40. The 1939 rates are lower on the whole than those shown for 1938 but the change is slight, and having regard to the way in which the 1938 figures are computed must be regarded as of doubtful significance.

The figures show that of the total births irregularly conceived, nearly 70 per cent are regularized by the marriage of the parents before birth occurs, the relevant age proportions being as follows :—

Age of Mother		15–45	15–	20–	25–	30–	35–	40–
(vi) Percentage regularized by marriage of parents before birth	1938	69·6	75·2	78·4	65·5	46·9	30·8	22·5
	1939	69·2	75·0	78·3	64·8	45·9	30·2	22·3

It is these proportions which are mainly responsible in the determination of the percentages referred to in (ii) above. They are gratifyingly high at the youngest ages, where they are in contrast to the far less satisfactory proportions of regularizations recorded in respect of older women.

In relation to all maternities, the proportion conceived out of wedlock are as follows :—

Age of Mother		15–45	15–	20–	25–	30–	35–	40–
(vii) Maternities conceived out of wedlock per 1,000 total maternities	1938	141	739	265	86	50	50	54
	1939	137	715	257	80	49	47	52

For all mothers the proportion approaches 1 in 7 with an age maximum five times this amount in the youngest age group. As with the proportion of pregnant brides however (ii above), age proportions shown in this way are no guide to the distribution of sexual irregularity.

Similar proportions in respect of first maternities cannot be precisely ascertained because it is not known how many illegitimate births are first births. It may be assumed however that the bulk of them fall within the category, in which event, the proportion irregularly conceived amongst all first births will be little short of 30 per cent.

From the magnitude of the events recorded, it seems at least questionable whether specific family planning, plays any considerable part as yet in determining births throughout the community at large. In spite of contraceptive controls, the incidence of the irregularities (v) extends far beyond the young ages, leaving a strong impression that a large proportion of our children continue to arrive other than at the conscious and deliberate intention of their progenitors.

Maternities by Number of Previous Children.

In Table II, the legitimate maternities at each age of mother are classified according to the number of previous children (including stillbirths) born to her by her present or any previous husband. Table KK provides a corresponding analysis according to the number of such previous children surviving at the date of registering the new birth and Table MM a similar classification according to the number of previous children (surviving, dead or still born) by the present husband only.

The proportion of maternities for which no record of previous children could be obtained was 0·5 per cent. in 1939 as against 0·8 per cent. for the second half of 1938. The 1939 record is thus completer than that derived from the first six months operation of the new procedure, but for either year the extent of the

omissions is comparatively insignificant. Some incompleteness in the detail of marital history must be expected in cases where a birth is registered by an informant other than the mother or father of the child, and there seems no reason to suppose that such cases are likely to be different in character from the recorded cases or that distributional bias is introduced by their omission.

The primary objective of these analyses is to throw light on the family building habits of the community ; to show how families are growing by ascertaining the frequencies at which first, second, third, etc., children are being born to mothers of different ages and how those frequencies have changed or are changing in successive calendar years or longer periods. This cannot be done at the present time because though the registration records show how the new maternities are distributed over families of different attained sizes, there is no corresponding record available of the size distribution of the total families in the community with which the new maternities can be associated and related. It is anticipated that this necessary background data will be forthcoming from the sample census taken by the Royal Commission on Population but until the results of this enquiry are known it will not be possible to exploit the full value of the registration data.

For aspects of interest revealed by the maternity analyses alone reference should be made to pages 124 to 141 of the special 1938 report, where birth order is discussed in some detail both in relation to all maternities and to maternities productive of stillbirths and multiple births.

A broad conspectus of the 1939 experience and of the difference between it and the corresponding record of 1938 are provided in the following summaries.

Table CVIII. Average number of previous children born to mothers of various ages who registered a maternity in 1939, the previous children so identified being as follows :

II *all previous children (surviving, dead or stillborn) by present and previous (if any) husbands.*

KK *all surviving previous children by present and previous (if any) husbands.*

MM *all previous children (surviving, dead or stillborn) by present husband only.*

	Average number of previous children, 1939, the age of mother being							Increase or Decrease (—) as compared with 1938						
	All Ages	15–	20–	25–	30–	35–	40–	All Ages	15–	20–	25–	30–	35–	40–
II	1·417	·13	·50	·95	1·68	2·97	4·81	—·024	·01	·01	—·01	—·03	—·06	—·08
KK	1·228	·11	·43	·83	1·46	2·56	4·10	—·014	·01	—	—	—·02	—·03	—·05
MM	1·393	·13	·50	·94	1·65	2·90	4·64	—·020	·01	·01	—·01	—·04	—·05	—·06
Stillborn or Dead Children														
II – KK	·189	·02	·07	·12	·22	·41	·71	—·010	—	·01	—·01	—·01	—·03	—·03
Per cent. of II*	13·3	16·8	13·0	12·4	12·9	13·8	14·7							
Children by previous husbands														
II – MM	·024	—	—	·01	·03	·07	·17	—·004	—	—	—	·01	—·01	—·02
Per cent. of II*	1·7	·1	·3	·7	1·4	2·2	3·5							

* based on extended figures

Thus the average size of family as expressed by the total number of children previously born to the mothers of 1939 was 1·417 of which 1·228 represented children surviving at the date of the new birth, the difference, viz., ·189 or 13·3 per cent. of the total 1·417, being a measure of those recorded as having been stillborn or as having subsequently died. Of the same total average of

1·417, the mother's present husband was the father in respect of 1·393 or 98·3 per cent. of the children involved, leaving a balance of 1·7 per cent. of the children to be associated with husbands of previous marriages.

Besides the average families of all 1939 mothers, the columns in the left half of the table show how the averages increased with the increasing age of the mother and the columns in the right half how the 1939 figures differ from the corresponding items in the 1938 experience. The size of the family, however, depends more upon the duration of the marriage than the present age of the wife and attention should be directed to the next Table, CIX, in which duration is identified, for a fuller appreciation of the incidence and changes in the average size of families to whom new children are being born.

It will be seen that the difference line, II – KK, which shows the average of non-surviving children, likewise increases with the age of the mother, but that when the non-survivors are expressed as a proportion of the total previous children at each age the percentage, which is 16·8 for mothers under 20, declines at first to 13·0 at ages 20–24 and 12·4 at 25–29 and only thereafter increases as would normally be expected with increase in the mother's age. The excessive proportions of non-surviving children for young mothers are examined in the special 1938 report where they are assigned partly to the higher child mortality experienced by wives marrying at the youngest marrying ages and partly to a probably greater incentive at the younger ages to replace a stillborn or dead infant by a further living one. Reasons are also advanced for concluding that the proportions at the older ages are understated by the omission, through forgetfulness or otherwise, of some of the stillborn or dead children associated with their generally longer married lives.

The consistent increase in the proportion of children fathered by previous husbands (difference line II – MM) with the increase of the mother's present age is in accordance with expectation, rising from a negligible fraction at the youngest age to a maximum of 3·5 per cent. at ages over 40.

In Table SS, the numbers of previous children (according to the MM basis of ascertainment, i.e., surviving, dead and stillborn by present husband) are classified by the age of the mother in conjunction with the duration of marriage and these are summarized in terms of average families in Table CIX.

Table CIX. Average number of previous children (surviving, dead or stillborn by present husbands) of 1939 mothers, distinguishing age and duration of present marriage.

Marriage Duration (Years)	Average number of previous children 1939, the age of mother being							Increase or decrease (—) as compared with 1938						
	All Ages	15–	20–	25–	30–	35–	40–	All Ages	15–	20–	25–	30–	35–	40–
0–	·02	·01	·01	·02	·06	·11	·15	—·01	—	—·01	—·01	—·02	—·02	—·01
1–	·18	·38	·21	·12	·14	·18	·20	·01	—·02	—	—	·01	·01	—·06
2–	·51	·89	·64	·40	·42	·54	·59	—·01	—·02	—·01	—·03	—	—·01	—·01
3–	·78	1·27	1·02	·68	·66	·79	·92	—·02	—·14	—·04	—·01	—	—	—·01
4–	1·05		1·42	1·00	·87	1·01	1·16	—	—	—·02	—	·02	·02	·11
5–	1·28		1·77	1·30	1·07	1·22	1·36	—·03		—·01	—·04	—·02	—·05	·01
6–	1·54		2·08	1·66	1·30	1·44	1·64	—·04		—·07	—·06	—·02	—·02	—·05
7–	1·80		2·43	2·05	1·55	1·62	2·00	—·02		·11	—·01	—·05	·02	·14
8–	2·07		2·52	2·41	1·90	1·81	2·27	·02		·24	—	·04	—·03	·25
9–	2·35			2·83	2·23	2·03	2·43	·03			·03	—·02	·03	—·02
10–	3·12			3·13	3·23	2·98	3·11	—·07			—·07	—·07	—·08	·01
15–	5·05				4·82	5·07	5·05	—·06				—·06	—·05	—·09
20–	6·87					6·76	6·89	—·08					·02	—·10
25–	8·86						8·87	—·20						—·20
30–	10·62						10·62	·42						·12
Not Stated	1·66	·20	·71	1·53	2·22	3·08	4·51	·39	·19	·36	·39	·21	·37	—·03
Total ...	1·393	·13	·50	·94	1·65	2·90	4·64	—·020	·01	·01	—·01	—·04	—·05	—·06

The columns in the right half of the table show that the families to which children were born in 1939 were on the whole smaller than corresponding families of 1938. Exceptions to the general rule are not sufficient to suggest that the changes are significantly associated with either the duration of the marriage or the age of the mother.

The size of the family itself however, as shown in the left half of the table is very definitely influenced both by age and duration. Read downwards the columns show, for given mother's ages, the increase in the average size of family with advancing marriage duration ; the increases are steady and continuous throughout as would be expected and do not appear to call for particular comment. When read across, however, so as to obtain the change with mother's age keeping the duration constant, the figures are more intriguing since for each duration after the first (0 —) the average family at first declines to a minimum and then somewhat surprisingly increases up to the oldest age recorded, the only difference in the progress of the successive duration curves being a slight advancing of the age at which the minimum average is located.

It is necessary to point out here that from the distribution of the previous children as shown in Table SS, it is clear that they could not all have been born within the period of the present marriage. Nor was it required that they should have been so born, for the question eliciting the information merely asked for the ' mother's previous children by present husband,' and the answer therefore, quite properly included children, by the husband, born before the marriage. The inclusion of such children complicates the picture but an indication of their measure and effect can be inferred from the average previous children* shown for duration 0 — since the marriage of the mothers here had only just taken place and all but a negligible proportion of the recorded previous children must have been born before marriage. There is no reason to suppose that the pre-marital children included in the families at durations 1 — and over were different† from those scheduled at 0 — and when these are deducted (allowing for the change in marriage age) the following should approximately represent the average families born within the first ten years of marriage (exclusive of the births now being registered).

Duration	Age 15–19	20–24	25–29	30–34	35–39	40 and over
0 — years	·00	·00	·00	·00	·00	·00
1 —	·37	·20	·10	·09	·08	·05
2 —	·88	·63	·39	·38	·45	·45
3 —	1·26	1·01	·67	·63	·71	·79
4 —		1·41	·99	·85	·94	1·04
5 —		1·76	1·29	1·05	1·16	1·25
6 —		2·07	1·65	1·28	1·39	1·54
7 —		2·42	2·04	1·54	1·58	1·91
8 —		2·51	2·40	1·89	1·78	2·19
9 —			2·82	2·22	2·01	2·36

In its adjusted form the distribution is only slightly different from that of Table. CIX. The averages for duration 1 — decline with each advance of mothers age, but for all later durations, an initial decline is invariably succeeded by a rise at the later ages, the minimum position being at ages 30–34 for durations 3 — to 7 — and at 35–39 for durations 8 — and 9 —. It is conceivable that conscious and deliberate limitation in the size of their families is exercised to a greater degree amongst older than younger women ; this would be reflected by a declining average with advancing age though it would hardly be expected to be sufficient wholly to account for the considerable falls shown, even at the youngest ages. Sterility produced by the casualties and difficulties of child-birth itself would progressively reduce the numbers of children born to the larger families and since its incidence would be expected to increase with the age of the mother, this would also tend to a reduction in the size of family with advancing mother's age at constant marriage durations and would be of significance even at the youngest ages. The operation of both these forces, however, would depress the average throughout the whole childbearing period and some further factor has to be sought to account for the reversal of the fall at the older ages. So far as deliberate control by the mothers themselves is concerned, it may be that women marrying towards the end of their reproductive period progressively tend to shorten the interval between the births of their children in order to achieve their desired family while they can. This would raise the average with advancing age, though its effect, as evidenced by the figures, is least at the shorter durations where it might be expected to be most pronounced. A rise in the averages might ensue from the type of sterility produced by the natural decay of the reproductive function in the later years of the childbearing period ; if the decay tended to be retarded by the continued exercise of the function or stimulated by its neglect it would act selectively in favour of the larger families with probably increasing effect towards the higher ages. More light on the possible interpretation should be forthcoming when the population data are available from which it will be possible to ascertain the actual rates at which children of successive orders are being born.

*A second maternity within the first year of marriage would be just possible where the first occurs within the first three months of marriage but allowance for this could hardly affect the average family for mothers aged 20 and over.

†Variation in the incidence of illegitimacy over recent years would not influence the allowance.

A general indication of the size distribution of the families to which children were born in 1939 is provided by the following table, the size being measured by the number of previous children by present or previous husbands surviving at the date of the new birth.

No. of surviving previous children by all husbands	Distribution per 1,000 total legitimate maternities the age of the mother being						
	All ages	15 —	20 —	25 —	30 —	35 —	40 —
0	454	35	150	164	78	23	4
1	261	4	55	97	72	28	5
2	123		15	41	39	22	6
3	64		3	17	22	17	5
4	38		1	7	13	12	5
5–6	39			3	11	16	9
7–9	18				2	8	8
10 or more	3					1	2
All sizes	1,000	39	224	329	237	127	44

Thus in respect of 45·4 per cent. of the total legitimate maternities recorded there was no previous living child, nearly three quarters of them being assigned to mothers between 20 and 30 years of age. In 26·1 per cent. of the cases there was 1 previous living child only, mothers between 25 and 35 being responsible for rather more than three fifths of them. Surviving families of 2 to 4 children were recorded in 22·5 per cent. and of 5 or more children in the remaining 6 per cent. of the maternities, mothers over 30 years of age predominating in respect of each of these two categories.

First Maternities (Legitimate).

Of the 606,203 total legitimate maternities of 1939 for which particulars of birth order were returned, Tables MM and II show that the mothers in respect of 257,925, or 42·5 per cent., had not had a previous live or stillborn child by their existing husbands and that in respect of 254,815 (42·0 per cent.) they had not had a previous child by any husband. The almost identical percentages in 1938 were 42·5 and 41·9.

The incidence of first born children is naturally at a maximum for the youngest mothers whose marriages are comparatively recent; it declines continuously with advancing age as follows :—

Percentage to all legitimate maternities of those in which there were no previous children	All ages	15—	20—	25—	30—	35—	40—
by present husband	42·5	88·1	63·9	46·7	29·6	16·5	9·2
by any husband	42·0	88·1	63·8	46·4	29·0	15·2	7·2

The difference between the two lines represents the cases where the first born to an existing marriage has been preceded by a child or children from a previous marriage and since the proportion of mothers married more than once would be greater at the older ages the difference, which is negligible in the case of the youngest mothers, increases with age, rising to nearly a quarter of the first maternities recorded in the highest age group.

In Table QQ, first legitimate maternities (by any husband) are analyzed by age of mother and duration of existing marriage, and the 1939 experience is summarized in the following table :—

Table CX.—First Legitimate Maternities 1939. Distribution and Proportion of All Maternities distinguishing Mother's Age and Duration of Marriage.

Marriage Duration (years)	Distribution of 1,000 first maternities the age of the mother being							First maternities per 1,000 total maternities in each group, the age of the mother being						
	All Ages	15—	20—	25—	30—	35—	40—	All Ages	15—	20—	25—	30—	35—	40—
0—	351	70	167	81	25	7	1	970	990	984	979	896	760	568
1—	266	11	111	102	33	8	1	819	626	793	876	853	760	598
2—	141	1	39	70	25	5	1	539	192	418	627	619	533	472
3—	86		14	49	19	4	—	385	98	228	446	462	394	317
4—	54		4	30	17	3	—	278		118	295	362	313	230
5—6—	55		2	24	23	5	1	190		61	167	249	233	205
7—9—	31			6	17	7	1	106		36	60	127	145	119
10 and over	16			1	5	8	2	37			53	39	41	21
All stated durations	1,000	82	337	363	164	47	7	420	881	638	464	290	152	72

The left half of the table shows that 35·1 per cent. of all first maternities occurred within a year of marriage and 26·6 per cent. within the second year nearly one-half of them going to mothers in the 20–24 age group. In 10 per cent. of the cases, the marriage had subsisted for at least 5 years and for 1·6 per cent. a period of 10 years childlessness intervened before the birth, the bulk of the mothers here being between 30 and 40 at the birth of their first child. The successive columns in the right half of the table show how for mothers of every age the proportion of first maternities to all maternities consistently declines with increasing marriage duration. When, however,

the proportions are examined line by line, that is at constant marriage durations, the changes have not the same unidirectional characteristic; for every duration after the first, the proportion first rises as the mothers age increases and after reaching a maximum falls to the end of the reproductive age period; the behaviour of the proportions in this respect is in a sense complementary to the contrary variations shown by the average numbers of previous children in Table CIX, and since for any group of mothers the proportion of first births would naturally be expected to be higher where the average existing family was small, than it would be if the average family was large it may be assumed that the two distributions are reflections of the same predisposing factors and that explanations advanced in the preceding section in respect of the variations in family size apply with equal weight to the distribution of the proportions of first maternities.

Reproduction Rates.

The nature of the indexes which, under the generic description of "reproduction" rates, have come into public use in recent years as measures expressing a fertility experience in terms of its population replacement capacity is described in the 1938 Special report (1938 A.R. Part II, page 152). That report dealt exclusively with the fertility of 1938 and it has been deemed appropriate in this companion section to the first of an entirely new series of records not only to add the indexes of 1939 but to supplement them with a brief summary in similar form of the reproductive history of the country from the time compulsory birth registration was introduced a century ago. The method of construction is described below and the basic data employed are reproduced in the appendix.

The reproduction index itself may take a number of forms, all of them of a relatively complex nature, in that, unlike simpler types of self-explanatory rates or proportions, they depend upon conventions, the character of which must be understood if the full implication of the index is to be appreciated. The form adopted by the Registrar General has been styled the Effective Reproduction Rate (E.R.R.) to distinguish it from other constructions and before dealing with the figures it is appropriate that its origin and its limitations should be explained. The publication of E.R.Rs. in recent years has given rise to some adverse comments, the more responsible of which can conveniently be dealt with in the course of this explanation.

The departmental treatment of the subject dates from early after the 1921 census, the first occasion in this country on which an attempt was made on a national scale to ascertain the current rate at which women of different ages were bearing children. The Registrar General realized at the time that the birth rate might be entering a danger zone, and felt that some demonstration would be necessary to carry conviction as to the position. It was not, however, clear whether the then fall in the rate was more than a natural reaction following the abnormal boom which followed the 1914–18 war war and it was not until 1926 that the matter was dealt with in the Annual Review. In a discussion of the birth rate of 1926 on page 157 of the Text volume of the Annual Review for that year the following appears :—

> "It does seem worth considering therefore whether it is possible to provide a simple test which . . . will exhibit its sufficiency or otherwise in relation to some definite and easily understood standard."

"A possible standard which suggests itself is indicated in the following question."

> "If the fertility of 1926 were maintained unaltered in the future, would the infants born in 1926 themselves in their turn reproduce offspring numerically equal to themselves?"

The question posed was examined in subsequent paragraphs and the conclusions reached :—

> " that every 1,000 children born in 1926, would, at the rate they themselves were born, produce eventually 915 children, or, in other words, that the 1926 birth rate was only 91½ per cent. of what it should be if continuity in reproduction is to be maintained at a constant level."

The test of replacement implied by the above question of 1926 has been retained in all subsequent departmental dealings with the subject and is that which is embodied in the E.R.R. as described today ; the standard of full or exact replacement is represented by unity and any calculated variation in the form of a fraction above or below unity shows the proportionate extent by which the reproductive capacity of the population would be increased or diminished in the course of a generation.

The fertility, of which the E.R.R. is an index, is the simple physiological fertility of all women, irrespective of their marital status, as expressed by the age curve showing the progressive rates at which girl children are actually born alive to them at successive ages within the reproductive field. The ascertainment of the E.R.R. proceeds by (i) applying the experienced age rates to the calculated survivors of the girl babies as they in turn pass through their subsequent child-bearing period and (ii) obtaining the ratio of the calculated live births they would thus produce to the live births of which they themselves are the survivors. It need hardly be stressed that the application of experienced birth rates to a subsequent generation is merely part of the mechanism for ascertaining the index and in no sense implies that the said rates would or even could be experienced by the new generation.

An inherent element in the construction of the index is the computation of the survivors of the original births, to allow for the inevitable mortality loss suffered by them during the calendar period which necessarily elapses between the time of birth and the times at which they reach the successive stages of their subsequent reproduction history. In respect of all generations born prior to 1900, the mortality of the 45 years following the birth year is known completely and the numbers of survivors can be calculated with precision. For later generations the full survivorship period extends beyond the present day so that the actual survivorship mortality is unknown or incompletely known and, for the as yet unexperienced period, assumptions have to be made regarding the mortality likely to prevail. While the use of any current standard mortality would usually serve as a reasonable approximation for this purpose, it was felt that in view of the attention focussed upon the subject at the present time, the customary measuring instrument should be as precise and objective as possible and that in assessing the mortality to be employed, regard should be paid to any general tendencies likely to attend its future course.

The mortality projections involved in the production of the series of E.R.Rs. for England and Wales now presented are shown on a later page. Though they portray a view of the future developed as a result of continuous contact with medical opinion and departmental medical administration, they are to be read as indicating broad tendencies rather than specific courses ; the particular justification for their employment here is to be found in the conclusion, based upon test, that any responsibly preferred variation from them is hardly likely to modify the resultant E.R.R. in more than the third decimal place.

Since the original development of the index by the Department in 1926, an alternative construction has attained some prominence among demographers under the appellation Net Reproduction Rate (N.R.R.) As suggested above,

the index may take a number of different forms and the use of an alternative by different constructors would hardly have needed reference here but for the fact that the protagonists of the N.R.R. in claiming superiority for the latter have criticized the departmental construction in terms sufficiently vigorous to have roused considerable attention. In form the N.R.R. is identical with the E.R.R. save for one element of difference which the N.R.R. construction insists upon as a matter of principle, namely, that the mortality used for the calculation of the survivors is not to be the mortality which actually determines or is likely to determine the survivors but the mortality of females recorded in the period to which the fertility relates. Just what relationship exists between female mortality at ages 0 to 50 and either concurrent fertility at ages 15 to 50 or the actual mortality of the survivorship interval is not clear and it is difficult to see what particular objective purpose is served by the insistence on an index of so rigid a type. Mortality has been falling during the major part of the past century and is continuing to fall, so that even in respect of normal mortality years a replacement index which assumes no fall will be biased in the direction of understatement ; while in respect of epidemic or abnormal mortality years like those of the recent war it might easily be meaningless ; a hypothesis, for example, that girls born in 1940 or 1941 would for an ensuing period of 50 years or so be continuously subject to the heavy air raid mortality of those years is palpably absurd. Even in less abnormal circumstances, movements in the N.R.R. may be misleading so far as change in fertility is concerned ; for example, the slight fall in fertility between 1938 and 1939, confirmed in a variety of ways already described, is reflected in the E.R.R. which declined from ·810 to ·808 ; the N.R.R. on the contrary appears to have risen (from ·805 to about ·807), the inherent deterioration in fertility being masked by a concurrent fall in mortality having no relationship with ultimate survivorship conditions.

Certain arguments put forward in favour of the N.R.R. do not carry conviction. It is suggested, for example, that the mortality of the fertility year should be preferred to any forecast mortality on the ground that the former is factual and the latter hypothetical. But the only " actual " mortality is that experienced during the survivorship process, and in relation thereto, the mortality of the fertility year is no less hypothetical than any other substitute. The E.R.R. uses the actual mortality where it is known, and even where it is not known, the mortality employed, in respect of which the likely future course has been taken into account, will be less hypothetical than one from which the consideration is omitted. Another claim made for the N.R.R. is that it has international authority from the fact that rates in this form appear in the Statistical Year Book of the League of Nations. In this connection it is fair to point out that the rates form a comparatively late addition to the League's publication and that the bulk of them were computed and supplied in the first instance by the author of the N.R.R. and his colleagues. They have never been the subject of international discussion or agreement and there is no evidence that alternative forms of the index have even been considered, far less repudiated.

Distribution of births and ensuing fertility by mother's age 1841-1939. From the first July, 1938 the age of the mother has been recorded at birth registration and from that date fertility rates at successive female ages as shown in Tables CV and CVII are available on the basis of ascertained fact.

For years prior to 1938, age analyses of the births of this country are not available and if an examination of the birth series in terms of reproduction

rates is to be made, it is necessary to obtain approximations to the required distributions by indirect means.

In the following attempt, the choice of method was governed by a number of general considerations. In the first place, though age has not been specifically recorded, the fact that births are confined to a reproductive period of substantially 30 years between ages 15 and 45 limits the range, and the series of aggregate rates per 1,000 women 15–45 with which, in the absence of more precise data, it has been customary to measure the overall changes in fertility, might equally be expected to afford a general guide to the direction, if not the scale, of the similar variations at different age levels. Secondly, it is obvious that the age fertility of all women depends largely on the disposition of the separate frequencies of legitimate and illegitimate births, which in turn is governed by marriage customs and the prevailing social attitude towards illegitimacy. Since these are more or less common amongst communities of British (white) stock and frequently differ from the customs of other countries it was concluded that reliance upon British experience, scanty as it is, would be preferable to that forthcoming in respect of foreign countries; and also that the distribution of all children would be best obtained as the sum of independently estimated distributions of the separate legitimate and illegitimate sections, following the procedure used in the first treatment of the subject in 1926.

With these considerations in mind, the records of four legitimate and three illegitimate experiences covering a reasonably wide range of British fertility conditions were assembled as follows :—

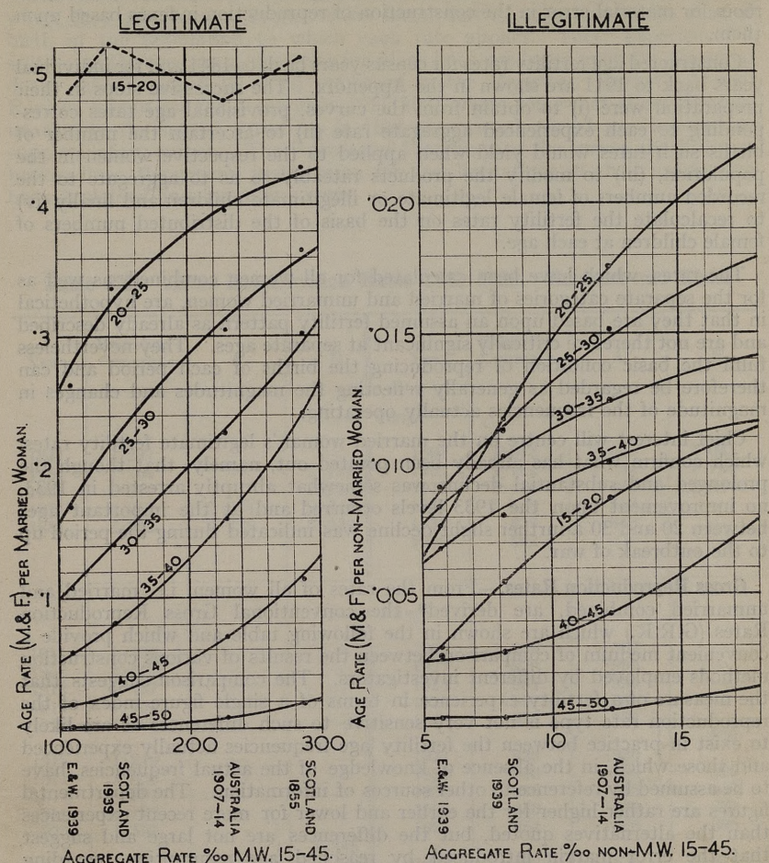
		LEGITIMATE				ILLEGITIMATE		
		E. & W. 1939	Scotland 1939*	Australia 1907/14	Scotland 1855	E. & W. 1939	Scotland 1939*	Australia 1907/14
Aggregate rate per 1,000 Women 15–45 (M. or non-M.) ...		108·4	142·7	228·5	288·	5·7	8·2	12·3
Births (M. & F.) per married or non-married woman	15–20	·486	·522	·480	·511	·0030	·0055	·0087
	20–25	·264	·337	·396	·427	·0077	·0117	·0176
	25–30	·170	·220	·304	·366	·0092	·0113	·0151
	30–35	·108	·141	·226	·302	·0084	·0103	·0125
	35–40	·059	·082	·160	·242	·0068	·0081	·0101
	40–45	·019	·026	·070	·113	·0027	·0028	·0043
	45–50	·002	·002	·008	·018	·0003	·0002	·0006

*Based on provisional figures supplied in advance of final publication in the Scottish report.

The records were then combined in graphic form as shown in Diagram III. The age rates of each of the selected experiences were plotted on the ordinate standing on the base line at the point corresponding to the aggregate rate of the experience and smooth curves, as shown, were drawn by hand through the common age points, having regard also where possible to the zero position (o on the base line) from which all the curves should theoretically radiate.

In regard to the " legitimate " curves, inconsistency in the basic records is only noticeable in respect of the 15–20 age experience; but births are comparatively few in numbers at these ages and from the misstatements of age and other exceptional circumstances which must always attach to this class, the degree of irregularity is not perhaps surprising. Apart from the irregularity the general level here is little affected by the birth rate as a whole giving the impression of a fertility maximum or ceiling in the neighbourhood of ·5 per married woman per annum. The slackening of the rise in the next highest

DIAGRAM III



curve, 20–25, as it approaches the higher positions is not inconsistent with the existence of a maximum hereabouts.

The indirect fertility rates based on the number of children under 1 enumerated with their mothers at the censuses of England and Wales in 1921 and 1931 which have been published in the Registrar General's Annual Review are lower than those suggested by the curves at the younger ages and correspondingly higher at the older ages, but they were admittedly approximations only with no claim to precision and no account has been taken of them here.

The illegitimate curves are less consistent within themselves, but variability is probably inevitable in respect of this class and its contribution to total fertility is not large enough for the age distribution to be of critical importance.

The uniformity and consistency of the system of curves was regarded as affording general evidence of the relationship between an aggregate rate and its component age rates; and it was concluded that by means of these curves, age rates in respect of fertility experiences of this country could be inferred, of

sufficient correspondence to their unknown original counterparts to leave little room for material error in the construction of reproduction indexes based upon them.

Constructed age fertility rates for census years back to 1841 and for individual years back to 1911 are shown in the Appendix. The successive steps in their preparation were (i) to obtain from the curves, provisional age rates corresponding to each experienced aggregate rate (ii) to ascertain the number of births such rates would yield when applied to the respective women in the population, (iii) to modify the products rateably so as to aggregate to the recorded numbers of female legitimate or illegitimate children and finally (iv) to recalculate the fertility rates on the basis of the distributed numbers of female children at each age.

The rates, which have been calculated for all women combined, as well as for the separate categories of married and unmarried women, are hypothetical in that they are based upon an assumed fertility pattern as already described and are not therefore critically significant at separate ages. They nevertheless fulfil the basic condition of reproducing the births of each period and can therefore be regarded as generally reflecting the magnitudes and changes in magnitude of the frequencies actually operating.

Chief interest will centre on the married woman's legitimate fertility rates, which confirm what has already been pointed out, namely, that though the prolonged and substantial decline was somewhat abruptly arrested in 1933, no improvement upon the 1933 levels occurred and at the important ages between 20 and 30 a further slight decline was indicated during the period up to the outbreak of war.

Gross Reproduction Rates.—From the rates of all women, i.e. married and unmarried combined, are derived* the conventional Gross Reproduction Rates (G.R.R.) which are shown in the following table and which provide a convenient medium of comparison between the results of various construction methods employed by different investigators. The comparison suggests that the measure of a fertility experience in terms of a single figure index of the reproduction rate type is not very sensitive to such differences as are likely to exist in practice between the fertility age frequencies actually experienced and those which, in the absence of knowledge of the actual frequencies, have to be assumed by reference to other sources of information. The departmental figures are rather higher for the earlier and lower for more recent experiences than the alternatives quoted, but the differences are not large and suggest that the error margin introduced by reasoned age assumption regarding fertility incidence should not be of a materially higher order than 1 per cent or thereabouts.

The G.R.R. thus calculated is a purely notional function in that it involves the theoretical conception that all the girl babies born survive to the end of their reproductive period and for a more realistic index of replacement, allowance must be made for the mortality loss incurred during the survivorship period.

Effective Reproductive Rates.—This objective is arrived at in the construction and presentation of the series of Effective Reproduction Rates. The mortality determining the survivors of the ensuing generation has no bearing upon the original fertility and the sole desideratum in its choice, as already explained, has been that it should reflect the mortality actually experienced or likely to be experienced by the new generation as faithfully as possible.

* By multiplying the quinary age group rates by 5 and adding the results together.

The death rates involved are graphically displayed in the adjoining diagram, where they are arranged in generation form, that is, according to the year of birth of the population to which each rate applies. The " experienced " sections of the age curves, shown as full black lines, are based upon the decennial death rates (marked by dots) published in the Registrar General's Annual Review, except for the decennium 1911–1921 where somewhat closer approximation to the special variations in that exceptional period are inserted as supplementary curves. The " projected " sections of the curves are shown as broken lines, the general justification for and limitations in their use having been explained on a preceding page.

Table CXI. Gross Reproduction Rates 1841–1939. England and Wales

Year	Registrar-General's	A	B	Year	Registrar-General's	A	B
			*Long Range**				
1841	2·237	—	—	1891	1·973	2·043	2·041
1851	2·264	—	2·195	1901	1·702	1·725	1·725
1861	2·277	—	2·256	1911	1·428	1·469	1·444
1871	2·356	2·344	2·349	1922	1·189	1·213	—
1881	2·252	2·278	2·279	1933	·839	·845	—
				1939	·892	—	—
			Short Range				
1911	1·424	—	—	1926	1·046	1·062	—
1912	1·413	—	—	1927	·979	·992	—
1913	1·427	—	—	1928	·981	·994	—
1914	1·404	—	—	1929	·951	·961	—
1915	1·262	—	—	1930	·953	·963	·929
1916	1·219	—	—	1931	·922	·930	
1917	1·026	—	—	1932	·890	·899	·899
1918	·991	—	—	1933	·839	·845	·850
1919	1·127	—	—	1934	·858	·869	·870
1920	1·503	—	1·345	1935	·854	·866	·866
1921	1·311	1·326		1936	·862	·874	·875
1922	1·189	1·213		1937	·872	—	·883
1923	1·161	1·176	—	1938	·897	—	—
1924	1·110	1·120	—	1939	·892	—	—
1925	1·074	1·086	—				

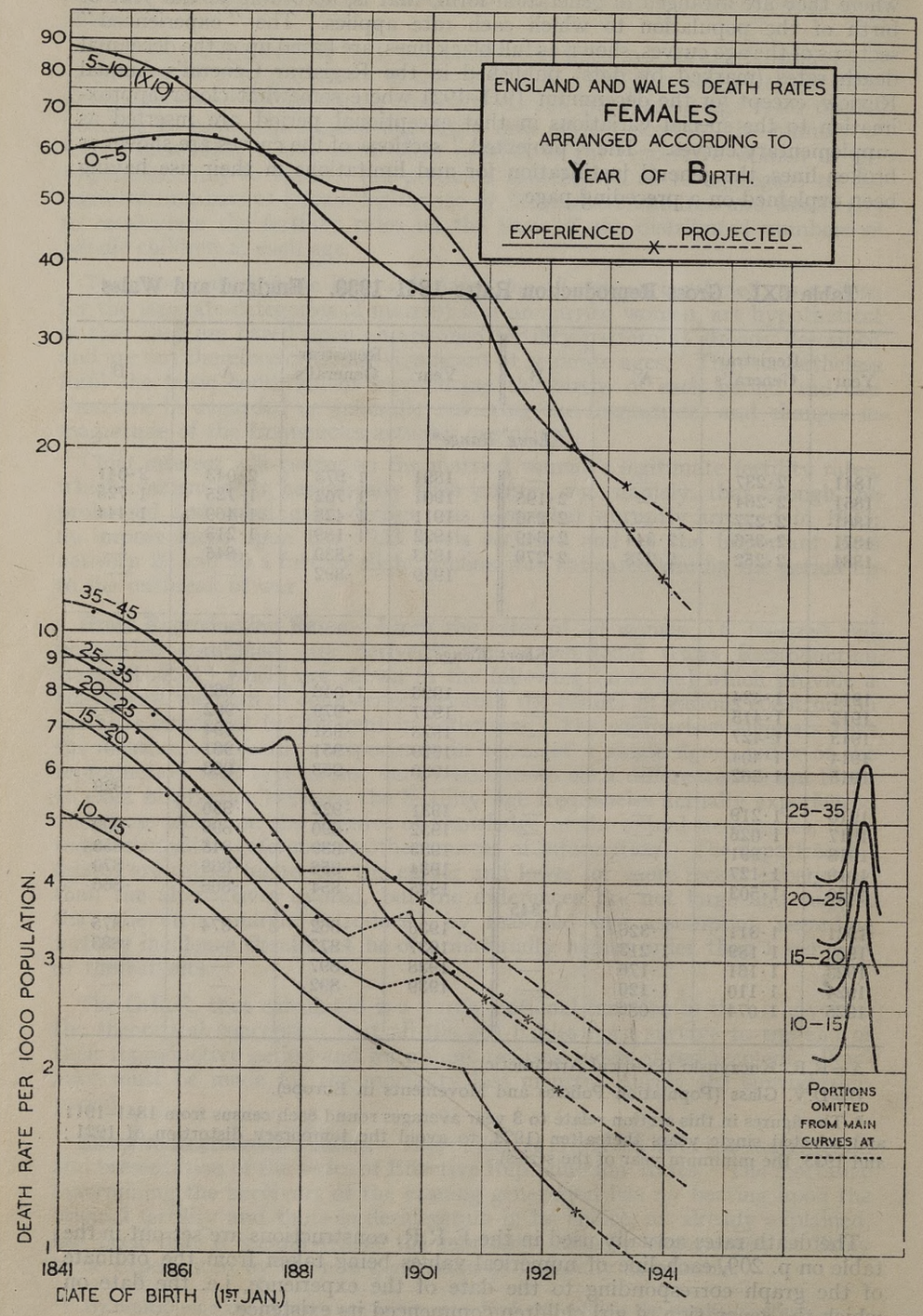
A=R.R. Kuczynski (Political Arithmetic).

B=D.V. Glass (Population Policies and Movements in Europe).

* The figures in this section relate to 3 year averages round each census from 1841–1911 and selected single years thereafter (1922, to avoid the temporary distortion of 1921; and 1933, the minimum year of the series).

The death rates actually used in the E.R.R. constructions are set out in the table on p. 209, each line of numerical values being taken from the ordinate of the graph corresponding to the date of the experience, i.e. the date on which the generation of girl children commenced its existence.

DIAGRAM IV



Births of years	Generation Death Rates at ages (Females—from graph) employed in calculation of reproduction rates						
	0–5	5–10	10–15	15–20	20–25	25–35	35–45
1840–2	·0599	·00880	·00513	·00724	·00816	·00918	·01115
1850–2	·0626	·00832	·00460	·00632	·00708	·00800	·01020
1860–2	·0634	·00738	·00392	·00519	·00585	·00664	·00860
1870–2	·0604	·00604	·00325	·00417	·00466	·00531	·00650
1880–2	·0542	·00499	·00268	·00333	·00371	·00411	·00550
1890–2	·0519	·00414	·00225	·00277	·00330	·00425	·00438
1900–2	·0456	·00360	·00214	·00365	·00320	·00309	·00370
1910–2	·0355	·00320	·00174	·00232	·00268	·00262	·00311
1920–2	·0240	·00217	·00132	·00192	·00228	·00221	·00264
1930–2	·0165	·00183	·00107	·00161	·00194	·00188	·00225
1940–2	·0120	·00157	·00090	·00137	·00164	·00160	·00192

On the basis of these rates, the survivors at quinary age points (15, 20, 25 etc. to 50) were ascertained in respect of 1,000 female children born at each decennial experience date (1841, 1851 etc. to 1941). Approximate methods commensurate with the approximate nature of the death rates read from the graph were employed and the same methods were consistently applied throughout. Having ascertained the survivors at successive age points, the population years lived through each quinquennial age period were taken as 5 times the mean of the survivors at the beginning and end of the age period. For the fertility experiences of individual generation years since 1911, the steady change in mortality rendered separate survivorship calculations unnecessary and it was deemed sufficient to interpolate the appropriate " exposed to risk " or population years lived through, from the calculated values at decennial generation year intervals.

The series of E.R.Rs. for the century were finally obtained by multiplying the female age fertility rates for each period represented (actual rates for 1938 and 1939 and constructed rates for all preceding years) by the appropriate survivors exposed to risk and adding together the age products. They are set out in the following table.

Table CXII. Effective Reproduction Rates 1841–1939. England and Wales

Year	E.R.R.	Year	E.R.R.	Year	E.R.R.	Year	E.R.R.
*Long Range**		*Short Range*					
1841	1·371	1911	1·127	1921	1·110	1931	·816
1851	1·401	1912	1·127	1922	1·013	1932	·790
1861	1·446	1913	1·147	1923	·994	1933	·747
1871	1·562	1914	1·138	1924	·954	1934	·766
1881	1·576	1915	1·031	1925	·928	1935	·764
1891	1·413						
1901	1·263	1916	1·004	1926	·908	1936	·774
1911	1·130	1917	·851	1927	·853	1937	·785
1922	1·013	1918	·826	1928	·859	1938	·810
1933	·747	1919	·944	1929	·835	1939	·808
1939	·808	1920	1·265	1930	·840		

* The figures in this section relate to 3-year averages round each census from 1841–1911 and selected single years thereafter.

As already stated, the E.R.R. is an index of a birth experience in terms of its population replacement value. Thus the births of 1881 which in the crude rate form measured 34·06 per thousand population represented a replacement value of 1·576, which meant that the reproductive women of 1881 were replacing themselves by a number more than half as many again in the next generation. In 1939 the corresponding effective reproduction rate was only ·808, so that the reproductive women of 1939 were not maintaining themselves but were only producing four-fifths of their number for the next generation of mothers. When the rate is exactly unity, replacement is being exactly maintained and during the long fall in the birth rate, this position was reached and passed between 1922 and 1923 since when the rate has been below standard. It is on account of this that it is possible to say without any reservation that the numbers of reproductive women are bound to fall during the next 20 years or more.

The growth or otherwise of a population is determined by the three factors of births, deaths and migration; in an established country such as this, however, it will be largely dominated by the originating force of births and the phenomenal growth of the national population recorded since the first census was taken in 1801 must in the main have been a direct product of the E.R.Rs. shown in the table. The rate was already high in 1841, the first year for which it can be measured, but from its then height coupled with the magnitude of the total population increases recorded in earlier decades, it may be inferred that it had been of a relatively high order for some decades prior to 1841. The table shows that the E.R.R. was rising prior to 1871 and 1881 at which time it reached a maximum, which, if it could have been maintained, would have ultimately involved a rate of population growth of 57 per cent. in a generation of about 30 years. The outstanding characteristic of a population expansion of this kind is that of necessity it was bound to be of a temporary nature. It no doubt accorded with the abnormal industrial development with which it synchronised, but it was no less abnormal in itself in that it could not have operated from a remote past nor could it have been maintained in the indefinite future. For example an indefinite continuance of the 1801–1881 rate of population growth would have resulted in a present-day population of 57 millions, as compared with the actual figure of 41½ millions, of 216 millions a hundred years hence and the even more fantastic figure of 824 millions two hundred years hence. A break had to come, and though it might have occurred earlier or later, the fact that it began about the 1871–81 decade can hardly be regarded otherwise than a natural turn in a natural sequence of events.

From a value of 1·576 in 1881 the E.R.R. fell drastically to 1·130 in 1911 and after a period of interruption by the 1914–18 war continued downward, reaching the parity level of unity between 1922 and 1923 and falling even more steeply thereafter to the minimum position of ·747, which was recorded in 1933.

In suggesting that a break was bound to occur sooner or later in the abnormal rate of growth of the pre-1880 period, it was not meant of course that it would come about as a result of some inscrutable providential law. It could only emerge as a combined achievement of millions of individuals, so that when it did come it must have been as an expression of their collective reaction to what for want of a more precise statement may perhaps be described as the malaise produced by the growing pressure of population upon the events and circumstances of the time. The malaise must have manifested itself in a number of ways. It is possible to point to the Factory Acts of an earlier period which transformed children from economic assets to economic liabilities and to infer that to many breadwinners, the increasing number of immediately unproductive family units was becoming more and more burdensome as rural amenities gradually

gave place to industrial conditions. From another point of view it has been suggested that an awakening social conscience was becoming increasingly revolted by the misery and wastefulness caused by the tremendously high infant and maternal mortality associated with the continuous child-bearing of the period. There were no doubt other adverse conditions, but whatever their nature, they were in all no more than manifestations of a growing pressure which was bound eventually to compel a slowing down of the population growth and a corresponding restriction therefore in the reproduction rate.

Moreover, to be effective the restriction had to be drastic. A feature of the 19th century type of population growth was that it occurred entirely from an excess of births, the new population being continually loaded on to the youngest age groups so that after a time the population acquired a distorted age shape, peculiar to the growing conditions and to no other, in which there was a quite abnormal representation of the younger elements and a complementary deficiency at the older ages. By 1881, for example, the distortion had become very marked, children under 5 being survivors of 3 or 4 times as many births as those from which a corresponding group of old people were sprung. Following such conditions, the numbers at each age group would for a long time thereafter be continually reinforced by larger numbers coming up from the immediately younger ages and the population was bound to go on increasing long after the rate of new births began to decline. This time lag is responsible for the fact that as late as 1911 the population of this country was still increasing at the wholly abnormal rate of 10 per cent per decade notwithstanding that the E.R.R. had by then fallen to 1·130; and that even to-day any forseeable cessation of growth is still years ahead with a current E.R.R., which between 1923 and 1939 was below replacement level and for many of those years seriously so.

One of the important demographic consequences of the high rate of population growth in this country is to be seen in the high population density resulting therefrom.

	Persons per sq. mile 1939		Persons per sq. mile 1939
GREAT BRITAIN	523	Poland	234
England	775	Denmark	230
Wales	308	France	197
Scotland	164	Sweden	37
		Norway	24

PROMINENT COUNTRIES OF EUROPE (Density Order)		LARGE COUNTRIES OUTSIDE EUROPE (Inclg. Russia)	
Belgium	725	Japan	492
Netherlands	693	India	242
Italy	366	China	105
Germany	352	U.S.A.	43
Czechoslovakia	282	U.S.S.R.	21

It will be seen that the density for Great Britain as a whole is only exceeded by those of Belgium and the Netherlands. In England alone the density is not only far higher than that of any other country in the world, but is several times as high as that of most of them.

Unless it is sincerely believed that the nation could and should have sustained an even higher rate of growth than that which has actually occurred, with all its consequential implication of a still higher population density and the added strain that might have been entailed in the matter of food supply and maintenance of living standards, the long continued fall in the E.R.R., even to a position well below parity as in the latest decade, was no more

than was absolutely necessary to restrain the growth within its present limits, and in this sense can be regarded merely as an alternative to the more violent scourges, pestilences and annihilations by which excessive population growths of other times and places have been kept in check. In its role of population regulator, a temporary depression of the E.R.R. below parity standard need not be regarded as a necessarily untoward circumstance and on the time scale of the events now depicted, the temporary period might well extend over several decades.

An indefinite continuance of fertility at the 1939 low level would, of course, ultimately result in a heavily declining population but likelihood of this happening is not to be inferred merely from the scale of the fall in the birth-rate of the past or from the fact that the E.R.R. is low at the present time. One of the effects of the past fall has been to modify the age shape of the population in such a way as to dissipate the momentum of growth which it formerly possessed so that the E.R.R. is no longer subject to former restraints and is accordingly free to adapt itself to changed conditions.

Evidence of reaction of this nature has already been shown by the records themselves, for the fall in the E.R.R. ceased in 1933 and there has since been a slight but steady improvement, increasing it from the then minimum of ·747 to ·810 in 1938 or ·808 in 1939, an increase which though not spectacular is in sharp contrast with the decline in the preceding five years (from ·859 in 1928) or any recent comparable period. The rapid rise in marriage rates, the substantial arrest of the long continued fall in legitimate fertility and the reversal of migration tendencies from an outward to an inward direction on balance which operated from about the same time, all point to a definite change in population tendencies dating from about the early nineteen thirties. The change is too recent and the conditions of too transitional a nature to enable positive conclusions to be formed as to their possible outcome, and now, with the overwhelming disturbance created by the war and the social and economic readjustments which are bound to follow in its train, the possibility of drawing valid inferences regarding long-term prospects must be slight for many years to come.

Analysis of changes in the E.R.R. The curve of fertility age frequencies exhibited by all women irrespectively of marital status upon which the reproduction index is conventionally based, is in effect a compound of three separate fertility components, viz., the separate and quite different fertility frequencies of the married and non-married sections of the population respectively and the relation between the two population sections represented by the age curve of proportion married. The three fertility components operate independently of one another so that their combined effect, as reflected by the all women rates, is largely a fortuitous one and for this reason it has been preferred, in attempting to distribute the births of past periods, to have regard to the incidence of the separate factors.

In an examination of the changes taking place in the E.R.R. from time to time, apportionment among the contributory components may be as informative as the identification of their combined effect and an analysis with this objective can be made in the following way.

As will be already understood, the E.R.R. in its simplest form is obtained by multiplying the fertility frequency of "all women" at each age by the proportion of women of the new generation who survive to that age and adding all the age products together. Clearly the same result will be obtained if the survivors at any age are assumed to be divided as between their married and non-married elements in the same proportion as were the original women whose fertility is being measured and the legitimate and illegitimate components of the E.R.R. ascertained separately as the products of married women fertility and married survivors and the products of non-married women's fertility

and non-married survivors respectively. In the form of symbols, if Fw, Fm and Fn represent the original fertility frequencies at a given age of all women, married women and non-married women, and Sw, Sm and Sn, the corresponding survivors, then the E.R.R. will be given by $\Sigma FwSw$ and is at the same time equal to the sum of its legitimate and illegitimate components $\Sigma FmSm$ and $\Sigma FnSn$.

Comparing such experience with another in which the symbols are differentiated by dashes (and omitting the summation symbol for conveniences, it being understood that the sum of separately computed age components is implied throughout), the total differences between the respective E.R.Rs. will be $FwSw - F'wS'w$.

Of this total difference, the portion due to change in legitimate fertility will be obtained approximately by applying the difference between the legitimate fertility rates to the mean of the married survivors exposed to risk, *i.e.*, $(Fm - F'm)\ (Sm + S'm)\ \frac{1}{2}$.

Similarly the portion due to change in illegitimate fertility will be $(Fn - F'n)\ (Sn + S'n)\ \frac{1}{2}$.

The effect of mortality differences is expressed by differences in the proportions of women surviving and the portion of the total change due to this source is thus $(Sw - S'w)$ multiplied by the mean fertility rate $(Fw + F'w)\ \frac{1}{2}$.

The verbal description of the effect of a change in marriage incidence is more complex. In symbols it may be expressed as $(F'mSm + F'nSn - F'wSw + FwS'w - FmS'm - FnS'n)\ \frac{1}{2}$ and represents the balance required with the other factors mentioned to make up the total difference between the E.R.Rs.

Apportionment of the successive changes in the E.R.Rs. shown in Table CXII has been carried out on the basis of these formulæ with the results shown in Table CXIII.

The analysis adds considerable definition to the picture of the events of the past century.

As was to be expected the legitimate fertility component dominates the movement as a general rule, but it is at once obvious that its true incidence as also the incidence of the other two fertility factors is quite concealed in the movements of the E.R.R. as a whole. The latter, for example, is shown as increasing prior to the 1881/91 decade, whereas it is quite clear that all three fertility factors were exercising a declining influence between 1871 and 1881, their effect being masked by the greater gain due to improving survivorship mortality. And in the immediately following decades, whereas the total decline in the E.R.R. was high in 1881/91 and tended to diminish thereafter, the decline in the important legitimate fertility component commenced gradually and increased progressively as time went on; in fact the decline may well have been at a maximum when it was abruptly halted in 1933. Between 1933 and 1938 the movements in both the total rate and the legitimate fertility component were relatively small, but even here the tendency in the former was upward while the latter was slightly downward though not to any significant extent.

Between 1938 and 1939 the movements, in so far as they differ from those of the immediately preceding period, have been influenced by the war, and for that reason will be of doubtful or limited significance in relation to more permanent trends.

Changes in illegitimate fertility have been of a small order and though perhaps welcome in their moral or social aspect have been adverse from the point of view of the reproduction rate almost throughout.

The trend of the marriage incidence contribution to the reproduction rate is characterized by well marked phases of increase and decrease. Prior to 1871 it appears to have been favourable, but for the next forty years it was definitely

unfavourable and contributed materially to the large early falls in the reproduction rate. At some time after 1911 the marriage tendency was again reversed and not only has remained favourable right up to the present day but in the last decade has been responsible for a positive contribution many times that recorded for any earlier comparable period.

Table CXIII.—Apportionment of periodic changes in Effective Reproduction Rate. England and Wales. 1841–1939.

Period	Total increase or decrease (—) in the effective reproduction tale	Portion of total increase or decrease due to beneficial or adverse (—) change in			
		Legitimate fertility	Illegitimate fertility	Proportion of women married	Survivorship mortality
Long range—10 year intervals*					
1841/51	·030	?	?	?	·014
1851/61	·045	—·033	—·002	·046	·034
1861/71	·116	·040	—·007	·017	·066
1871/81	·014	—·051	—·014	—·006	·085
1881/91	—·163	—·114	—·018	—·065	·034
1891/01	—·150	—·149	—·010	—·037	·046
1901/11	—·133	—·165	—·003	—·041	·076
1911/22	—·115	—·225	—·005	·039	·076
1922/33	—·265	—·302	—·010	·009	·038
1933/38	·063	—·015	·003	·065	·010
Short Range—single year intervals					
1911/12	·000	—·015	·001	·006	·008
1912/13	·020	·009	—·000	·002	·009
1913/14	—·009	—·022	—·000	·004	·009
1914/15	—·107	—·128	—·002	·015	·008
1915/16	—·028	—·043	·002	·005	·008
1916/17	—·153	—·140	—·002	—·017	·006
1917/18	—·025	—·014	·003	—·019	·005
1918/19	·118	·108	·005	·000	·005
1919/20	·320	·285	·002	·027	·006
1920/21	—·154	—·161	—·008	·008	·007
1921/22	—·097	—·104	—·006	·008	·005
1922/23	—·019	—·020	—·003	—·001	·005
1923/24	—·039	—·041	—·001	—·002	·005
1924/25	—·026	—·029	—·002	·000	·005
1925/26	—·020	—·021	·001	—·004	·004
1926/27	—·055	—·055	—·002	—·001	·003
1927/28	·006	—·001	·001	·003	·003
1928/29	—·024	—·028	—·000	·001	·003
1929/30	·005	—·003	·000	·005	·003
1930/31	—·024	—·029	—·002	·004	·003
1931/32	—·026	—·031	—·001	·004	·002
1932/33	—·043	—·044	—·001	·000	·002
1933/34	·019	·008	·000	·009	·002
1934/35	—·002	—·012	—·001	·009	·002
1935/36	·010	—·004	—·000	·012	·002
1936/37	·011	—·007	·001	·015	·002
1937/38	·025	·000	·003	·020	·002
1938/39	—·002	—·209	·000	·025	·002

*From 1841–1911. Selected periods of 11, 11 and 5 years thereafter.

It is of interest to observe that in spite of the losses of young men during the 1914/18 war and of the disastrous effect that it was publicly feared this would have on the marriage prospects of young women at the time, the marriage position which had only recently become favourable from the fertility point of view, was substantially maintained in the 1921/31 decade.

The mortality component (column 6 of table) has been consistently positive. Its operation has been mainly that of discounting the heavy negative contributions of the other factors and its cumulative effect over the 100 years has been considerable. In the nature of things, however, the more mortality is reduced, the less room there is for further reduction and the tendency must be for the comparatively small present contribution of about ·02 per decade to diminish still further in the future.

Fertility and Infertility recorded at Death Registration.

Under the Population Statistics Act of 1938, the record obtained at registration of deaths of persons over 16 years of age has been extended to include a statement of marital condition together with the age of the surviving spouse in the case of the married ; and in respect of each woman who was or had been married, the duration of the last marriage and whether or not she had had any children by her present or any previous husband. Designating the women who had thus had children as Fertile and those who had not had children as Infertile, the incidence of Fertility and Infertility amongst such women is analysed in Tables TT to WW. The nature of the analyses is considered at length in the special 1938 report (1938 Annual Review Part II page 158) where they are discussed in relation to the statistics of the second half of 1938. The 1939 distribution is generally similar as will be seen from the summaries of the two years extracted and compared below.

	Deceased Married Women		Deceased Widows and Divorced Women	
	1938 (2nd half)	1939	1938 (2nd half)	1939
Numbers				
Infertile	5997	13337	4868	11633
Fertile	29508	64506	33830	79042
Not stated	2846	6505	2890	7231
Total	38351	84348	41588	97906
Percentage of not stated to total ...	7·4	7·7	6·9	7·4
Infertile per 1,000 stated	169	171	126	128

The total records for the whole of 1939 were considerably more than double those of the second half of 1938, due to the customary excess mortality which occurs in the first quarter of the year and which therefore is included in the 1939 experience but not in 1938. The proportion of cases in which the information regarding previous children was not forthcoming is maintained at the comparatively high figure of between 7 and 8 per cent but, as indicated in the 1938 special report, the bulk may be accounted for by circumstances in which either the questions eliciting the information were not asked (cases dealt with by coroners) or in which the facts were not known to the informant registering the death ; their omission is not regarded as introducing material distributional bias.

For all ages taken together the recorded proportions infertile were fractionally higher in 1939 both for the married and widowed sections but the increase is within the range of casual variation and little significance is to be attached to it in this form.

When the proportions infertile (per 1,000 stated) are set out by successive ages an element of uniformity in the 1938/39 change is disclosed, in that for married women all the declines are at ages below 45 and all the increases above that age, a similar division occurring for widows but with 55 as the dividing age.

Age at death	Deceased Married Women			Deceased Widows and Divorced Women		
	1938 2nd half	1939	Increase or decrease (—)	1938 2nd half	1939	Increase or decrease (—)
under 25	405	393	—12	—	—	—
25—	295	278	—17	216	197	—19
35—	201	199	—2	248	216	—32
45—	173	177	+4	165	160	—5
55—	153	153	—	141	152	+11
65—	135	146	+11	129	129	—
75 and over	153	159	+6	118	122	+4

By comparing the 1939 infertiles of the several increase and decrease sections with those which would have eventuated had the 1938 age proportions operated, declines in infertility of about 3 and 6 per cent are indicated for married women under 45 and widows under 55 respectively as against increases of 4 and 3 per cent in the corresponding sections at older ages. The size and consistency

Infertile proportions per 1,000 stated. 1939

Disease	Ages under 45				Ages over 45			
	Actual	Expected	Standard error ± (approx.)	Excess or Defy (—) of Actual	Actual	Expected	Standard error ± (approx.)	Excess or Defy (—) of Actual
Diseases showing association with infertility								
Tuberculosis	288	267	8	21*				
Syphilitic Diseases ...	296	222	39	74	230	163	21	67*
Cancer of Ovaries and Fallopian Tubes ...	341	218	36	123*	264	161	15	103*
Cancer of Genital Organs n.e.s.					224	157	33	67*
Cancer n.e.s.					166	156	5	10*
Exophthalmic Goitre ...					197	161	16	36*
Chronic Endocarditis and Valvular Disease ...	291	236	14	55*				
Diseases showing association with Fertility								
Cancer of Uterus ...	174	210	17	—36*	151	161	8	—10
Anaemias	205	245	35	—40				
Diseases of Myocardium...					146	154	2	—8*
Gallstone and Gall Bladder diseases					114	157	13	—43*
Diseases of Urinary Organs n.e.s.					125	158	17	—33
Diseases of Genital Organs (non-puerperal) ...	170	239	40	—69	123	165	32	—42
Diseases showing association with both Fertility and Infertility in the separate age sections								
Cancer of Breast	163	210	16	—47*	200	159	7	41*
Diabetes	331	242	39	89*	93	153	6	—60*
Cerebral Haemorrhage Arterio Sclerosis ...	238	207	27	31	145	154	3	—9*
Nephritis	294	235	19	59*	145	158	7	—13

n.e.s. = not elsewhere specified

of the changes are more than can be ascribed to chance variation but further records in the series must be awaited before it can be seen whether they are influenced by factors of consequence other than those bequeathed by the long continued decline in the birth rates of the past.

Table VV classifies the infertility proportions in the case of married women by cause of death with the object of throwing light on the existence of possible association between different types of diseases and infertility or fertility as the case may be. As the age distribution of the deaths varies greatly for different causes, the 1939 comparison in respect of each disease group has been made between the actual numbers of cases returned as infertile with those that would have obtained if the " all causes " age proportions of infertility had operated. In the summary on the opposite page two age sections, below and above 45, have been kept separate and only those experiences shown where the existence of some association seems likely as judged from the fact that the difference between the actual and expected infertilities exceeds the standard error. Differences exceeding twice the standard error are marked with a * indicating that the relation may be regarded as more than an accidental association.

The experience is generally similar to that of 1938 reported on more fully in the special 1938 report, the only difference of possible significance pertaining to cancer of the breast in respect of which deaths at ages under 45 appear in 1939 to have been definitely associated with above average fertility as compared with a contrary though less well established association in 1938 ; for both years association of the deaths at older ages with low fertility is marked. The building up of a larger body of experience by the accumulation of several years' records must be awaited before a detailed examination of the association of fertility with separate diseases can be satisfactorily undertaken.

Age of surviving spouse.

Table XX (Part II) gives the ages of surviving husbands in combination with the ages at death of deceased married women, and the complementary ages of surviving wives with the ages of deceased married men, it being noted that the Table XX record makes no allowance for deaths in which marital condition of the deceased was not stated. Record of the not stated cases will be found in Tables 19 and 19A of Part I. Deaths of non-civilians after the 3rd September, 1939 are excluded from all these tables.

STILLBIRTHS.

Stillbirths were not registered in England and Wales prior to 1st July, 1927, when the Births and Deaths Registration Act, 1926, came into operation for that purpose, but some records, obtained from notifications to Medical Officers of Health, were published in reports of the Chief Medical Officer to the Ministry of Health from 1919 onwards. These were summarised in the text volume of the Statistical Review for 1927, page 128.

Under the Population (Statistics) Act which came into operation on 1st July, 1938, additional information regarding marital history and previous children is now required at the time of registration of every birth, including stillbirths. The effects of maternal age and birth order are discussed on pages 133 and 134 of Part II of the Statistical Review for 1938 and comparable figures for 1939 are summarized on pages 221 and 222 of this volume.

The Registration of Stillbirths (Scotland) Act, 1938, came into force on 1st January, 1939, and a comparison of stillbirth proportions in Scotland in 1939 with those in England and Wales will be found on pages 221 and 222.

No provision has yet been made for obtaining a record of the causes of stillbirth in England and Wales but information on this subject will be found for Scotland in the Eighty-Fifth Annual Report of the Registrar-General for Scotland, 1939.

Compared with 1937 the stillbirths registered in England and Wales in 1938 and 1939 and their proportions per thousand total and live births respectively were as follows :—

	Numbers of Stillbirths.			*Per* 1,000 *total births.*			*Per* 1,000 *live births.*		
	Persons.	*Males.*	*Females*	*Persons.*	*Males.*	*Females.*	*Persons.*	*Males.*	*Females.*
1937 ...	24,806	13,479	11,327	39	41	37	41	43	38
1938 ...	24,729	13,349	11,380	38	40	36	40	42	38
1939 ...	24,309	13,105	11,204	38	40	36	39	41	37

The proportion of all stillbirths to total births which remained almost constant at 40 or 41 per 1,000 from 1928, the first complete year of registration, to 1936 has now begun to fall slowly.

Table CXIV shows the regional and density distribution of stillbirths according to sex and legitimacy in 1938 and 1939 and the geographical incidence of still-births, live-births, neo-natal mortality and infant mortality.

From this table it will be seen that in England the proportion of stillbirths to 1,000 total births ranges, as in previous years, from low rates in Greater London and the remainder of the South-East, 30·5 and 32·6 respectively in 1939, to high rates of 42·3 and 44·1 in North III and IV, or from 19 per cent. below average in the case of Greater London to 17 per cent. above in North IV. The proportions in Wales are consistently higher, amounting to 49·4 or 31 per cent. above average in Wales I and 47·1 in Wales II. The density aggregates show that the rate for the smaller urban areas is generally slightly in excess of that for the county boroughs while rural areas have the lowest rate.

The distribution by sex and legitimacy shows that the frequency of still-births is greater in males than in females and in the illegitimate than in the legitimate ; the few exceptions to be found among the rates in the table being based on very small figures and therefore subject to a good deal of chance variation. Geographically, the proportions by sex and legitimacy follow very closely the relative distribution of the total.

Comparing the regional distribution of stillbirths with that of live births the range of variation is greater than in the case of live births and is also somewhat different geographically. Greater London instead of being about 19 per cent. below average as for stillbirths is only about 6 per cent. below for legitimate live births and Wales I is only 3 or 4 per cent. above. The lowest legitimate live birthrate in 1939 occurred in the South-West, 8 per cent. below average, and the highest in Midland I with 11 per cent. above. Still further variation occurs in the case of the illegitimate but with some inconsistency probably due to the small numbers involved.

The last three columns of the table compare stillbirth frequencies with neo-natal and infant mortalities and show some similarity in the regional distribution especially between stillbirth frequency and neo-natal mortality. The 1938 and 1939 figures show tendencies similar to those of 1933–7 which were fully discussed in the infant mortality section of the 1937 Text volume, pages 45 *et. seq.*

The extremes of local variation in stillbirth proportions will be found in Table CXV, which shows the boroughs and the county urban and rural aggregates exhibiting the highest and lowest rates in 1938 and 1939.

Table CXVI furnishes a comparison of live births with stillbirths in the years 1928 to 1939. It shows that the stillbirth rate per 1,000 population has continued to fall with small fluctuation to its lowest level of 0·59 in 1939 although the corresponding live birth rate, see Table C, reached its lowest level of 14·4 in 1933 and has since recovered to 15·1 in 1938 and 14·9 in 1939. The apparent beginning of a fall in the proportion of stillbirths to total births has already been mentioned.

Table CXIV.—Stillbirths, 1938 and 1939

Area	Stillbirths per 1,000 total births.					Stillbirths per 1,000 total births and Live Births per 1,000 population expressed in relation to corresponding rate for England and Wales taken as 1,000				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		
	Total	Legitimate		Illegitimate		Stillbirths		Live Births		Still-births	Deaths under 4 weeks	Deaths under 1 year
		Males	Fe-males	Males	Fe-males	Legiti-mate	Illegi-timate	Legiti-mate	Illegi-timate			
1938												
England and Wales	**38·3**	**40**	**36**	**51**	**49**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**
Regional Summary—												
South-East	32·2	34	29	47	43	886	901	951	1,047	841	819	884
Greater London	31·2	32	29	46	45	804	915	944	1,063	815	801	944
Remainder of South East	33·8	36	31	48	38	881	877	958	1,047	883	845	796
North	42·3	44	40	55	51	1,106	1,071	1,035	1,000	1,104	1,144	1,144
North I	38·6	41	35	47	50	1,011	970	1,118	953	1,008	1,197	1,194
North II	37·1	36	38	42	48	971	909	1,097	1,328	969	1,120	1,125
North III	41·2	43	39	50	38	1,087	891	1,014	1,000	1,076	1,109	1,029
North IV	45·5	47	42	65	60	1,185	1,260	1,007	922	1,188	1,147	1,194
Midland	38·0	39	36	51	50	992	1,014	1,076	922	992	1,033	994
Midland I	37·5	39	35	51	49	979	1,002	1,104	906	979	1,040	1,013
Midland II	39·1	39	38	52	51	1,021	1,036	1,028	938	1,021	1,017	955
East	37·0	40	33	40	49	968	901	965	1,125	966	960	840
South-West	39·4	42	36	38	42	1,040	800	903	922	1,029	999	883
Wales	50·5	51	48	71	73	1,312	1,458	1,021	922	1,319	1,151	1,077
Wales I	51·4	51	50	78	69	1,339	1,488	1,035	813	1,342	1,159	1,092
Wales II	48·2	50	44	59	80	1,241	1,407	979	1,219	1,258	1,130	1,036
Density Summary of all Areas outside Greater London—												
County boroughs ...	39·9	42	37	52	53	1,042	1,054	1,042	1,078	1,042	1,092	1,142
Other Urban Districts ...	41·2	42	39	51	47	1,082	986	1,007	875	1,076	1,024	945
Rural Districts	38·3	40	35	55	47	997	1,020	1,000	984	1,000	1,017	898
1939												
England and Wales	**37·8**	**39**	**35**	**49**	**44**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**
Regional Summary												
South-East	31·4	33	29	43	37	829	853	944	1,040	831	822	819
Greater London	30·5	32	28	43	35	805	831	930	1,016	807	826	864
Remainder of South-East	32·6	34	31	42	41	861	885	965	1,072	862	818	756
North	42·4	44	40	57	44	1,123	1,086	1,028	1,002	1,122	1,160	1,180
North I	40·4	41	39	52	52	1,067	1,111	1,105	989	1,069	1,179	1,257
North II	38·6	40	36	54	34	1,022	955	1,084	1,337	1,021	1,055	1,170
North III	42·3	44	40	60	46	1,118	1,134	993	976	1,119	1,135	1,084
North IV	44·1	46	42	58	43	1,171	1,084	1,007	956	1,167	1,192	1,205
Midland	38·1	39	36	50	45	1,011	1,015	1,084	923	1,008	1,019	1,029
Midland I	38·0	40	35	53	50	1,003	1,100	1,119	904	1,006	1,032	1,052
Midland II	38·4	39	38	43	36	1,024	857	1,021	960	1,016	994	982
East	35·6	37	33	40	45	944	910	979	1,139	942	877	832
South-West	36·9	39	34	44	61	968	1,128	916	941	976	978	845
Wales	48·8	51	45	63	71	1,286	1,423	1,021	909	1,291	1,155	1,185
Wales I	49·4	53	45	53	61	1,313	1,210	1,035	792	1,307	1,130	1,194
Wales II	47·1	47	43	80	87	1,206	1,774	979	1,214	1,246	1,220	1,159
Density Summary of all Areas outside Greater London—												
County Boroughs ...	40·0	42	38	52	42	1,062	1,002	1,084	1,080	1,058	1,077	1,149
Other Urban Districts ...	40·2	42	38	48	51	1,067	1,064	1,014	912	1,064	1,010	976
Rural Districts	37·4	38	35	54	49	981	1,105	1,007	989	989	1,031	946

Table CXV.—Stillbirths, 1938 and 1939. Range of local variation. Stillbirths per 1,000 total births.

Note.—Areas in which fewer than 20 stillbirths were registered are omitted.

Metropolitan Boroughs		County Boroughs		Urban Aggregates (Excluding County Boroughs)		Rural Aggregates	
			Highest				
			1938				
Finsbury	49	Blackpool	66	Carmarthen	57	Brecon	68
Paddington	38	Merthyr Tydfil	62	Glamorgan	53	Monmouth	63
St. Marylebone	35	Bury	55	Monmouth	53	Caernarvon	60
Hackney	34	Warrington	54	Lincs.: Kesteven	51	Flint	58
		Swansea	54	Lancashire	50	Huntingdon	55
			1939				
St. Marylebone	37	Eastbourne	70	Anglesey	88	Caernarvon	54
Shoreditch	35	Merthyr Tydfil	59	Ely, Isle of	57	Cardigan	54
Deptford	34	Barnsley	57	Glamorgan	54	Huntingdon	53
Lewisham	34	Blackburn	55	Monmouth	52	Brecon	53
		Oldham	55			Denbigh	53
			Lowest				
			1938				
Kensington	27	Bath	29	Peterboro', Soke of	30	Berks.	31
Lewisham	27	Smethwick	29	Surrey	29	Lincs: Lindsey	30
Westminster	27	Croydon	28	Sussex East	29	Bucks	26
Battersea	26	Northampton	27	Warwick	28	Herts	26
Bermondsey	24	West Ham	27				
			1939				
Poplar	25	Croydon	30	Surrey	30	Hereford	28
Woolwich	25	East Ham	30	Sussex, East	30	Northumberland	28
St. Pancras	24	Gloucester	30	Wight, Isle of	30	Hertford	27
Battersea	20	Lincoln	30	Dorset	27	Sussex, West	27
		Oxford	30	Yorks, E.R.	26	Bucks	23
		Reading	29				
		Tynemouth	26				

Table CXVI.—Comparison of Live Births and Stillbirths, 1928–1939.

Year	Stillbirths per 1,000—		Male births per 1,000 female births				Illegitimate births per 1,000—			
			Live births		Stillbirths		Live births		Stillbirths	
	Population of all ages	Total births (live and still)	Total	Illeg.	Total	Illeg.	M.	F.	M.	F.
Col. (1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1928	0·70	40·1	1,044	1,041	1,210	1,297	44·9	45·1	64·8	60·5
1929	0·68	40·0	1,043	1,021	1,259	1,311	45·1	46·0	62·9	60·4
1930	0·69	40·8	1,044	1,049	1,235	1,233	45·9	45·6	61·0	61·1
1931	0·67	40·9	1,049	1,059	1,248	1,250	44·6	44·2	61·8	61·7
1932	0·66	41·3	1,050	1,042	1,216	1,197	43·8	44·2	56·5	57·3
1933	0·62	41·4	1,046	1,021	1,180	1,137	43·3	44·3	56·1	58·2
1934	0·62	40·5	1,055	1,049	1,188	1,102	43·0	43·3	56·2	60·7
1935	0·63	40·7	1,056	1,046	1,184	1,065	41·7	42·1	48·6	54·0
1936	0·61	39·7	1,054	1,037	1,196	1,171	40·8	41·5	52·8	53·9
1937	0·60	39·0	1,056	1,065	1,190	1,178	41·7	41·3	54·1	54·6
1938	0·60	38·3	1,051	1,047	1,178	1,091	42·4	42·6	53·8	57·8
1939	0·59	37·8	1,050	1,039	1,170	1,172	41·6	42·1	52·5	52·4

From the columns relating to masculinity it will be seen that while amongst legitimate live births the ratio of males to females continue to vary round a percentage excess of about 5, the ratio amongst stillbirths fell from an average of 1,234 per 1,000 in the first five years of the table to 1,180 in 1933 and after rising again slightly to 1,196 in 1936 has now fallen to 1,170. Illegitimate births, both live and still, follow courses similar to the legitimate but with wider variation.

Table CXVII.—Stillbirths per 1,000 Total Births according to Birth Order and Maternal Age. England and Wales, 1938 (second half) and 1939 and in Scotland, 1939.

NOTES.—(1) The figures throughout relate to legitimate births only. For England and Wales the rates by parity are based on legitimate single births only, but in Scotland multiple births are included. For all parities in the respective mothers' age groups a line is added with rates including multiple births in England and Wales.

(2) Rates based on less than 25 stillbirths are shown in italics.

Order of Birth (parity)	England and Wales		Scotland	England and Wales		Scotland
	2nd half 1938	1939	1939	2nd half 1938	1939	1939
	Mothers of All Ages			Mothers aged 30–34		
1st	41	40	49	55	55	62
2nd	24	24	30	26	28	35
3rd	30	31	32	30	31	45
4th	34	38	41	28	37	44
5th	42	42	43	29	37	45
6th	47	45	43	42	35	38
7th	49	50	53	43	41	38
8th	53	54	59	36	38	*33*
9th	57	63	58	*48*	56	*48*
10th	51	76	61	*41*	*71*	*26*
11th and later	74	70	86	*62*	*40*	*30*
Total (single births)	36	36	?	37	39	?
(incl. multiple)	38	37	42	38	40	46
	Mothers aged under 20			Mothers aged 35–39		
1st	27	27	29	82	80	98
2nd	*20*	18	*32*	40	37	46
3rd	*26*	*33*	*19*	45	40	42
4th	—	—	—	45	48	58
5th	—	—	—	48	48	61
6th	—	—	—	47	49	52
7th	—	—	—	43	52	66
8th	—	—	—	52	53	68
9th	—	—	—	54	57	49
10th	—	—	—	45	76	*66*
11th and later	—	—	—	67	64	106
Total (single births)	26	26	?	51	51	?
(inc. multiple)	27	27	29	53	52	62
	Mothers aged 20–24			Mothers aged 40–44		
1st	31	30	37	117	113	
2nd	18	18	21	51	52	
3rd	20	23	16	60	60	
4th	21	28	*27*	63	56	
5th	*20*	*27*	*35*	72	67	
6th	—	*30*	*25*	69	68	
7th	—	*45*	—	69	66	
8th	—	—	—	65	63	Not available
9th	—	—	—	66	67	
10th	—	—	—	57	74	
11th and later	—	—	—	69	73	
Total (single births)	27	26	?	68	67	?
(inc. multiple)	27	27	29	69	68	73
	Mothers aged 25–29			Mothers aged 45 and over		
1st	40	38	48	*128*	*144*	
2nd	22	21	29	*91*	*92*	
3rd	23	25	27	*101*	*103*	
4th	26	29	31	*134*	*73*	
5th	39	32	25	*114*	*83*	
6th	39	34	*30*	*44*	*84*	
7th	*46*	*25*	*35*	*93*	*96*	
8th	*26*	*70*	*30*	*97*	*96*	
9th	*30*	*53*	—	*72*	*121*	
10th	—	*22*	—	*84*	*90*	Not available
11th and later	—	*18*	—	123	*92*	
Total (single births)	31	30	?	101	95	?
(inc. multiple)	32	31	36	104	97	139

The ratio of illegitimate live births to legitimate fell from a maximum level of 45·9 in 1930 for males and of 46·0 in 1929 for females to 40·8 for males in 1936 and 41·3 for females in 1937 and has shown a tendency to increase during the war years. The corresponding ratios for stillbirths which stood in 1928 at 64·8 and 60·5 compared with 44·9 and 45·1 for live births have fallen with some irregularity but faster than for live births and have reached minima of 52·5 for males and 52·4 for females in 1939.

Birth Order and Maternal Age.—Table CXVII compares legitimate stillbirth frequencies in England and Wales in 1938 and 1939 and those for the latter year with nearly corresponding figures for Scotland. The correspondence by birth order is not exact since the England and Wales figures relate to single births only whereas the figures for Scotland include multiple births. The effect of the difference may however, be gauged to some extent from the additional totals which show at each mother's age group without distinction of parity the frequencies in England and Wales when multiple births are included. The effect of the inclusion is seen to increase the rates only by one or two per 1,000 except in the small group of mothers ages 45 and over, where the increase is two or three.

The England and Wales rates for 1939 are in close accord with those for the second half of 1938, the first period for which the information was available. They confirm the observations made in Part II 1938, pages 133 and 134, that stillbirth frequency is generally at its highest among first-born children, dropping to its lowest level for the second child and thereafter increasing with the number of previous children. In only a few cases, and those associated with small numbers, did the higher parity frequencies exceed those of the first born. In 1939, as in 1938, stillbirth risk for children of similar birth order generally increased progressively with advancing age of the mother.

Comparing the 1939 figures for England and Wales with those for Scotland the same general order is observed of increase of frequency with advancing age of mother, but there is less conclusive evidence of increase in the higher parities. It does appear, however, that while the frequency of stillbirth is definitely at its lowest in England and Wales for the second child, there is a tendency in Scotland for the third child to share the lowest risk with the second.

The following figures show the ratio of stillbirth risk in Scotland to that in England and Wales for children of all parities and for first-born children, the latter after allowance for multiple births has been made to the England and Wales figures.

	Mothers of all ages	*Under 20*	20–24	25–29	30–34	35–39
All parities	1·14	1·07	1·07	1·16	1·15	1·19
First born	1·19	1·03	1·19	1·22	1·10	1·20

For all parities Scotland shows a stillbirth risk 14 per cent. in excess of that of England and Wales, the excess increasing generally from 7 per cent. for mothers under 20 to 19 per cent. for mothers aged 35–39. For the first born the average excess for all legitimate children appears to be still greater, 19 per cent., but the range with age is greater and its advance with age stops at 29. The figures for one year may not, however, be sufficient to provide a valid test and further information must be awaited to establish any definite tendencies.

GREAT BRITAIN, NORTHERN IRELAND AND EIRE

Population.—The first complete census of Great Britain and Ireland 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 Census figures for 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 population of the several portions of Great Britain and Ireland for each census year from 1821 and for individual years from 1899 are set out in Table A (Part II).

The estimated population and the number of marriages, births, deaths and deaths of infants under 1 year of age in the years 1938 and 1939 together with the corresponding rates for the decennium 1921–30 and individual years from 1931–1939, inclusive, are shown in Table CXVIII :—

Table CXVIII.—Great Britain and Ireland. Vital Statistics. 1921–30 and 1931–9.

	Great Britain and Ireland	England and Wales	Scotland	Northern Ireland	Eire
Estimated Population in the middle of the years 1938 and 1939 (in thousands)					
Males 1938	24,327	19,792	2,405	625	1,505
Females 1938	26,104	21,423	2,588	661	1,432
Persons 1938	50,431	41,215	4,993	1,286	2,937
Males 1939	24,465	19,920	2,412	630	1,503
Females 1939	26,231	21,540	2,595	665	1,431
Persons 1939	50,696	41,460	5,007	1,295	2,934
Marriages					
1938	424,025	361,768	38,747	8,617	14,893
1939	510,340	439,694	46,257	9,185	15,204
Persons married per 1,000 living :—					
1921–1930	14·9	15·5	13·8	12·1	9·5
1931	14·9	15·6	13·5	11·9	9·0
1932	14·6	15·3	13·6	11·1	8·8
1933	15·1	15·8	13·9	12·1	9·4
1934	16·2	16·9	15·0	13·0	9·6
1935	16·5	17·2	15·3	13·9	9·7
1936	16·6	17·4	15·3	14·3	10·0
1937	16·8	17·5	15·4	13·5	10·0
1938	16·8	17·6	15·5	13·4	10·1
1939	20·1	21·2	18·5	14·2	10·4
Births					
1938	792,498	621,204	88,627	25,742	56,925
1939	787,561	619,352	86,899	25,240	56,070
Per 1,000 living :—					
1921–1930	18·8	18·3	21·5	22·1	20·2
1931	16·5	15·8	19·0	20·7	19·5
1932	16·0	15·3	18·6	20·1	19·1
1933	15·1	14·4	17·6	19·6	19·4
1934	15·5	14·8	18·0	20·1	19·5
1935	15·4	14·7	17·8	19·5	19·6
1936	15·5	14·8	17·9	20·3	19·6
1937	15·5	14·9	17·6	19·8	19·2
1938	15·7	15·1	17·7	20·0	19·4
1939	15·5	14·9	17·4	19·5	19·1

Table CXVIII (*contd.*).—**Great Britain and Ireland. Vital Statistics. 1921–30 and 1931–9.**

	Great Britain and Ireland	England and Wales	Scotland	Northern Ireland	Eire
Deaths					
1938	599,472	478,829	62,953	17,649	40,041
1939	623,476	499,804	64,413	17,542	41,717
Per 1,000 living :—					
1921–1930	12·5	12·1	13·7	15·1	14·5
1931	12·6	12·3	13·3	14·5	14·6
1932	12·4	12·0	13·5	14·2	14·6
1933	12·5	12·3	13·2	14·4	13·7
1934	12·0	11·8	12·9	13·9	13·2
1935	12·1	11·7	13·2	14·6	14·0
1936	12·5	12·1	13·4	14·4	14·4
1937	12·8	12·4	13·9	15·1	15·3
1938	11·9	11·6	12·6	13·7	15·6
1939	12·3	12·1	12·9	13·5	14·2
Deaths of Infants under 1 year					
1938	44,614	32,724	6,163	1,933	3,794
1939	42,615	31,190	5,955	1,779	3,691
Per 1,000 live births :—					
1921–1930	74	72	89	81	70
1931	69	66	82	73	69
1932	69	65	86	83	72
1933	66	64	81	80	65
1934	62	59	78	70	63
1935	61	57	77	86	68
1936	63	59	82	77	74
1937	62	58	80	77	73
1938	55	53	70	75	67
1939	54	50	69	70	66

It will there be seen that, while the increases in the marriage rates in the years 1931–8 were shared to a great extent by each of the four countries the abnormal rise in 1939, which has been referred to earlier on page 162, was confined to England and Wales and Scotland.

In Great Britain and Ireland as a whole the rates in 1938 and 1939 compared with the average recorded in 1921–30 as follows :—

Marriage-rate (per 1,000 living).—1·9 above in 1938 and 5·2 above in 1939.

Birth-rate (per 1,000 living).—3·1 below in 1938 and 3·3 below in 1939.

Death-rate (per 1,000 living).—0·6 below in 1938 and 0·2 below in 1939.

Infant Mortality (deaths under 1 year per 1,000 live births).—19 below in 1938 and 20 below in 1939.

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 and Wales, Scotland, Northern Ireland and Eire. Similar returns are furnished in peace-time by officers in command of His Majesty's Ships, but these are suspended during war and a complete return covering the whole war period is supplied by the Admiralty as soon as possible after the suspension of hostilities. The returns of births and deaths at sea received by the Registrar-General constitute the "Marine Register Book."

During the year 1938 this register was increased by the addition of 93 births and 1,212 deaths and in 1939 by 47 births and 1,030 deaths exclusive, of course, of such entries as may later be furnished by the Admiralty.

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 1938 by 1,823,736 and during 1939 by 1,998,642 bringing the total at the end of 1939 embracing a period of 102½ years to 174,127,542.

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 the General Register Office under statute or other arrangement. A revised list of these various registers and records will be found on pages 149–155 of the Statistical Review for 1925 (Text volume). Searches may be made in any of these registers, and certificates obtained on payment of the prescribed fees.

Table CXIX affords an indication of the extent to which the copies of the records kept by the Registrar-General have been utilized since 1866.

The 506,351 and 649,741 gratuitous searches made in 1938 and 1939 comprise 44,312 and 39,474 made for the purpose of verifying the ages of persons aged 70 years and upwards and certain blind persons claiming old age (non-contributory) pensions ; 241,770 and 265,494 for persons claiming pensions under the Widows', Orphans' and Old Age Contributory Pensions Acts, 1925 and 1929 ; 79,371 and 74,077 for verification purposes in connection with claims to widows' and orphans' pensions under those Acts ; 64,613 and 200,721 to assist dependants of men of H.M. Forces to produce evidence of marriage and of the births of children in connection with claims to naval and military pensions, separation allowances, etc., and to verify the ages of certain classes of youths and men in connection with service in the Navy, Army and Air Force ; 45,795 and 38,617 for verification of age, etc., in connection with National Health and Unemployment Insurance ; and 30,490 and 31,358 for other public purposes.

Offences against the Registration Acts.—In 1938 8 persons, on prosecution by order of the Registrar-General, were convicted for failing to register a birth and in 1939 10 persons were so convicted.

Proceedings were taken, also, by the Director of Public Prosecutions or by the police under the Perjury Act, 1911, in a number of cases where false information had been given (1) by an informant in regard to particulars required to be registered in an entry of birth, stillbirth, marriage or death or (2) for the purpose of procuring marriage.

Table CXIX.

Years	Total Searches	Gratuitous Searches	Searches paid for by Fees	Certificates Issued	Amount Received £	s.	d.
1866 (52 weeks) ...	12,135	—	12,135	10,017	1,860	15	6
1875 (52 weeks) ...	26,356	—	26,356	20,282	3,879	15	6
1885 (52 weeks) ...	36,450	—	36,450	27,682	5,317	13	6
1895 (52 weeks) ...	53,289	—	53,289	35,727	7,200	12	6
1905 (52 weeks) ...	65,142	—	65,142	50,310	9,611	9	0
1906 (52 weeks) ...	64,340	—	64,340	49,429	9,458	6	0
1907 (52 weeks) ...	69,249	—	69,249	53,058	10,194	9	0
1908 (53 weeks) ...	72,370	—	72,370	54,870	10,550	8	0
1909 (52 weeks) ...	132,169	58,626*	73,543	54,674	10,568	8	0
1910 (52 weeks) ...	126,716	51,347	75,369	57,019	10,939	5	6
1911 (52 weeks) ...	140,496	65,491	75,005	56,347	10,875	6	0
1912 (52 weeks) ...	149,752	69,151	80,601	61,143	11,752	6	0
1913 (52 weeks) ...	150,540	71,225†	79,315	60,356	11,613	19	0
1914 (53 weeks) ...	188,040	104,593	83,447	65,817	12,482	11	6
1915 (52 weeks) ...	202,939	118,788	84,151	69,746	13,007	10	0
1916 (52 weeks) ...	303,334	197,669	105,665	88,265	16,379	17	0
1917 (52 weeks) ...	272,199	177,403	94,796	80,374	14,859	14	0
1918 (52 weeks) ...	255,462	146,504	108,958	90,898	16,889	0	0
1919 (52 weeks) ...	301,913	170,670	131,243	107,067	20,017	14	6
1920 (53 weeks) ...	284,194	149,447	134,747	108,684	20,415	0	0
1921 (52 weeks) ...	258,461	131,167	127,294	99,911	18,949	10	6
1922 (52 weeks) ...	263,047	143,088	119,959	90,400	19,028	12	6
1923 (52 weeks) ...	269,822	144,118	125,704	93,701	20,875	16	0
1924 (52 weeks) ...	337,521	178,990	158,531	121,890	27,109	15	0
1925 (53 weeks) ...	488,781	339,790	148,991	115,378	25,610	2	6
1926 (52 weeks) ...	541,916	407,687	134,229	105,560	23,305	6	6
1927 (52 weeks) ...	1,002,345	854,084	148,261	115,009	25,733	16	0
1928 (52 weeks) ...	600,678	452,953	147,725	114,731	25,678	17	0
1929 (52 weeks) ...	550,742	402,853	147,889	116,768	25,903	18	0
1930 (52 weeks) ...	1,207,344	1,053,047	154,297	121,549	26,964	12	0
1931 (53 weeks) ...	651,414	509,267	142,147	109,163	24,323	1	6
1932 (52 weeks) ...	598,624	464,985	133,639	104,420	23,086	13	0
1933 (52 weeks) ...	591,668	455,664	136,004	108,050	23,790	11	0
1934 (52 weeks) ...	562,849	424,943	137,906	111,265	24,378	14	6
1935 (52 weeks) ...	591,056	443,783	147,273	119,351	26,221	9	6
1936 (53 weeks) ...	630,842	473,616	157,226	128,572	28,219	19	3
1937 (52 weeks) ...	662,195	494,045	168,150	138,401	30,336	16	0
1938 (52 weeks) ...	668,246	506,351	161,895	145,412	32,564	8	8
1939 (52 weeks) ...	802,566	649,741	152,825	148,379	32,596	17	5

* Including some searches made in 1908.

† In addition, there were 91,917 gratuitous searches made for National Insurance Audit purposes.

RE-REGISTRATION OF BIRTHS UNDER THE LEGITIMACY ACT, 1926

Under the Legitimacy Act, 1926, an illegitimate child was, subject to certain conditions, legitimated by a subsequent marriage of the parents; and the Act contained incidental provision to enable the birth of such a child to be re-registered.

The numbers of authorities issued during each quarter from 1929–1939 are as follows:—

Quarter	*1929*	*1930*	*1931*	*1932*	*1933*	*1934*	*1935*	*1936*	*1937*	*1938*	*1939*
March	1,075	996	981	854	752	722	774	742	695	634	717
June	1,105	1,001	908	762	724	777	790	843	699	716	883
September ...	933	1,006	797	709	718	798	701	685	628	748	791
December ...	933	986	825	819	774	798	691	716	756	746	1,138
Totals	4,046	3,989	3,511	3,144	2,968	3,095	2,956	2,986	2,778	2,844	3,529

After the accumulation of cases reflected by the numbers in the earlier years had been disposed of, it will be seen that the figures remained comparatively steady until 1939. A significant increase in the June quarter and some increase in the September quarter of that year were followed by an increase in the December quarter amounting to 50 per cent. of the figure for the corresponding quarter of the previous year, which brought the number to a level not reached since 1927. The general increase of marriages in the September quarter of 1939 (see page 162) may have had some effect also on these figures, but it is possible that the earlier increase in the June quarter and the abnormal increase in the last quarter of the year may be not unconnected with a desire on the part of men called up for military service, to make provision for an illegitimate child and its mother by means of the service allowances made to wives and legitimate children.

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 a Court, and established a system of registration of such adoptions in an Adoption Register to be kept by the Registrar-General.

Table CXX furnishes an analysis of the Adoption Orders made by reference to the several classes of Courts and the quarterly distribution of the total figure, from which it may be seen that about 90 per cent. of the orders are made by Courts of Summary Jurisdiction. The 2,943 orders made in 1927 have increased year by year with one interruption in 1931, to 6,826 in 1939. The increases of well over 600 recorded in 1938 and 1939 have only been exceeded once, in 1930, and are about 380 in excess of the average increase in the ten preceding years.

Table CXX.

Year	Number of Adoption Orders dealt with: Total	High Court	County Court	Court of Summary Jurisdiction	Corresponding number of children, *i.e.* Entries made in Adopted Children Register: Year's Total	March Quarter	June Quarter	September Quarter	December Quarter
1927 ...	2,943	133	184	2,626	2,967	329	990	774	874
1928 ...	3,278	124	236	2,918	3,303	851	844	705	903
1929 ...	3,294	72	224	2,998	3,307	722	787	857	941
1930 ...	4,511	74	317	4,120	4,517	1,084	1,196	983	1,254
1931 ...	4,119	68	274	3,777	4,127	873	1,049	1,046	1,159
1932 ...	4,465	38	264	4,163	4,467	1,073	1,178	1,000	1,216
1933 ...	4,524	61	262	4,201	4,528	1,029	1,258	1,004	1,237
1934 ...	4,756	45	290	4,421	4,758	1,063	1,265	1,075	1,355
1935 ...	4,844	64	342	4,438	4,852	1,174	1,261	1,073	1,344
1936 ...	5,180	62	372	4,746	5,185	1,215	1,230	1,320	1,420
1937 ...	5,547	78	413	5,056	5,553	1,183	1,535	1,283	1,552
1938 ...	6,193	85	446	5,662	6,198	1,444	1,593	1,442	1,719
1939 ...	6,826	65	635	6,126	6,832	1,630	1,705	1,667	1,830

PARLIAMENTARY AND LOCAL GOVERNMENT ELECTORS.

The Returns of Parliamentary and Local Government Electors published each year in Tables U and V of Part II of the Statistical Review, summarize 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 of the respective years.

Table CXXI.—Parliamentary and Local Government Electors, 1918—1939

Register	Parliamentary Register (including University Constituencies)					Local Government Register		
	Persons	Males	Females	Business Premises Qualifications — Males only up to 1928. Persons from 1929 (included in Cols. *b–d*)	Persons on Absent Voters' List (included in Cols. *b–d*)	Persons	Males	Females
a	*b*	*c*	*d*	*e*	*f*	*g*	*h*	*k*
1918 (Autumn)	17,222,983	10,281,054	6,941,929	159,013	3,362,028	13,930,130	6,998,665	6,931,465
1919 ,,	17,465,638	10,234,887	7,230,751	205,461	1,157,061	14,361,123	7,176,019	7,185,104
1920 ,,	17,584,552	10,176,750	7,407,802	203,471	254,866	14,712,453	7,364,912	7,347,541
1921 ,,	17,795,784	10,237,344	7,558,440	194,737	185,227	15,019,348	7,527,861	7,491,487
1922 ,,	18,001,692	10,312,248	7,689,444	199,904	162,901	15,322,625	7,700,108	7,622,517
1923 ,,	18,388,833	10,498,179	7,890,654	208,694	151,953	15,691,962	7,873,461	7,818,501
1924 ,,	18,806,842	10,719,922	8,086,920	211,257	165,564	16,015,033	8,007,384	8,007,649
1925 ,,	19,167,275	10,897,545	8,269,730	217,509	167,406	16,345,290	8,157,607	8,187,683
1926 ,,	19,346,954	10,982,128	8,364,826	206,199	161,460	16,574,549	8,284,181	8,290,368
1927 ,,	19,585,972	11,094,031	8,491,941	205,538	155,436	16,865,666	8,444,718	8,420,948
1928 ,,	19,866,649	11,226,396	8,640,253	205,793	154,432	17,179,487	8,608,017	8,571,470
1929 (Spring)	25,095,793	11,866,794	13,228,999	371,594	174,731	18,620,395	8,825,225	9,795,170
1930 (Autumn)	25,730,507	12,101,108	13,629,399	364,762	174,270	18,879,147	8,905,768	9,973,379
1931 ,,	26,135,944	12,288,852	13,847,092	365,090	174,274	19,156,018	9,036,870	10,119,148
1932 ,,	26,439,713	12,440,109	13,999,604	367,684	172,234	19,418,156	9,160,409	10,257,747
1933 ,,	26,715,526	12,578,340	14,137,186	365,734	168,684	19,659,678	9,274,801	10,384,877
1934 ,,	27,031,162	12,735,465	14,295,697	367,912	166,102	19,984,911	9,428,765	10,556,146
1935 ,,	27,395,836	12,911,650	14,484,186	367,797	164,751	20,352,389	9,602,772	10,749,617
1936 ,,	27,723,561	13,067,627	14,655,934	366,835	165,911	20,712,367	9,770,974	10,941,393
1937 ,,	27,948,139	13,175,851	14,772,288	365,159	161,773	21,067,804	9,936,477	11,131,327
1938 ,,	28,183,422	13,292,980	14,890,442	360,644	160,832	21,354,421	10,068,192	11,286,229
1939 ,,	28,348,555	13,367,456	14,981,099	354,831	168,480	21,685,772	10,224,773	11,460,999

The particulars have been taken from statements furnished to the Registrar General by the Registration Officers of the several 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 CXXI and are shown in conjunction with the figures of previous Registers made since the passing of the 1918 Act.

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 4½ million women to the Parliamentary electorate and nearly 1¼ million to the Local Government electorate, and as a consequence women now out-number men by approximately 12 per cent. in the case of each.

The total Parliamentary Electorates of 28,183,422 in 1938 and 28,348,555 in 1939 include 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 figures represent 68·4 per cent. of the estimated total population, or 67·1 per cent. of the male and 69·5 per cent. of the female in both 1938 and 1939; in the case of the rather more restricted Local Government franchise, the numbers are somewhat less and the proportions correspondingly lower, the total being 51·8 per cent. in 1938 and 52·3 per cent. in 1939, or percentages of 50·9 and 51·3 in the case of males and 52·7 and 53·2 in the case of females in the respective years.

Of the total of the Parliamentary Register, the bulk, viz. 28,059,134 in 1938 and 28,218,883 represents the aggregate voting strength in the 509 geographical constituencies into which England and Wales is divided, the balance of 124,288 in 1938 and 129,672 in 1939 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 Borough and County divisions, with average electorates of 53,960 and 54,267 in the two years respectively and eight in respect of the Universities with average electorates of 15,536 and 16,209.

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, 1937.

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 YEARS 1938 AND 1939

ENGLAND AND WALES

1938

From a meteorological standpoint the year 1938 was a memorable one. Among the many remarkable features of the weather were the magnificent display of aurora observed throughout the British Isles on the evening of 25th January, the exceptional mildness of March and November, the serious

drought of February to April, the severe gales which prevailed at times, particularly those at the beginning and end of June, the remarkable series of thunderstorms during the period 1st August to 12th and the severe frost and widespread snow of 18th December to 26th. The coincidence of northerly gales with the spring tides in the North Sea caused serious flooding and much damage in eastern coastal districts of England on 12th February.

Mean temperature exceeded the average generally, the deviations for the districts ranging from +0·7° F. in the Channel Islands to +1·7° F. in England, N.E. Marked variations from the average occurred at certain periods. March, November and the first half of December were exceptionally mild ; January was mild and the first 12 days of August were warm. On the other hand, it was cold at times from 13th February to 23rd, particularly in the south and the period 18th December to 26th was exceptionally cold. May and July were cool on the whole. The extreme mildness of March was unprecedented ; with a very few exceptions stations throughout the country had the highest mean temperature on record for March.

The general rainfall of England and Wales was 101 per cent. of the average for the period 1881–1915. Less than the average occurred over most of England south of a line drawn from Liverpool to Lincoln and at numerous places in a coastal strip from Spurn Head to Berwick-on-Tweed ; less than 80 per cent. was reported in east Norfolk, over an area stretching from north Hampshire and east Berkshire to Kew Observatory (London) and at a few isolated places elsewhere. More than the average occurred, however, over a fairly large area in Devon and Cornwall, and more than 120 per cent. over a small area in south Devon (Holne 123 per cent.). In the north, more than 120 per cent. was received in areas in Yorkshire, Lancashire, Westmorland and Cumberland and more than 130 per cent. in the English Lake district and at Huddersfield, Yorkshire. In Wales, rainfall exceeded the average except at a few isolated stations and exceeded 130 per cent. locally in Montgomery. The period February to April was exceptionally dry ; the rainfall for these three months was less than for any similar period back to 1785. June was excessively wet in the Lake district and October was unusually wet also in the north-west ; at Lancaster it was the wettest October for over 75 years. A remarkable series of thunderstorms occurred during the period 1st August to 12th. The storms on the 4th were exceptionally severe in the south-west ; at Torquay, for example, 6·39 in. of rain occurred, nearly all of which fell between 5 h. and 14 h. The snowfall of the period 17th December to 26th was considerable ; undrifted snow lay to a depth of 1 foot at places as far apart as Bellingham, Oundle and Woburn on the morning of the 22nd.

The duration of bright sunshine was slightly below the average on the whole, the percentages for the districts ranging from 91 in England, S.W., to 100 in England, S.E. For the country generally the sunniest months compared with the average were March, April and December, and the dullest July and September. March was unusually sunny in the east, south-east and Midlands ; April in the western districts ; and November in the Midlands. The summer months, May to September, were dull on the whole.

1939

The year 1939 was distinguished by excessive rainfall in east and south-east England, chiefly due to the heavy rainfall of January, April, October and November. Among other notable features were the excessive rainfall over the greater part of the western half of England and almost the whole of Wales in July, the droughts and dry spells of the latter half of May and early June and during September, the considerable snowfall of January, the severe gale of

22nd–23rd January on the south-west coasts and the marked mildness of November.

Mean temperature slightly exceeded the average generally, the deviations for the districts ranging from +0·4° F. in the Channel Islands to +0·9° F. in England, N.E. Considerable variations from the average occurred at certain periods ; November was unusually mild and February mild, particularly from the 5th–12th, 15th–21st January was very mild and the periods April 9th–16th, 22nd–31st May, 3rd–7th June, 13th–31st August and 1st–9th September were mainly warm. On the other hand, the first week of January, the last days of January and the opening days of February, the latter half of October, and the latter half of December were cold on the whole, while the last three weeks of June, most of July and the first 12 days of August were rather cool.

The general precipitation of England and Wales was 114 per cent. of the average for the standard period 1881–1915 ; it was the wettest year since 1930. The distribution was very complex. Less than the average occurred over a fairly large part of north-west England, locally in north Devon and west Cornwall, over a part of Northumberland and at a few isolated stations elsewhere ; less than 90 per cent. of the average was registered in a coastal area covering part of north-west Lancashire and south Cumberland and also at Colwyn Bay and Berwick-on-Tweed. On the other hand, more than 140 per cent. was received over much of Suffolk, north-east Essex and east Kent as well as at Wolverton, Buckinghamshire, and East Ham, London. The percentage of the average was as great as 160 at Clacton-on-Sea, 158 at St. Peter's (near Broadstairs) and 156 at Folkestone. With regard to individual months, over the country generally, January, July and November were notably wet, and May, September and December markedly dry. January was the wettest month of that name since before 1868 and as far as can be estimated since 1764. July was notably wet over the western half of England and most of Wales and October exceptionally wet in east and south-east England.

Sunshine was variable but about average for the country as a whole ; the percentage of the average for the districts ranged from 95 in England, E., and the Midlands, to 102 in England, N.W. and England S.E., and 105 in the Channel Islands. The higher percentage in the last district was due to the large excess enjoyed at the Scilly Isles. Compared with the average the sunniest months for the country generally were February and April and the dullest January, March, July and November, particularly November. February was exceptionally sunny in east and south-east England and parts of the Midlands, while June and October were sunny months in north-west England, and February, April and September in the Channel Islands.

Appendix.—Fertility Data, 1841-1939, England and Wales.

I. Female Population in thousands at ages 15–50. (Census records in census years; mid-year estimates in other years.)

(a) All Marital Conditions. **(b) Married Women.**

(a) 15–20	20–25	25–30	30–35	35–40	40–45	45–50	Aggregates 15–50	Aggregates 20–40	Year	(b) 15–20	20–25	25–30	30–35	35–40	40–45	45–50	Aggregates 15–50	Aggregates 20–40
805·0	827·0	700·0	574·0	489·0	413·0	354·0	4,162·0	2,590·0	1841*	not available								
884·0	871·2	771·1	658·2	555·9	494·4	406·1	4,640·9	2,856·4	1851	22·2	268·1	450·2	468·3	421·6	373·7	300·2	2,304·3	1,608·2
974·7	969·3	834·8	725·1	634·3	583·1	477·5	5,198·8	3,163·5	1861	29·7	321·2	511·5	528·7	485·1	443·4	355·1	2,674·7	1,846·5
1,095·7	1,052·8	937·3	813·7	700·5	639·7	546·1	5,785·8	3,504·3	1871	34·6	361·3	584·7	598·3	536·6	485·2	404·1	3,004·8	2,080·9
1,279·0	1,215·9	1,066·7	905·2	796·5	726·4	603·9	6,593·6	3,984·3	1881*	32·4	402·0	661·0	682·8	617·0	548·0	445·0	3,388·2	2,362·8
1,485·7	1,399·1	1,239·1	1,049·6	916·3	801·5	694·6	7,585·9	4,604·1	1891*	28·9	414·4	731·2	762·4	697·9	608·7	509·7	3,753·2	2,605·9
1,638·6	1,648·3	1,496·2	1,273·7	1,110·9	953·1	813·2	8,934·0	5,529·1	1901	25·4	447·9	867·7	913·3	834·7	715·0	591·9	4,395·9	3,063·6
1,681·7	1,673·1	1,623·3	1,501·3	1,351·8	1,157·5	999·5	9,988·2	6,149·5	1911	20·1	404·1	906·4	1,067·0	1,016·4	873·5	728·3	5,015·8	3,393·9
1,775·2	1,703·1	1,620·3	1,519·6	1,471·9	1,378·1	1,244·0	10,712·2	6,314·9	1921	31·1	459·8	921·0	1,059·5	1,089·3	1,035·1	919·1	5,514·9	3,529·6
1,725·0	1,795·3	1,728·1	1,622·0	1,520·0	1,434·2	1,367·4	11,192·0	6,665·4	1931	31·1	461·0	1,014·4	1,188·9	1,147·4	1,074·7	1,002·2	5,919·7	3,811·7
1,681·7	1,673·1	1,623·3	1,501·3	1,351·8	1,157·5	999·5	9,988·2	6,149·5	1911	20·1	404·1	906·4	1,067·0	1,016·4	873·5	728·3	5,015·8	3,393·9
1,687·	1,636·	1,593·	1,509·	1,370·	1,201·	1,005·	10,001·	6,108·	1912	21·2	408·	896·	1,066·	1,028·	898·	749·	5,066·	3,398·
1,694·	1,634·	1,585·	1,512·	1,386·	1,225·	1,029·	10,065·	6,117·	1913	23·1	411·	892·	1,066·	1,038·	917·	768·	5,115·	3,407·
1,706·	1,641·	1,592·	1,527·	1,390·	1,269·	1,051·	10,176·	6,150·	1914	25·1	415·	898·	1,076·	1,053·	938·	788·	5,193·	3,442·
1,725·	1,639·	1,609·	1,537·	1,436·	1,276·	1,093·	10,315·	6,221·	1915	26·7	435·	918·	1,094·	1,070·	962·	808·	5,314·	3,517·
1,739·	1,667·	1,600·	1,544·	1,454·	1,303·	1,117·	10,424·	6,265·	1916	25·4	444·	930·	1,105·	1,083·	981·	828·	5,396·	3,562·
1,749·	1,676·	1,607·	1,551·	1,470·	1,324·	1,143·	10,520·	6,304·	1917	22·2	426·	916·	1,102·	1,091·	998·	849·	5,404·	3,535·
1,757·	1,683·	1,608·	1,552·	1,477·	1,346·	1,170·	10,593·	6,320·	1918	21·3	410·	891·	1,086·	1,090·	1,009·	868·	5,375·	3,477·
1,761·	1,682·	1,598·	1,541·	1,480·	1,353·	1,195·	10,610·	6,301·	1919	24·2	416·	884·	1,064·	1,084·	1,016·	884·	5,372·	3,448·
1,787·	1,673·	1,583·	1,524·	1,472·	1,380·	1,218·	10,637·	6,252·	1920	28·9	443·	904·	1,054·	1,085·	1,025·	902·	5,442·	3,486·
1,775·2	1,703·1	1,620·3	1,519·6	1,471·9	1,378·1	1,244·0	10,712·2	6,314·9	1921	31·1	459·8	921·0	1,059·5	1,089·3	1,035·1	919·1	5,514·9	3,529·6
1,775·	1,716·	1,634·	1,528·	1,468·	1,382·	1,262·	10,765·	6,346·	1922	29·3	470·	938·	1,076·	1,086·	1,036·	930·	5,565·	3,570·
1,773·	1,728·	1,646·	1,536·	1,465·	1,384·	1,276·	10,808·	6,375·	1923	27·0	465·	952·	1,092·	1,084·	1,036·	939·	5,595·	3,593·
1,772·	1,740·	1,659·	1,545·	1,464·	1,386·	1,289·	10,855·	6,408·	1924	25·7	457·	964·	1,108·	1,087·	1,036·	948·	5,626·	3,616·
1,774·	1,751·	1,670·	1,556·	1,469·	1,391·	1,302·	10,913·	6,446·	1925	25·4	455·	972·	1,124·	1,093·	1,038·	956·	5,663·	3,644·
1,775·	1,760·	1,682·	1,567·	1,474·	1,396·	1,313·	10,967·	6,483·	1926	25·5	446·	976·	1,138·	1,100·	1,040·	964·	5,689·	3,660·
1,776·	1,770·	1,692·	1,578·	1,480·	1,400·	1,324·	11,020·	6,520·	1927	26·6	441·	980·	1,150·	1,108·	1,044·	969·	5,719·	3,679·
1,776·	1,780·	1,702·	1,588·	1,488·	1,406·	1,335·	11,075·	6,558·	1928	28·1	445·	986·	1,160·	1,118·	1,049·	976·	5,762·	3,709·
1,766·	1,788·	1,712·	1,598·	1,497·	1,414·	1,345·	11,120·	6,595·	1929	29·2	448·	993·	1,170·	1,128·	1,055·	984·	5,807·	3,739·
1,747·	1,793·	1,721·	1,610·	1,508·	1,423·	1,356·	11,158·	6,632·	1930	30·4	455·	1,005·	1,180·	1,137·	1,064·	993·	5,864·	3,777·
1,725·0	1,795·3	1,728·1	1,622·0	1,520·0	1,434·2	1,367·4	11,192·0	6,665·4	1931	31·1	461·0	1,014·4	1,188·9	1,147·4	1,074·7	1,002·2	5,919·7	3,811·7
1,659·8	1,780·2	1,751·8	1,641·4	1,532·1	1,448·1	1,371·7	11,185·1	6,705·5	1932	32·9	463·1	1,022·7	1,201·3	1,161·1	1,086·4	1,004·2	5,971·7	3,848·2
1,573·4	1,769·6	1,769·5	1,663·4	1,545·5	1,456·1	1,378·3	11,155·8	6,748·0	1933	33·7	462·3	1,027·8	1,212·3	1,175·3	1,093·7	1,007·3	6,012·4	3,877·7
1,482·5	1,763·3	1,780·7	1,684·6	1,559·9	1,464·4	1,385·2	11,120·6	6,788·5	1934	35·1	470·0	1,043·7	1,223·9	1,190·3	1,102·9	1,011·5	6,077·4	3,927·9
1,538·7	1,754·2	1,784·2	1,705·8	1,577·0	1,475·6	1,395·0	11,230·5	6,821·2	1935	35·1	483·5	1,065·9	1,236·3	1,209·5	1,115·7	1,019·6	6,165·6	3,995·2
1,603·0	1,719·6	1,787·0	1,724·3	1,598·1	1,490·8	1,406·2	11,329·0	6,829·0	1936	34·7	496·4	1,089·9	1,249·9	1,230·5	1,132·1	1,029·7	6,263·2	4,066·7
1,662·1	1,670·6	1,778·6	1,738·8	1,616·5	1,504·1	1,416·2	11,386·9	6,804·5	1937	35·4	507·9	1,110·3	1,265·5	1,245·7	1,147·8	1,039·0	6,351·6	4,129·4
1,730·9	1,588·4	1,766·0	1,752·5	1,635·1	1,520·1	1,428·0	11,421·0	6,742·0	1938	37·5	514·8	1,134·9	1,285·3	1,261·0	1,166·7	1,051·4	6,451·6	4,196·0
1,797·2	1,505·4	1,763·0	1,763·2	1,655·4	1,538·5	1,441·2	11,463·9	6,687·0	1939	51·4	516·2	1,151·5	1,310·4	1,277·4	1,184·2	1,066·7	6,557·8	4,255·5

* Census records for 1841 of all women and for 1881 and 1891 of married and unmarried women are available for decennial age-groups only. To secure uniformity with other years in the series, the decennial figures have been conventionally split into their quinquennial components.

Appendix.—Fertility Data, 1841-1939, England and Wales.

I. Female Population—(*continued*)

(c) Non-married Women (Single, Widowed and Divorced) **(d) Proportion Married** (Ib ÷ Ia)

(c) 15–20	20–25	25–30	30–35	35–40	40–45	45–50	Aggregates 15–50	Aggregates 20–40	Year	(d) 15–20	20–25	25–30	30–35	35–40	40–45	45–50	Aggregates 15–50	Aggregates 20–40
Not available									1841	Not available								
861·8	603·1	320·9	189·9	134·3	120·7	105·9	2,336·6	1,248·2	1851	·0251	·3077	·5838	·7115	·7584	·7559	·7392	·4965	·563
945·0	648·1	323·3	196·4	149·2	139·7	122·4	2,524·1	1,317·0	1861	·0305	·3314	·6127	·7291	·7648	·7604	·7437	·5145	·584
1,061·1	691·5	352·6	215·4	163·9	154·5	142·0	2,781·0	1,423·4	1871	·0316	·3432	·6238	·7353	·7660	·7585	·7400	·5193	·594
1,246·6	813·9	405·7	222·4	179·5	178·4	158·9	3,205·4	1,621·5	1881*	·0253	·3306	·6197	·7543	·7746	·7544	·7369	·5139	·593
1,456·8	984·7	507·9	287·2	218·4	192·8	184·9	3,832·7	1,998·2	1891*	·0195	·2962	·5901	·7264	·7617	·7595	·7338	·4948	·566
1,613·2	1,200·4	628·5	360·4	276·2	238·1	221·3	4,538·1	2,465·5	1901	·0155	·2717	·5799	·7170	·7514	·7502	·7279	·4920	·554
1,661·6	1,269·0	716·9	434·3	335·4	284·0	271·2	4,972·4	2,755·6	1911	·0120	·2415	·5584	·7107	·7519	·7546	·7287	·5022	·552
1,744·1	1,243·3	699·3	460·1	382·6	343·0	324·9	5,197·3	2,785·3	1921	·0175	·2700	·5684	·6972	·7401	·7511	·7388	·5148	·559
1,693·9	1,334·3	713·7	433·1	372·6	359·5	365·2	5,272·3	2,853·7	1931	·0180	·2568	·5870	·7330	·7549	·7493	·7329	·5289	·572
1,661·6	1,269·0	716·9	434·3	335·4	284·0	271·2	4,972·4	2,755·6	1911	·0120	·2415	·5584	·7107	·7519	·7546	·7287	·5022	·552
1,666·	1,228·	697·	443·	342·	303·	256·	4,935·	2,710·	1912	·0126	·2494	·5625	·7064	·7504	·7477	·7453	·5065	·556
1,671·	1,223·	693·	446·	348·	308·	261·	4,950·	2,710·	1913	·0136	·2515	·5628	·7050	·7489	·7486	·7464	·5082	·557
1,681·	1,226·	694·	451·	337·	331·	263·	4,983·	2,708·	1914	·0147	·2529	·5641	·7046	·7576	·7392	·7498	·5103	·560
1,698·	1,204·	691·	443·	366·	314·	285·	5,001·	2,704·	1915	·0155	·2654	·5705	·7118	·7451	·7539	·7392	·5152	·565
1,714·	1,223·	670·	439·	371·	322·	289·	5,028·	2,703·	1916	·0146	·2663	·5813	·7157	·7448	·7529	·7413	·5177	·569
1,727·	1,250·	691·	449·	379·	326·	294·	5,116·	2,769·	1917	·0127	·2542	·5700	·7105	·7422	·7538	·7428	·5137	·561
1,736·	1,273·	717·	466·	387·	337·	302·	5,218·	2,843·	1918	·0121	·2436	·5541	·6997	·7380	·7496	·7419	·5074	·550
1,737·	1,266·	714·	477·	396·	337·	311·	5,238·	2,853·	1919	·0137	·2473	·5532	·6905	·7324	·7509	·7397	·5063	·547
1,758·	1,230·	679·	470·	387·	355·	316·	5,195·	2,766·	1920	·0162	·2648	·5711	·6916	·7371	·7428	·7406	·5116	·558
1,744·1	1,243·3	699·3	460·1	382·6	343·0	324·9	5,197·3	2,785·3	1921	·0175	·2700	·5684	·6972	·7401	·7511	·7388	·5148	·559
1,746·	1,246·	696·	452·	382·	346·	332·	5,200·	2,776·	1922	·0165	·2739	·5741	·7042	·7398	·7496	·7369	·5170	·563
1,746·	1,263·	694·	444·	381·	348·	337·	5,213·	2,782·	1923	·0152	·2691	·5784	·7109	·7399	·7486	·7359	·5177	·564
1,746·	1,283·	695·	437·	377·	350·	341·	5,229·	2,792·	1924	·0145	·2626	·5811	·7172	·7425	·7475	·7355	·5183	·564
1,749·	1,296·	698·	432·	376·	353·	346·	5,250·	2,802·	1925	·0143	·2599	·5820	·7224	·7440	·7462	·7343	·5189	·565
1,750·	1,314·	706·	429·	374·	356·	349·	5,278·	2,823·	1926	·0144	·2534	·5803	·7262	·7463	·7450	·7342	·5187	·565
1,749·	1,329·	712·	428·	372·	356·	355·	5,301·	2,841·	1927	·0150	·2492	·5792	·7288	·7486	·7457	·7319	·5190	·564
1,748·	1,335·	716·	428·	370·	357·	359·	5,313·	2,849·	1928	·0158	·2500	·5793	·7305	·7513	·7461	·7311	·5203	·566
1,737·	1,340·	719·	428·	369·	359·	361·	5,313·	2,856·	1929	·0165	·2506	·5800	·7322	·7535	·7461	·7316	·5222	·567
1,717·	1,338·	716·	430·	371·	359·	363·	5,294·	2,855·	1930	·0174	·2538	·5840	·7329*	·7540	·7477	·7323	·5255	·570
1,693·9	1,334·3	713·7	433·1	372·6	359·5	365·2	5,272·3	2,853·7	1931	·0180	·2568	·5870	·7330	·7549	·7493	·7329	·5289	·572
1,626·9	1,317·1	729·1	440·1	371·0	361·7	367·5	5,213·4	2,857·3	1932	·0198	·2601	·5838	·7319	·7578	·7502	·7321	·5339	·574
1,539·7	1,307·3	741·7	451·1	370·2	362·4	371·0	5,143·4	2,870·3	1933	·0214	·2612	·5808	·7288	·7605	·7511	·7308	·5389	·575
1,447·4	1,293·3	737·0	450·7	369·6	361·5	373·7	5,043·2	2,860·6	1934	·0237	·2665	·5861	·7265	·7631	·7531	·7302	·5465	·579
1,503·6	1,270·7	718·3	469·5	367·5	359·9	375·4	5,064·9	2,826·0	1935	·0228	·2756	·5974	·7248	·7670	·7561	·7309	·5490	·586
1,568·3	1,223·2	697·1	474·4	367·6	358·7	376·5	5,065·8	2,762·3	1936	·0216	·2887	·6099	·7249	·7700	·7594	·7323	·5528	·596
1,626·7	1,162·7	668·3	473·3	370·8	356·3	377·2	5,035·3	2,675·1	1937	·0213	·3040	·6243	·7278	·7706	·7631	·7337	·5578	·607
1,693·4	1,073·6	631·1	467·2	374·1	353·4	376·6	4,969·4	2,546·0	1938	·0217	·3241	·6426	·7334	·7712	·7675	·7363	·5649	·622
1,745·8	989·2	611·5	452·8	378·0	354·3	374·5	4,906·1	2,431·5	1939	·0286	·3429	·6531	·7432	·7717	·7697	·7401	·5720	·636

* *See* note on previous page.

Appendix.—Fertility Data, 1841-1939, England and Wales.

II. Annual Marriages of Women under age 50 (3 year averages in decennial section after 1851).

(a) Number of Women married (in hundreds) (n.s. ages rateably distributed).

15–20	20–25	25–30	30–35	35–40	40–45	45–50	Aggregates 15–50	Aggregates 20–40	Year
188·2	767·2	312·7	129·1	62·9	39·2	21·9	1521·2	1271·9	1851
179·8	825·2	346·9	131·9	71·6	47·9	27·5	1630·8	1375·6	1861
239·0	955·1	377·1	145·2	76·3	50·2	31·6	1874·5	1553·7	1871
243·9	1004·7	399·3	139·8	75·2	48·5	31·6	1943·0	1619·0	1881
231·3	1112·4	523·0	176·5	86·0	51·6	34·9	2215·7	1897·9	1891
207·7	1261·1	669·2	221·4	103·2	57·3	35·4	2555·3	2254·9	1901
186·5	1217·6	786·9	271·7	118·9	62·4	40·2	2684·2	2395·1	1911
256·2	1482·4	906·0	334·1	155·4	82·6	52·1	3268·8	2877·9	1921
285·0	1416·2	856·3	259·6	115·6	65·2	45·5	3043·4	2647·7	1931
186·	1234·	793·	269·	116·7	62·5	40·5	2702·	2413·	1911
196·	1266·	811·	283·	125·5	66·1	42·0	2790·	2486·	1912
218·	1270·	802·	287·	128·7	67·3	42·9	2816·	2488·	1913
223·	1308·	809·	296·	136·2	73·5	45·2	2891·	2549·	1914
238·	1618·	1012·	361·	169·0	91·8	56·7	3547·	3160·	1915
186·	1221·	746·	297·	150·5	86·8	52·6	2740·	2415·	1916
178·	1126·	681·	267·	140·7	81·8	52·6	2527·	2215·	1917
186·	1256·	765·	295·	151·5	89·2	59·7	2802·	2468·	1918
246·	1586·	1012·	406·	197·6	104·9	66·4	3619·	3202·	1919
279·	1686·	1037·	388·	180·6	95·0	59·9	3726·	3292·	1920
256·	1428·	860·	320·	150·0	79·1	50·4	3143·	2758·	1921
232·	1334·	821·	294·	135·7	73·7	46·0	2936·	2585·	1922
220·	1331·	791·	280·	127·3	68·8	44·8	2863·	2529·	1923
222·	1354·	804·	281·	125·6	69·8	46·6	2903·	2565·	1924
226·	1352·	803·	273·	123·3	67·9	45·6	2891·	2551·	1925
229·	1276·	754·	254·	116·8	62·4	43·6	2736·	2401·	1926
251·	1408·	839·	273·	122·9	69·4	48·4	3012·	2643·	1927
257·	1387·	824·	259·	118·6	66·9	45·4	2958·	2589·	1928
268·	1433·	859·	263·	119·5	68·5	47·1	3058·	2675·	1929
279·	1441·	861·	263·	118·8	67·9	46·7	3077·	2684·	1930
287·	1421·	855·	258·	115·4	64·6	46·0	3047·	2649·	1931
289·	1387·	853·	258·	112·6	63·1	43·9	3007·	2611·	1932
289·	1427·	903·	272·	112·7	65·1	43·6	3113·	2715·	1933
294·	1539·	980·	302·	121·1	68·0	46·1	3350·	2942·	1934
287·	1586·	996·	311·	125·0	69·6	46·2	3421·	3018·	1935
288·	1624·	995·	317·	130·8	70·3	46·9	3472·	3067·	1936
315·	1625·	989·	322·	136·4	74·0	49·8	3511·	3072·	1937
382·	1580·	975·	326·	141·8	75·8	52·1	3533·	3023·	1938
560·	1939·	1140·	368·	159·5	85·4	57·3	4309·	3607·	1939

(b) Women married per 1,000 non-married women at each age (IIa ÷ Ic).

15–20	20–25	25–30	30–35	35–40	40–45	45–50	Aggregates 15–50	Aggregates 20–40	Year
21·8	127·2	97·4	68·0	46·8	32·5	20·7	65·1	101·9	1851
19·0	127·3	107·3	67·2	48·0	34·3	22·5	64·6	104·4	1861
22·5	138·1	106·9	67·4	46·6	32·5	22·3	67·4	109·2	1871
19·6	123·4	98·4	62·9	41·9	27·2	19·9	60·6	99·8	1881
15·9	113·0	103·0	61·5	39·4	26·8	18·9	57·8	95·0	1891
12·9	105·1	106·5	61·4	37·4	24·1	16·0	56·3	91·5	1901
11·2	95·9	109·8	62·6	35·5	22·0	14·8	54·0	86·9	1911
14·7	119·2	129·6	72·6	40·6	24·1	16·0	62·9	103·3	1921
16·8	106·1	120·0	59·9	31·0	18·1	12·5	57·7	92·8	1931
11·2	97·2	110·6	61·9	34·8	22·0	14·9	54·3	87·6	1911
11·8	103·1	116·4	63·9	36·7	21·8	16·4	56·5	91·7	1912
13·0	103·8	115·7	64·3	37·0	21·9	16·4	56·9	91·8	1913
13·3	106·7	116·6	65·6	40·4	22·2	17·2	58·0	94·1	1914
14·0	134·4	146·5	81·5	46·2	29·2	19·9	70·9	116·9	1915
10·9	99·8	111·3	67·7	40·6	27·0	18·2	54·5	89·3	1916
10·3	90·1	98·6	59·5	37·1	25·1	17·9	49·4	80·0	1917
10·7	98·7	106·7	63·3	39·1	26·5	19·8	53·7	86·8	1918
14·2	125·3	141·7	85·1	49·9	31·1	21·4	69·1	112·2	1919
15·9	137·1	152·7	82·6	46·7	26·8	19·0	71·7	119·0	1920
14·7	114·9	123·0	69·6	39·2	23·1	15·5	60·5	99·0	1921
13·3	107·1	118·0	65·0	35·5	21·3	13·9	56·5	93·1	1922
12·6	105·4	114·0	63·1	33·4	19·8	13·3	54·9	90·9	1923
12·7	105·5	115·7	64·3	33·3	19·9	13·7	55·5	91·9	1924
12·9	104·3	115·0	63·2	32·8	19·2	13·2	55·1	91·0	1925
13·1	97·1	106·8	59·2	31·2	17·5	12·5	51·8	85·1	1926
14·4	105·9	117·8	63·8	33·0	19·5	13·6	56·8	93·0	1927
14·7	103·9	115·1	60·5	32·1	18·7	12·6	55·7	90·9	1928
15·4	106·9	119·5	61·4	32·4	19·1	13·0	57·6	93·7	1929
16·2	107·7	120·3	61·2	32·0	18·9	12·9	58·1	94·0	1930
16·9	106·5	119·8	59·6	31·0	18·0	12·6	57·8	92·8	1931
17·8	105·3	117·0	58·6	30·4	17·4	11·9	57·7	91·4	1932
18·8	109·2	121·7	60·3	30·4	18·0	11·8	60·5	94·6	1933
20·3	119·0	133·0	65·6	32·8	18·8	12·3	66·4	102·8	1934
19·1	124·8	138·7	66·2	34·0	19·3	12·3	67·5	106·8	1935
18·4	132·8	142·7	66·8	35·6	19·6	12·5	68·5	111·0	1936
19·4	139·8	148·0	68·0	36·8	20·8	13·2	69·7	114·8	1937
22·6	147·2	154·5	69·8	37·9	21·4	13·8	71·1	118·7	1938
32·1	196·0	186·4	81·3	42·2	24·1	15·3	87·8	148·3	1939

Appendix.—Fertility Data, 1841-1939, England and Wales.

III. Live Births, adjusted where necessary for registration time lag ; *see* note* (3 year averages in decennial section)

Year	(a) Numbers Registered (in thousands)				(b) Rates (both sexes combined)	
	Both Sexes combined		Females only		Legit. per 1,000 married women 15–45	Illegit. per 1,000 non-married women 15–45
	Legit.	Illegit.	Legit.	Illegit.		
‡1841	564·8		275·3			
‡1851	591·1	43·2	289·0	21·2	295	19·4
‡1861	668·3	45·3	327·0	22·2	288	18·9
‡1871	770·5	45·3	378·0	22·2	296	17·2
1881	841·8	42·9	413·2	21·0	286	14·1
1891	855·8	38·3	420·5	18·7	264	10·5
1901	895·9	36·6	439·8	18·0	236	8·5
1911	846·3	37·3	415·0	18·3	197	7·9
1921	823·0	39·2	401·2	19·2	179	8·0
1931	603·4	28·3	294·7	13·8	123	5·8
1911	843·5	37·6	413·8	18·4	197	8·0
1912	835·2	37·5	409·3	18·4	193	8·0
1913	844·0	37·9	414·3	18·4	194	8·1
*1914	837·0	37·1	411·1	18·3	190	7·9
*1915	763·2	35·5	374·1	17·6	169	7·5
*1916	743·7	37·5	362·9	18·3	163	7·9
*1917	624·8	36·7	305·7	18·0	137	7·6
*1918	601·7	40·2	293·9	19·5	134	8·2
*1919	686·5	44·1	333·2	21·5	153	9·0
*1920	913·9	45·1	445·4	22·0	201	9·2
*1921	809·4	38·6	394·6	19·0	176	7·9
*1922	741·1	33·9	361·5	16·6	160	7·0
1923	726·6	31·5	355·5	15·4	156	6·5
1924	699·6	30·3	341·8	14·9	150	6·2
1925	681·7	28·9	333·3	14·1	145	5·9
1926	665·0	29·6	325·8	14·6	141	6·0
1927	625·1	29·0	306·3	14·1	132	5·9
1928	630·6	29·7	308·5	14·6	132	6·0
1929	614·4	29·3	300·5	14·5	127	5·9
1930	619·1	29·7	302·9	14·5	127	6·0
1931	604·0	28·1	294·9	13·6	123	5·7
1932	587·0	27·0	286·3	13·2	118	5·6
1933	555·0	25·4	271·1	12·6	111	5·3
1934	571·9	25·8	278·2	12·6	113	5·5
1935	573·7	25·1	278·9	12·3	111	5·4
1936	580·4	24·9	282·5	12·2	111	5·3
1937	585·2	25·3	284·7	12·3	110	5·4
1938	594·8	26·4	289·9	12·9	110	5·7
†1939	588·9	25·6	286·3	12·5	107	5·6

* For these years the actual occurrences were not adequately reflected by the numbers registered owing to changes in registration time lag associated with successive food rationing and de-rationing procedures and to abnormal changes in the numbers of births themselves ; the numbers registered have therefore been adjusted in the light of information bearing on the changes, to correspond as far as possible with the true occurrences.

† The figures for 1939 relate to actual occurrences.

‡ To allow for registration omissions prior to the Act of 1874, the registered births for 1841, 1851, 1861 and 1871 have been increased by 10·6, 3·8, 2·3 and 1·3 per cent. respectively. (See Dr. Farr's estimate of deficiency—Census 1871, Vol. IV, p. 55).

Appendix.—Fertility Data, 1841-1939, England and Wales.

IV. Constructed Female Fertility Rates as described on pages 203-206.

(a) **All Women.**

Year	Age Fertility Rates per 1,000 Women						
	15–20	20–25	25–30	30–35	35–40	40–45	45–50
Long Range—3-year averages 1841–1911 *and selected single years thereafter.*							
1841	12·65	73·28	108·60	107·98	92·99	44·99	6·98
1851	12·76	74·10	109·83	109·31	94·12	45·53	7·12
1861	13·96	78·30	113·36	109·07	90·73	43·18	6·79
1871	13·70	80·24	116·38	112·89	95·13	45·71	7·12
1881	11·11	75·55	112·64	111·50	91·14	42·19	6·31
1891	8·28	65·98	102·53	98·26	78·77	36·08	4·77
1901	6·55	58·60	93·40	85·88	64·79	28·31	2·95
1911	5·49	51·57	82·78	73·32	50·64	19·84	1·92
1922	6·24	52·24	71·70	57·42	36·62	12·47	1·17
1933	6·41	37·82	52·14	39·98	23·12	7·67	·75
1939	7·75	44·28	55·40	39·65	22·95	7·56	·75
Short Range—Single-year intervals							
1911	5·54	51·58	82·78	73·05	50·12	19·76	1·92
1912	5·73	53·09	82·32	71·93	49·05	18·90	1·59
1913	6·07	53·87	83·01	72·39	49·36	19·02	1·60
1914	6·28	53·63	82·37	70·55	48·33	18·08	1·61
1915	6·31	52·93	75·35	62·60	39·75	14·29	1·19
1916	6·16	52·12	74·02	59·86	47·48	12·99	1·19
1917	5·48	45·76	63·23	50·44	29·95	9·55	·80
1918	5·67	43·86	60·27	48·88	29·23	9·47	·81
1919	6·42	48·41	68·13	54·96	34·66	11·59	1·20
1920	7·31	57·73	86·92	73·83	51·50	20·96	2·36
1921	6·95	54·99	77·83	63·98	41·82	15·43	1·19
1922	6·24	52·24	71·70	57·42	36·62	12·47	1·17
1923	5·65	50·57	70·72	56·88	35·49	11·73	1·17
1924	5·34	48·38	68·58	54·66	33·24	10·93	·80
1925	5·10	46·95	66·35	53·55	31·94	10·10	·79
1926	5·23	45·22	65·27	52·18	30·71	9·79	·80
1927	5·25	42·47	60·95	48·48	28·51	9·32	·79
1928	5·50	42·61	60·92	48·58	28·60	9·29	·78
1929	5·65	41·66	59·23	47·15	27·17	8·53	·78
1930	5·90	42·01	59·31	47·05	27·08	8·48	·78
1931	5·90	40·99	57·57	45·12	25·91	8·12	·76
1932	6·24	40·03	55·40	43·06	24·77	7·71	·76
1933	6·41	37·82	52·14	39·98	23·12	7·67	·75
1934	7·06	38·86	52·98	40·39	23·81	7·69	·75
1935	6·73	39·37	53·21	39·65	23·41	7·62	·75
1936	6·43	41·02	54·03	39·37	23·10	7·68	·75
1937	6·42	42·78	54·64	39·00	23·05	7·68	·74
1938	7·06	44·92	55·19	40·47	23·09	7·98	·72
1939	7·75	44·28	55·40	39·65	22·95	7·56	·75

IV. Constructed Female Fertility Rates—(*continued*)

(b) Married Women (legitimate fertility)

(c) Non-Married Women (illegitimate fertility)

Age Fertility Rates per 1,000 Married Women							Year	Age Fertility Rates per 1,000 Non-Married Women						
15–20	20–25	25–30	30–35	35–40	40–45	45–50		15–20	20–25	25–30	30–35	35–40	40–45	45–50
Long Range—3-year averages 1841–1911 and selected single years thereafter.														
Not available							1841	Not available						
243·24	209·25	179·90	150·33	121·92	58·87	9·33	1851	6·82	14·03	11·81	8·16	6·85	4·23	·85
245·79	208·59	177·71	146·59	116·57	55·48	8·87	1861	6·68	13·73	11·54	8·10	6·70	4·15	·74
245·66	209·80	180·26	150·76	122·25	59·15	9·40	1871	6·14	12·55	10·44	7·71	6·35	3·50	·63
245·68	207·96	176·55	145·59	116·05	55·11	8·40	1881	5·01	10·15	8·50	6·88	5·52	2·52	·44
245·67	205·36	169·21	133·13	102·02	46·99	6·41	1891	3·57	7·32	6·54	5·68	4·49	1·66	·22
248·03	200·27	157·08	117·82	84·94	37·26	3·99	1901	2·75	5·74	5·47	4·94	3·87	1·43	·18
258·71	196·73	144·11	101·22	66·12	25·87	2·58	1911	2·43	5·35	5·23	4·77	3·73	1·30	·15
255·97	178·51	121·30	79·65	48·25	16·22	1·53	1922	2·04	4·61	4·86	4·51	3·56	1·27	·18
243·32	135·41	86·79	53·45	29·44	9·79	·98	1933	1·22	3·30	4·13	3·77	3·05	1·27	·13
237·22	124·94	82·42	51·94	28·74	9·42	·97	1939	1·38	3·70	4·52	4·09	3·39	1·34	·14
Short Range—Single year intervals														
258·71	196·68	144·14	100·84	65·43	25·76	2·57	1911	2·47	5·37	5·20	4·77	3·73	1·30	·18
259·43	196·57	142·24	99·81	64·11	24·83	2·07	1912	2·50	5·42	5·29	4·83	3·80	1·32	·20
264·07	198·05	143·39	100·66	64·64	24·97	2·08	1913	2·50	5·42	5·30	4·84	3·76	1·30	·19
262·95	196·14	141·98	98·10	62·58	23·99	2·08	1914	2·44	5·39	5·24	4·81	3·80	1·33	·19
258·43	185·40	128·21	86·01	52·06	18·50	1·55	1915	2·34	5·07	5·12	4·76	3·77	1·37	·18
255·91	180·86	123·58	81·72	49·03	16·82	1·53	1916	2·46	5·38	5·22	4·83	3·77	1·34	·21
252·25	164·95	107·06	69·06	39·05	12·22	1·01	1917	2·30	5·14	5·12	4·74	3·77	1·35	·20
258·22	162·95	104·49	67·77	38·26	12·19	1·03	1918	2·57	5·50	5·31	4·85	3·80	1·31	·20
256·20	177·16	118·55	77·28	45·85	14·96	1·55	1919	2·94	6·10	5·70	5·16	4·04	1·42	·19
262·98	200·45	147·77	104·36	68·39	27·71	3·13	1920	3·11	6·33	5·92	5·36	4·16	1·49	·19
257·23	189·00	132·88	89·66	55·17	20·09	1·54	1921	2·48	5·43	5·31	4·85	3·82	1·34	·18
255·97	178·51	121·30	79·65	48·25	16·22	1·53	1922	2·04	4·61	4·86	4·51	3·56	1·27	·18
255·56	176·34	118·91	78·26	46·77	15·25	1·52	1923	1·79	4·27	4·62	4·26	3·39	1·26	·18
252·92	172·87	114·75	74·57	43·61	14·19	1·01	1924	1·70	4·04	4·53	4·19	3·34	1·29	·21
251·97	169·89	110·84	72·60	41·81	13·10	1·00	1925	1·52	3·79	4·40	4·00	3·24	1·27	·20
254·90	167·04	109·24	70·30	40·00	12·69	1·02	1926	1·59	3·87	4·49	4·13	3·37	1·29	·20
251·88	159·18	102·07	65·04	37·00	12·07	1·00	1927	1·50	3·74	4·34	3·97	3·23	1·26	·20
249·11	158·88	101·93	65·00	36·97	12·01	·99	1928	1·58	3·85	4·46	4·09	3·32	1·29	·19
250·00	154·84	98·89	62·91	34·97	11·00	1·00	1929	1·54	3·82	4·46	4·07	3·31	1·28	·19
250·00	154·29	98·42	62·71	34·83	10·90	1·00	1930	1·57	3·83	4·43	4·07	3·32	1·28	·19
250·80	149·24	95·04	60·14	33·29	10·42	·99	1931	1·40	3·59	4·30	3·90	3·17	1·25	·14
246·20	144·03	91·91	57·44	31·69	9·86	·99	1932	1·38	3·47	4·18	3·82	3·10	1·24	·14
243·32	135·41	86·79	53·45	29·44	9·79	·98	1933	1·22	3·30	4·13	3·77	3·05	1·27	·13
245·01	136·60	87·48	54·17	30·24	9·80	·98	1934	1·29	3·34	4·12	3·78	3·08	1·24	·13
242·17	134·23	86·31	53·30	29·60	9·69	·97	1935	1·24	3·28	4·08	3·71	3·02	1·22	·13
242·07	133·96	85·97	52·88	29·09	9·72	·97	1936	1·22	3·29	4·10	3·75	3·05	1·25	·13
242·94	132·90	85·02	52·15	28·98	9·67	·96	1937	1·27	3·41	4·17	3·82	3·13	1·26	·13
253·50	131·51	83·50	53·60	28·90	10·00	·94	1938	1·32	3·75	4·56	4·09	3·40	1·41	·10
237·22	124·94	82·42	51·94	28·74	9·42	·97	1939	1·38	3·70	4·52	4·09	3·39	1·34	·14

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