# SUPPLEMENT

TO THE

# SEVENTY-FIFTH ANNUAL REPORT

OF THE

# REGISTRAR-GENERAL

OF

# BIRTHS, DEATHS AND MARRIAGES

## IN ENGLAND AND WALES.

---

# PART I.—LIFE TABLES.

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

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# BIRTHS, DEATHS AND MARRIAGES

## IN ENGLAND AND WALES.

## PART I.—LIFE TABLES.

REPORT TO THE RIGHT HONOURABLE HERBERT L. SAMUEL, M.P.,

PRESIDENT OF THE LOCAL GOVERNMENT BOARD, &c., &c.

SIR,

I HAVE the honour to submit to you the following Report which forms Part I. of the "Supplement to the Seventy-Fifth Annual Report of the Registrar-General."

The present volume is the sixth of a series, the first number of which dealt with the mortality in the ten years 1851-60, and was presented to Parliament in 1864.

This volume relates entirely to Life Tables, Tables I. and II., for males and for females, respectively, being based upon the mortality experienced in England and Wales as a whole during the ten years 1901-10, and Tables III. and IV. upon the mortality in the same area during the years 1910-12. The presentation of the latter tables, relating to a period of only three years, is a departure from the usual practice of this Department, which has been, for the past thirty years or so, to present tables based upon the mortality experience of an entire decennium. There are two reasons for this innovation: (1) that, given a sufficiently wide basis, a more definite measure of mortality is obtained by dealing with the data for a short period of time than with the data for a long period—a consideration perhaps of special significance when the progressive decline of the death-rate in recent years is borne in mind, and (2) that the enumeration of the population in 1911 and of the deaths in 1910-1912 by single years of age instead of by quinquennial or decennial age-periods as formerly has furnished material of far more value than was previously available for the purpose of Life Table construction.

During 1910-12 also, marital condition has for the first time been distinguished in tabulating the deaths of females, and it has, therefore, been possible to prepare Life Tables for the three sections of the female population of England and Wales, single, married, and widowed. The results are given in Tables V., VI., and VII. Unfortunately, the death registers do not contain information as to the marital condition of males, and a similar investigation in the case of that sex is, therefore, impracticable.

For the decennia 1881-90, and 1891-1900, Life Tables were constructed relating to "Selected Healthy Districts," the criterion of healthiness being a death-rate not exceeding a certain limit. At that time, however, deaths were tabulated only by registration areas, and were not corrected by the distribution of the deaths of persons occurring away from their homes. Owing to this lack of correction for transferable deaths a district whose true death-rate would fall within the limit of healthiness

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might be excluded owing to the inclusion within it of a large institution receiving patients from without; while, on the other hand, other districts might have notatiously low death-rates owing to the non-inclusion of the deaths of residents occurring elsewhere, and would thus be included among the selected healthy districts. Such tables were doubtless of interest as furnishing a contrast between the mortality conditions of the country as a whole and those of the healthiest parts of it, but suffered from the defect, in addition to that already noted, that the healthy districts even where successfully selected represented no defined class of area. It is, in fact, obvious that life must be more prolonged in those districts where deaths are comparatively few, and it has not been deemed worth while again to prepare tables for the purpose of presenting this superiority in life table form.

Under the system of tabulation adopted since 1911 we are able to obtain a knowledge of the numbers of deaths grouped by ages in the sanitary areas (county boroughs, urban districts, and rural districts), these numbers being corrected by the transference of the deaths of persons occurring away from their homes. I have accordingly thought it advisable to discontinue the arbitrary selection of "Healthy Districts," and to prepare instead a set of Life Tables based upon the mortality in the years 1911-12 in London, in the aggregate of County Boroughs, in the aggregate of Urban districts, and in the aggregate of Rural Districts, groups of districts which represent approximately varying degrees of urbanization. The results are given in Tables VIII.-XV.

In the past the Life Tables published from this Office have been prepared by members of my staff. The construction of Life Tables, however, involves work of a highly technical nature for which it appeared desirable to obtain the advice of an expert skilled in such work. I determined, therefore, to have recourse to the services of an Actuary, and I was so fortunate as to secure those of Mr. George King, F.I.A., F.F.A., who has been Vice-President of the Institute of Actuaries, and is the author of the Institute of Actuaries Text Book (Part II.), and of many papers bearing on actuarial matters. The Report which follows, together with the Appendices and the Life Tables themselves herewith submitted for your consideration, are the work of Mr. King. Special reference may be made to Part IV. of the Report (p. 26), which contains a short method of constructing abridged Life Tables—a method which should, I think, prove of great service from the public health point of view.

This is not the first occasion on which I have been indebted to Mr. George King for expert assistance in the business of my Department. His work in connexion with the Report on Ages and Conditions, Vol. VII., of the Census of 1911, was of high merit, and I feel sure that the value of these Life Tables, the construction of which has involved a great amount of labour, will be generally recognised.

I may add that the original intention was to include the result of other investigations in Life Table Construction, which have already been commenced, in this volume. Owing, however, to the many extra duties thrown upon the Department by the outbreak of war and the consequent necessity of postponing work which is not of a pressing character, it has been decided to suspend these investigations for the present, and to publish the contents of the present volume which were ready for press by themselves.

I am,

Sir,

Your obedient Servant,

BERNARD MALLET,

Registrar-General.

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# REPORT ON LIFE TABLES

BY

## MR. GEORGE KING, F.I.A., F.F.A.

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15, Walbrook, London, E.C.,
31 August, 1914.

TO BERNARD MALLET, ESQ., C.B.,
Registrar-General,
Somerset House, W.C.

SIR,

1. Following on the invitation which you gave me to examine certain of the returns of the Census of 2nd April, 1911, and to prepare graduated tables therefrom, and on my consequent report of 25th April, 1913, which appeared in the volume "Census of England and Wales, 1911, Vol. VII., Ages and Conditions as to Marriage, &c.," you were good enough to ask me to prepare the decennial life tables to be published in accordance with the custom which has prevailed for many years past after each census, and I have now the honour to submit my report.

### PART I. INTRODUCTORY.

The report is in four parts, namely:—

I. Introductory,

II. Construction of the Life Tables,

III. Some of the more important deductions derivable from the annexed Life Tables, and

IV. A short method of constructing abridged Life Tables.

2. On the present occasion a set more extended than usual was decided on, and your instructions were to prepare life tables as follows:—

(1) Life tables for England and Wales, for males and females, respectively, based upon the two Censuses of 1901 and 1911, and on the deaths of the ten years 1901 to 1910.

(2) Life tables for England and Wales, for males and females, respectively, based upon the Census of 1911 alone, and on the deaths of the three years 1910 to 1912.

(3) Life tables for England and Wales, for females only, according to marital condition, single, married, or widowed, based upon the Census of 1911, and on the deaths of the three years 1910 to 1912.

(4) Sectional life tables, for males and females, respectively, for:—
(*a*) The Administrative County of London,
(*b*) The aggregate of County Boroughs,
(*c*) The aggregate of Urban Districts,
(*d*) The aggregate of Rural Districts,
these sectional tables to be based upon the population (as estimated by your Department) in the middle of each of the years 1911 and 1912, and on the deaths in each of these two years.

3. There were, therefore, fifteen life tables in all to be prepared.

4. In constructing the tables it was desirable that a method should be employed, simple in theory, easy in application, and which would produce curves of smooth graduation, and curves which would adhere closely to the original data; and I had several conferences with yourself, Sir, and with Dr. Stevenson, the Superintendent of Statistics, and the method finally adopted is fully set forth later on in this report. Moreover, in accordance with your wish, all the statistics made use of in the preparation of the tables are given in Appendix I hereto, and all the mathematical formulas employed are demonstrated in Appendix II. It will, therefore, be possible for anyone who so desires to check every figure in the various columns of the life tables and to apply the principles and methods in investigations of a similar kind.

5. The most important of the four desiderata above mentioned is, that the mortality curves should adhere closely to the original data. It is admitted that the earlier national life tables prepared by the late Dr. Farr, while much in advance of anything that had been produced previously, yet involved certain theoretical errors which, at the older ages especially, gave an under-estimate of the rate of mortality. From English Life Tables 5 and 6, which were prepared respectively by the late Mr. A. C. Waters and by Mr. F. Finch, both of your Department, these theoretical errors were eliminated, with the result that their tables were much more trustworthy, although still showing mortality too low at the advanced ages. There remained room for improvement, and it is not derogatory to these pioneers to say that tables can now be produced more accurate than theirs. This is partly due to the fuller statistics now available, but also it is partly due to the greater knowledge to which we have attained and to the improved processes which in consequence can be applied.

6. It cannot be denied that even now the national statistics are defective. The public has not yet been sufficiently educated to lead to exact ages being always given at the census enumerations and in the records of deaths; and, especially at the older ages, say, from 80 onwards, there appears to be a tendency to make exaggerated statements of age. It is quite likely that, as a result, even the most recent tables may show an unduly light mortality at the advanced ages, but to what extent this is the case we cannot say. Although the same misstatements may occur, and in the same proportions, in the ages given at the census enumerations and in registering the deaths, yet, if on both occasions the ages are equally exaggerated, the result is to understate the rate of mortality. For instance, if after age 80 a considerable number of persons return their ages as five years greater than they really are, and if in registering the deaths the same misstatements occur, the life table shows an unduly favourable mortality, because the rate of mortality increases with the age, and therefore, if, when persons are really aged 80, say, they give their age as 85, we get the lower rate of mortality at age 80 recorded against the age 85. I cannot help thinking that this is the case to a certain extent, but to what extent we have at present no means of judging. Therefore, in constructing the present life tables, no correction has been attempted to counteract the possible misstatements of age. An unbiassed position has been assumed, and the effort has been to construct the tables absolutely in accordance with the facts as recorded, and to allow those who are interested in the subject to pursue further investigations and to make such corrections as, in their opinion, may be thought necessary. In saying this, it is not intended to cast doubt upon the accuracy of the tables as now presented. In my own mind I feel sure that up to, say, age 85 or 90, they do really represent the mortality prevailing, while above these rather advanced ages they may be accepted without much hesitation. For practical purposes any errors which exist are of trivial importance, and we may rest assured that the present tables are safely to be trusted.

7. With these preliminary observations, I now proceed to explain in sufficient detail the method of construction of the various life tables presented.

## Part II. Construction of the Life Tables.

(1) Life tables for England and Wales based upon the censuses of 31st March, 1901, and 2nd April, 1911, and the deaths of the ten years 1901 to 1910. English Life Tables No. 7.

8. The last preceding National Life Tables are known amongst actuaries by the name of English Life Tables No. 6, and were based upon the Censuses of 1891



and 1901 and the deaths of the ten years 1891 to 1900, and it was your wish to construct a set of new tables on as nearly as possible the same plan from the records of ten years later date. The new tables may therefore be called, not inappropriately, English Life Tables No. 7.

9. The new tables, for males and females, respectively, were prepared on identical lines, and are based on the population in 1901 as given in the volume "Census of England and Wales 1901 Summary Tables," and on the population at the Census of 1911 given in the Volume VII. already mentioned relating to that Census, and on the deaths of the ten years 1901 to 1910. The population figures for 1901 are reproduced in Table 1 of Appendix I., and those for 1911 in Table 2, and the deaths of males are given in Table 3, and of females in Table 4.

10. The populations of 1901 were supplied for each year of age for each of the first five years of life, and thereafter for the quinquennial age intervals 5 to 9 last birthday, 10 to 14, &c., up to 95 to 99, and, lastly, one group for age 100 and over.

11. The populations of 1911 were supplied for each year of age throughout life, and to bring them into harmony with the population of 1901 they were grouped into quinquennial age periods 5 to 9 last birthday, 10 to 14, &c., up to 95 to 99, and, lastly, the one group for 100 and over.

12. To obtain the mean population from the two censuses, the method of the late Mr. A. C. Waters was applied, and thus was found the mean population for each of the first five years of life, and then for quinquennial age periods, and, lastly, for the period age 100 and over; and this last group was divided into 100 to 104, and 105 and over, in the same proportions as existed among centenarians enumerated at the Census of 1911. The method of Mr. Waters for obtaining the mean population is demonstrated in Appendix II., Section 1. In applying this method it was assumed that at each of the censuses the enumerations were made one-fourth of a year after January 1st. The following tables give the mean populations, for males and females, respectively, derived as above:—

*Males.*

| Ages last birthday. | Populations. | | |
|---|---|---|---|
| | 31 March, 1901. | 2 April, 1911. | Mean. |
| 0 ... | 399,875 | 395,110 | 398,048 |
| 1 ... | 363,424 | 374,109 | 368,644 |
| 2 ... | 366,824 | 395,919 | 380,483 |
| 3 ... | 363,161 | 388,669 | 375,174 |
| 4 ... | 362,077 | 382,306 | 371,670 |
| 0 to 4 ... | 1,855,361 | 1,936,113 | 1,894,019 |
| 5 „ 9 ... | 1,738,993 | 1,847,295 | 1,790,172 |
| 10 „ 14 ... | 1,670,970 | 1,747,631 | 1,707,589 |
| 15 „ 19 ... | 1,607,522 | 1,654,895 | 1,630,664 |
| 20 „ 24 ... | 1,472,644 | 1,502,652 | 1,487,708 |
| 25 „ 29 ... | 1,328,288 | 1,455,783 | 1,387,895 |
| 30 „ 34 ... | 1,157,666 | 1,375,872 | 1,258,688 |
| 35 „ 39 ... | 1,034,459 | 1,261,432 | 1,139,388 |
| 40 „ 44 ... | 897,484 | 1,075,076 | 979,663 |
| 45 „ 49 ... | 759,955 | 926,102 | 836,767 |
| 50 „ 54 ... | 636,254 | 768,231 | 697,298 |
| 55 „ 59 ... | 497,498 | 608,005 | 548,580 |
| 60 „ 64 ... | 410,447 | 477,151 | 441,379 |
| 65 „ 69 ... | 282,403 | 365,896 | 320,914 |
| 70 „ 74 ... | 195,465 | 236,868 | 214,612 |
| 75 „ 79 ... | 113,096 | 127,466 | 119,782 |
| 80 „ 84 ... | 52,137 | 56,403 | 54,138 |
| 85 „ 89 ... | 14,915 | 18,457 | 16,551 |
| 90 „ 94 ... | 2,687 | 3,739 | 3,171·5 |
| 95 „ 99 ... | 322 | 505 | 406·14 |
| 100 „ 104 ... | } 47 { | 31 | 36·167 |
| 105 & over ... | } 47 { | 5 | 5·833 |
| Total. | 15,728,613 | 17,445,608 | 16,529,426·640 |

*Females.*

| Ages last birthday. | Populations. | | |
|---|---|---|---|
| | 31 March, 1901. | 2 April, 1911. | Mean. |
| 0 ... ... | 396,932 | 386,618 | 392,556 |
| 1 ... ... | 364,371 | 368,709 | 366,681 |
| 2 ... .. | 368,586 | 393,376 | 380,273 |
| 3 ... ... | 366,966 | 388,682 | 377,243 |
| 4 ... ... | 364,492 | 380,885 | 372,327 |
| 0 to 4 ... ... | 1,861,347 | 1,918,270 | 1,889,080 |
| 5 „ 9 ... ... | 1,748,298 | 1,849,501 | 1,796,226 |
| 10 „ 14 ... ... | 1,670,770 | 1,752,057 | 1,709,502 |
| 15 „ 19 ... ... | 1,638,621 | 1,681,726 | 1,659,826 |
| 20 „ 24 ... ... | 1,648,278 | 1,673,066 | 1,661,096 |
| 25 „ 29 ... ... | 1,496,221 | 1,623,277 | 1,555,775 |
| 30 „ 34 ... ... | 1,273,665 | 1,501,303 | 1,379,119 |
| 35 „ 39 ... ... | 1,110,924 | 1,351,838 | 1,222,318 |
| 40 „ 44 ... ... | 953,138 | 1,157,535 | 1,047,657 |
| 45 „ 49 ... ... | 813,233 | 999,487 | 899,313 |
| 50 „ 54 ... ... | 692,749 | 834,449 | 758,303 |
| 55 „ 59 ... ... | 555,079 | 670,426 | 608,434 |
| 60 „ 64 ... ... | 480,226 | 542,803 | 509,330 |
| 65 „ 69 ... .. | 347,270 | 440,918 | 390.496 |
| 70 „ 74 ... ... | 250,868 | 316,685 | 281,254 |
| 75 „ 79 .. ... | 151,384 | 182,463 | 165,761 |
| 80 „ 84 ... .. | 76,631 | 87,761 | 81,800 |
| 85 „ 89 ... .. | 24,046 | 32,221 | 27,814 |
| 90 „ 94 ... ... | 5,515 | 7,821 | 6,576·726 |
| 95 „ 99 ... ... | 868 | 1,185 | 1,014·050 |
| 100 „ 104 ... ... | } 99 { | 87 | 90·669 |
| 105 & over ... ... | | 5 | 5·211 |
| Total ... ... | 16,799,230 | 18,624,884 | 17,650,790·656 |

13. The deaths corresponding to the populations of the two censuses are given in Tables 3 and 4 of Appendix I., for each of the first five years of life, and then in groups, quinquennial to age 24 last birthday, and decennial 25 to 34, &c., as far as 75 to 84, and, lastly, a group for ages 85 to 99, with a further statement of the deaths of centenarians by years of age for the calendar years 1901 to 1909. For young children extended information is given in Table 7 of Appendix I., for the calendar years 1894 to 1912 inclusive. We there have the births in each calendar year, and also the deaths in each of the first five years of life.

14. To obtain in quinquennial age groups the deaths for the ten years 1901 to 1910, the groups in the decennial periods 25 to 34, &c., up to 75 to 84, and also the group 85 to 99, were sub-divided in the proportions existing among the deaths for the three years 1910 to 1912 given in Table 5 of Appendix I., and the deaths of centenarians in the year 1910 were divided into the groups 100 to 104, and 105 and over, in the proportions existing for the nine years 1901 and 1909.

15. Having thus, for the population and the deaths respectively, the quinquennial age groups 5 to 9, 10 to 14, &c., as far as 100 to 104, graduated quinquennial pivotal values were obtained of the populations and of the deaths for ages 12, 17, &c., down to age 97 inclusive by the formula demonstrated in Section 2 of Appendix II. Then, by dividing the deaths by the population we have the graduated pivotal values of the central death-rate, $m_x$, called sometimes the "mean annual death-rate," at quinquennial age points from 12 to 97 inclusive, and hence the rate of mortality, $q_x$, by the formula $q_x = \frac{2\,m_x}{2 + m_x}$. *See* definitions in paragraphs 25 to 28.

16. The intervening values of the rate of mortality were derived by Osculatory Interpolation, the formula of interpolation being demonstrated in Section 3 of Appendix II. There are several functions, such as $p_x$ (the probability of living a



year), log $p_x$, $q_x$ (the probability of dying in a year), log $q_x$, and log $(q_x + \cdot 1)$, any one of which might be made the subject of the interpolation without appreciably affecting the general results, and that one should be adopted which will give the smoothest curve. On the present occasion log $(q_x + \cdot 1)$ was chosen as on the whole the best. The interpolation gives the values of log $(q_x + \cdot 1)$, and hence of $q_x$, to seven places of decimals from age 17 to age 92 inclusive, and beyond these limits we have the pivotal values at ages 12 and 97.

17. It remained to complete the table at the infantile and youthful ages from 0 to 16 inclusive, and at the old ages from 92 to the extremity of life.

18. For the young ages recourse was first had to the births in the years 1896 to 1910, and to the deaths in the years of age 0 to 1, 1 to 2, &c., up to 4 to 5, in each of the calendar years 1897 to 1910 inclusive, as given in Table 7 of Appendix I. It was assumed that half of the sum of the births in the years 1896 and 1897 took place on 1st January, 1897, and, similarly, for the years 1898 to 1910. Then, for the purpose of the life table, the number aged exactly 0 is the sum of the assumed births on 1st January of the years 1901 to 1910: the number aged exactly 1 is the sum of the assumed births on 1st January of the years 1900 to 1909, less the sum of the deaths aged 0 to 1 in the years 1900 to 1909; the number aged exactly 2 is the sum of the assumed births on 1st January of the years 1899 to 1908, less the sum of the deaths aged 0 to 1 in the years 1899 to 1908, and the sum of the deaths aged 1 to 2 in the years 1900 to 1909: and so on for the numbers living aged exactly 2, 3, and 4. We have also the deaths in each year of age 0 to 1, 1 to 2, &c., up to 4 to 5, in the years 1901 to 1910, and dividing these deaths by the numbers living as found above, we obtain the rate of mortality derived from the records of births and of deaths without reference to the censuses. The following figures for males may be given as an example of this process:—

| Exact Ages. | Numbers Living derived as above. | Deaths. | Rate of Mortality. $q_x$ |
|---|---|---|---|
| 0 | 4,743,220 | 664,467 | ·1400877 |
| 1 | 4,062,694 | 159,264 | ·0392016 |
| 2 | 3,868,334 | 59,879 | ·0154793 |
| 3 | 3,779,262 | 36,748 | ·0097236 |
| 4 | 3,711,011 | 26,668 | ·0071862 |
| Total ... | 20,164,521 | 947,026 | |

19. These figures, however, do not correspond with the enumerations at the censuses, as it is found that the living derived as above exceed the numbers enumerated. Ten years ago for English Life Table No. 6, it was assumed that the total of the numbers in the first five years of life enumerated at the censuses was correct, but that they were wrongly distributed. They were therefore redistributed, the total being left unchanged, and a similar course has now been followed for English Life Table No. 7. Continuing the illustration, for the males, the mean population for each of the first five years of life is given in the table in paragraph 12 above, and the total amounts to 1,894,019. This is the population living during each year of age, and not at each point of age. From this we must find the sum of the numbers living at exact ages 0, 1, 2, 3, and 4. In the first year of life it cannot be assumed that the deaths are uniformly distributed over the year of age, as the rate of mortality during the first few months of life is much heavier than afterwards. According to Table 8 of Appendix I. there were in the years 1910 to 1912, 164,033 deaths of male infants under 1 year of age, of whom 120,629 died aged less than six months, and 43,404 aged over six months, the ratios being, under six months ·7353947, and over six months ·2646053. Applying these ratios to the deaths of male infants in the years 1901 to 1910 there were 48,865 deaths per annum in the first six months of age. After the first year it may be assumed without any serious error that the deaths are equally distributed over each year of age, so that half of the deaths in each year of

age may be assumed to have taken place in the first six months of the year. From these considerations we have the following table:—

| | |
|---|---|
| Mean male population aged 0 to 5 living in the ten years 1901 to 1910 ... ... ... ... ... ... ... | 1,894,019 |
| Add deaths per calendar year under six months of age in the years 1901 to 1910 ... ... ... ... ... ... | 48,865 |
| Add half deaths per annum aged 1 to 2 ... ... ... ... | 7,963 |
| ,, ,, ,, 2 to 3 ... ... ... ... | 2,994 |
| ,, ,, ,, 3 to 4 ... ... ... ... | 1,837 |
| ,, ,, ,, 4 to 5 ... ... ... ... | 1,333 |
| | 1,957,011 |

20. This number, 1,957,011, may be assumed to be the sum of the mean numbers, based upon the enumerations at the censuses, aged exactly 0, 1, 2, 3, and 4. By the births and deaths alone the corresponding number is 2,016,452, the ratio between these two totals being ·97052199. Applying this ratio to the numbers living derived from the births and deaths alone as shown in paragraph 18 above, we have the following results:—

| Exact Ages. | Adjusted Numbers Living derived as above. | Deaths. | Rate of Mortality. |
|---|---|---|---|
| 0 | 4,603,399 | 664,467 | ·1443427 |
| 1 | 3,942,934 | 159,264 | ·0403923 |
| 2 | 3,754,303 | 59,879 | ·0159494 |
| 3 | 3,667,857 | 36,748 | ·0100189 |
| 4 | 3,601,617 | 26,668 | ·0074045 |
| Total ... | 19,570,110 | 947,026 | |

21. To make English Life Table No. 7 comparable to No. 6, this adjustment of the rate of mortality was applied, but probably it has the effect of overstating the mortality among young children, and this point is taken up more fully later on in this report. (*See* paragraphs 35 to 43.)

22. Having thus the rate of mortality for each of the years of age 0 to 4, and the rates for ages 12, 17, and 18, previously calculated, it remained only, by interpolation, to find the rates for ages 5 to 11 and 13 to 16 inclusive. The given values are those of a function at unequal intervals, and Lagrange's method of interpolation enables the missing terms to be supplied. This method of interpolation is demonstrated in Section 4 of Appendix II. The values of $q_x$ used in applying the formula were those for ages 3, 4, 12, 17, and 18.

23. To complete the table at the old ages the function log $p_x$ was employed. The values of log $p_x$ for ages 89, 90, 91, 92, and 97, had already been calculated, and from them a fourth difference was formed, and the table was completed by summation of differences.* It is thus provided that the actual original data were used in their integrity down to age 92, with a pivotal value beyond at age 97, and it is only after these extreme ages that an artificial method was adopted. Theoretically the table never comes to an end, but practically the probability of living a year becomes evanescent at about age 110 for males and 114 or 115 for females. With a

* These values may be written $u_0$, $u_1$, $u_2$, $u_3$, and $u_8$, the first four of which supply three differences. Then,

$$u_8 = u_0 + 8\delta + 28\delta^2 + 56\delta^3 + 70\delta^4,$$

$$\text{whence } \delta_4 = \frac{1}{70}\{u_8 - (u_0 + 8\delta + 28\delta^2 + 56\delta^3).\}$$



radix of 1,000,000 at age 0, only two remain alive at age 105 in the case of males, and one at age 108 in the case of females.

24. English Life Tables No. 7 are annexed hereto in Table 1 for males and Table 2 for females. For ages 0 to 4 inclusive the adjusted census figures were adopted, as explained in paragraphs 18 to 21, but an alternative construction was also effected from the births and deaths alone. The following are the rates of mortality thus derived, and for comparison the adjusted census rates which have been adopted are placed beside them.

*English Life Table No. 7.*

Rates of Mortality, $q_x$.

| Age. | Births and Deaths alone. | | Adjusted Census Rates. | | Age. |
|---|---|---|---|---|---|
| | Males. | Females. | Males. | Females. | |
| 0 | ·1400877 | ·1141159 | ·1443427 | ·1174346 | 0 |
| 1 | ·0392016 | ·0365787 | ·0403923 | ·0376425 | 1 |
| 2 | ·0154793 | ·0148335 | ·0159494 | ·0152649 | 2 |
| 3 | ·0097236 | ·0097657 | ·0100189 | ·0100498 | 3 |
| 4 | ·0071862 | ·0072661 | ·0074045 | ·0074774 | 4 |
| 5 | ·0052679 | ·0053811 | ·0054248 | ·0055339 | 5 |
| 6 | ·0038701 | ·0040107 | ·0039788 | ·0041174 | 6 |
| 7 | ·0029024 | ·0030633 | ·0029745 | ·0031346 | 7 |
| 8 | ·0022831 | ·0024561 | ·0023280 | ·0025009 | 8 |
| 9 | ·0019389 | ·0021149 | ·0019645 | ·0021406 | 9 |
| 10 | ·0018049 | ·0019740 | ·0018175 | ·0019867 | 10 |
| 1 | ·0018249 | ·0019763 | ·0018293 | ·0019809 | 1 |
| 2 | ·0019507 | ·0020735 | ·0019507 | ·0020735 | 2 |
| 3 | ·0021431 | ·0022258 | ·0021413 | ·0022238 | 3 |
| 4 | ·0023711 | ·0024020 | ·0023690 | ·0023997 | 4 |
| 15 | ·0026122 | ·0025794 | ·0026107 | ·0025779 | 15 |
| 6 | ·0028523 | ·0027443 | ·0028517 | ·0027437 | 6 |
| 7 | ·0030860 | ·0028912 | ·0030860 | ·0028912 | 7 |

The adjusted census rates necessarily differ from the rates derived from the births and deaths alone up to age 4, and as they indicate the curve which must be joined on to the ordinary curve at age 12, therefore from 4 to 12 the two sets of rates must also differ. From ages 12 to 17 they differ to an inappreciable extent in order to complete the smooth junction of the two curves.

25. The annexed tables comprise various columns which it may be well to explain. The first function arrived at in constructing life tables from census returns and records of deaths is the "central death rate," which has also been called the "mean annual death rate," and is represented by the symbol $m_x$. It is the ratio of deaths to population in the year of age $x$ to $x + 1$. That function has not been tabulated. It was obtained for quinquennial age points, and from it at these age points the values of the rate of mortality, $q_x$, were derived, the rate of mortality being the ratio of the number of deaths in the year of age $x$ to $x + 1$ to the number entering on the year.* Throughout all the tables of this Report the rate of mortality, $q_x$, is the fundamental function. The arithmetical complement of $q_x$ is $p_x$, the probability of living a year, and $p_x$ is the ratio of the number completing the year of age $x$ to $x + 1$ to the number entering on the year. The column $l_x$ gives the number surviving according to the life table to exact age $x$. The first value in the column is called

* The term "rate of mortality" is here used as has been customary among actuaries. In the reports of the Registrar-General the terms "rate of mortality" and "death rate" have been used indifferently to denote the "central death rate" as defined above.

the radix of the table, and for English Life Tables Nos. 7 and 8 the radix is that for age 0, that is, it is the assumed number of simultaneous births. The other life tables annexed start at later ages.

26. The column $d_x$ shows the deaths in the year of age $x$ to $x + 1$ among the $l_x$ persons who enter on that year of age. The column $L_x$, which in former publication of the General Register Office was called $P_x$, shows the population, or the years of life lived, in the year of age $x$ to $x + 1$, and $T_x$, formerly called $Q_x$, shows the population, or the years of life lived, above the moment of age $x$. The column $\mathring{e}_x$, formerly called $E_x$, gives the complete expectation of life, or the total future lifetime which on the average will be passed through by persons aged exactly $x$, and there is a further function, not tabulated, but used in Part IV. of this report, $e_x$, which is the curtate expectation of life, or the number of years which on the average will be completed by persons aged exactly $x$.

27. The complete expectation of life, $\mathring{e}_x$, and the curtate expectation of life, $e_x$, are closely connected, the latter giving the number of years completed on the average, while the former includes the fraction of a year passed through in the year of death. It is usual to assume that that fraction is one-half of a year, so that $\mathring{e}_x = \frac{1}{2} + e_x$, Throughout the greater part of life this equation is accurate to two places of decimals, but there is a theoretical error, introduced by the assumption thus made that the deaths are equally distributed over each year of age; and writing $\frac{1}{2} + e_x = \mathring{e}_x$ rather overstates the complete expectation of life. This overstatement is with very close approximation equal to $\frac{d_{x-1} + d_x}{24\ l_x}$. At birth, if we did not make a correction, the complete expectation of life would be overstated by about ·03 of a year, and in the annexed tables the necessary correction has been made by taking the true proportion of deaths in the first six months of life. From age 2 to nearly age 80 the assumption is correct to two places of decimals that $\mathring{e}_x = \frac{1}{2} + e_x$. At age 1 and at age 80 the overstatement is about ·01, at age 90 about ·02, and at age 95 about ·03, but it has not been thought worth while to make any corrections.

28. It will be noticed above that as regards the population, $L_x$ or $P_x$, as regards the total population aged $x$ and upwards, $T_x$ or $Q_x$, and as regards the complete expectation of life, $\mathring{e}_x$ or $E_x$, the notation has been changed from that formerly used in the Reports of the Registrar-General. The reason is that the notation which had been used in the General Register Office differed from that which had been employed by actuaries for very many years, and that the actuaries' notation has at various International Congresses of Actuaries been adopted as the universal notation to be employed throughout the civilized world. It has therefore been thought desirable on the present occasion to bring in the universal notation and abandon the old notation of the General Register Office, but with this explanation no confusion will arise.

29. For English Life Table No. 7, and also No. 8 to be discussed presently, the fundamental function $q_x$, the rate of mortality, and consequently the complementary function $p_x$, the probability of living a year, are given to seven places of decimals, and for the other life tables to five places of decimals. Theoretically these columns never come to an end at the old ages, but $q_x$ rapidly approaches the limit unity and $p_x$ the limit zero. They are tabulated exactly as calculated up to the point where the numbers in the column of living, $l_x$, cease to contain integers. The columns $l_x$, $d_x$, $L_x$, and $T_x$, are tabulated to the nearest integer only, it not having been thought necessary to introduce fractions. The complete expectation of life $\mathring{e}_x$ equals $\frac{T_x}{l_x}$, and up to age 90 this ratio gives practically exact values as explained in paragraph 27. Above age 90, however, through the omission of fractions in $l_x$ and $T_x$ the values of $\mathring{e}_x$ produced by division would not be exact. At these old ages, therefore, $\mathring{e}_x$ was specially calculated by carrying out $l_x$ to four places of decimals, so that up to the oldest ages in the tables the values are correct, except that no adjustment has been made for the error involved in the assumption that $\mathring{e}_x = \frac{1}{2} + e_x$. Anyone wishing to make a correction can, however, do so from the formula given above. The following is an extended statement of the values of $q_x$ for ages above 100.



*English Life Table No. 7. Extended Table of $q_x$.*

| Age. | Males. | Females. |
|---|---|---|
| 100 ... ... ... | ·4496864 | ·4054393 |
| 1 ... ... ... | ·4912033 | ·4270731 |
| 2 ... ... ... | ·5459793 | ·4528570 |
| 3 ... ... ... | ·6129410 | ·4834460 |
| 4 ... ... ... | ·6883137 | ·5192339 |
| 105 ... ... ... | ·7658671 | ·5602347 |
| 6 ... ... ... | ·8381651 | ·6059796 |
| 7 ... ... ... | ·8985845 | ·6554565 |
| 8 ... ... ... | ·9432962 | ·7071198 |
| 9 ... ... ... | ·9721936 | ·7589957 |
| 110 ... ... ... | ·9882578 | ·8088858 |
| 1 ... ... ... | ·9958124 | ·8546504 |
| 2 ... ... ... | ·9987645 | ·8945169 |
| 3 ... ... ... | ·9997050 | ·9273439 |
| 4 ... ... ... | ·9999443 | ·9527690 |
| 115 ... ... ... | ·9999919 | ·9711948 |

(2) Life Tables for England and Wales, males and females, respectively, based upon the Census of 1911, and on the deaths of the three years 1910 to 1912. These tables are designated English Life Table No. 8.

30. The population enumerated at the Census on 2nd April, 1911, was available for every year of age, including the oldest centenarian. The details are given in Table 2 of Appendix I. The corresponding deaths for the years 1910 to 1912 are given in Table 5 of Appendix I. The central point of the three years 1910, 1911, and 1912 is 1st July, 1911, and it was therefore necessary to bring the corresponding population down to that date. Quinquennial groups were formed of the population enumerated for age period 0 to 4 last birthday, 5 to 9, &c., as far as 95 to 99, with a final group for age 100 and over, and each group was compared with the corresponding group of the Census of 1901, given in Table 1 of Appendix I., and the ratio of the increase or decrease in that group during the ten years was ascertained. There was an increase in all the groups except the last, fewer centenarians having been enumerated in 1911 than in 1901. The rate of increase or decrease in each group was calculated for the ninety days from 2 April to 1 July, 1911, by multiplying the logarithm of the decennial rate by $\frac{1}{10} \times \frac{90}{365}$ or ·02465753. This gives the adjusting factor. The number recorded at the census at each age was then multiplied by the appropriate adjusting factor for its own quinquennial group, and the census population at each age was thus found brought down to 1st July, 1911.

31. In my report on the "Graduation of the Ages," given in Vol. VII. of the Census of 1911, it was explained that the most accurate results in graduating the numbers would be obtained by quinquennial grouping for the age periods 4 to 8, 9 to 13, &c., and in constructing English Life Table No. 8 this age grouping was adopted, and groups obtained as far as that for age 99 to 103. This differs from the grouping used in constructing English Life Table No. 7, where it was for ages 5 to 9, 10 to 14, &c., but for that Table we were restricted to that particular grouping, because none other was available for the Census of 1901.

32. The deaths in each of three years 1910 to 1912 were supplied age by age down to age 99, and then for 100 and over; but for 1912 the ages at death of centenarians were given, and the centenarian deaths of the three years were divided into the groups 100 to 103 and 104 and over, in the proportions which prevailed in 1912. The deaths were then grouped for age intervals 4 to 8, 9 to 13, &c., down to 99 to 103 to correspond with the population groups.

33. Having thus, for the population and the deaths respectively, the quinquennial age groups 4 to 8, 9 to 13, &c., as far as 99 to 103, graduated quinquennial

values of $m_x$ were obtained for ages 11, 16, &c., to age 96 inclusive, in the way already explained in paragraph 15, and, hence, the corresponding values of the rate of mortality, $q_x$, were calculated, and the table was filled in from age 16 to age 91 by osculatory interpolation. At the old ages a fourth difference of log $p_{88}$ was formed from the values of $q_x$ at ages 88, 89, 90, 91, and 96, and the table was carried to the end by summation of differences. The following is an extended table of the values of $q_x$ for ages above 100 :—

*English Life Table No. 8. Extended Table of $q_x$.*

| Age. | Males. | Females. |
|---|---|---|
| 100 ... ... ... | ·4160478 | ·4188895 |
| 1 ... ... ... | ·4707252 | ·4503632 |
| 2 ... ... ... | ·5394855 | ·4863315 |
| 3 ... ... ... | ·6191855 | ·5268432 |
| 4 ... ... ... | ·7039925 | ·5715861 |
| 105 ... ... ... | ·7863101 | ·6198317 |
| 6 ... ... ... | ·8585865 | ·6704237 |
| 7 ... ... ... | ·9154100 | ·7218280 |
| 8 ... ... ... | ·9549468 | ·7722519 |
| 9 ... ... ... | ·9789754 | ·8198301 |
| 110 ... ... ... | ·9915490 | ·8628504 |
| 1 ... ... ... | ·9971266 | ·8999802 |
| 2 ... ... ... | ·9991892 | ·9304418 |
| 3 ... ... ... | ·9998139 | ·9540941 |
| 4 ... ... ... | ·9999660 | ·9713958 |
| 115 ... ... ... | ·9999952 | ·9832617 |

34. The rate of mortality for each of the first six years of life, not five as for English Life Table No. 7, was calculated from the births in the years 1904 to 1912, and from the deaths in the three years 1910 to 1912, on exactly the same principles as were used for English Life Table No. 7, and then, taking the values of $q_x$ at ages 4, 5, 11, 16, and 17, the intervening value were supplied by Lagrange's method of interpolation.

35. For children under age 6 the rates of mortality derived from the births and deaths alone were adopted, and the adjustment to bring them into harmony with the census enumerations was not made. This course was followed because it is submitted that the births and deaths give more trustworthy results at these ages than do the censuses, and it may be well here to set out in a little detail the reasons for this opinion.

36. Dealing first with English Life Table No. 7, Males, in paragraph 18 there is a table showing the living at exact ages 0 to 4 derived from the births and deaths, and the deaths in each of these years of age, and we have to pass to the populations in years of age 0 to 1, 1 to 2, 2 to 3, 3 to 4, and 4 to 5, and to do so we must deduct from the numbers living at exact age $x$ the deaths in the first half of the year $x$ to $x + 1$. For ages 1 to 4 we may take, without important error, half of the deaths, but for age 0 we must allow for the much greater mortality that occurs in the first half of the year. In paragraph 19 we have the ratio ·7353947 for deaths under six months, and adopting this ratio for age 0, and half the deaths for the other ages, we have the following results, taking them for one year instead of for ten years as in paragraph 18:—

*Births and Deaths alone. Males.*

| Age. | Living. | Deaths. | Half year's Deaths. | Population. |
|---|---|---|---|---|
| 0 ... ... ... | 474,322·0 | 66,446·7 | 48,864·6 | 425,457·4 |
| 1 ... ... ... | 406,269·4 | 15,926·4 | 7,963·2 | 398,306·2 |
| 2 ... ... ... | 386,833·4 | 5,987·9 | 2,994·0 | 383,339·4 |
| 3 ... ... ... | 377,926·2 | 3,674·8 | 1,837·4 | 376,088·8 |
| 4 ... ... ... | 371,101·1 | 2,666·8 | 1,333·4 | 369,767·7 |



37. From the table in paragraph 20 we have the corresponding modified census figures as follows:—

*Modified Census Figures. Males.*

| Age. | Living. | Deaths. | Half year's Deaths. | Population. |
|---|---|---|---|---|
| 0 ... ... ... | 460,339·9 | 66,446·7 | 48,864·6 | 411,475·3 |
| 1 ... ... ... | 394,293·4 | 15,926·4 | 7,963·2 | 386,330·2 |
| 2 ... ... ... | 375,430·3 | 5,987·9 | 2,994·0 | 372,436·3 |
| 3 ... ... ... | 366,785·7 | 3,674·8 | 1,837·4 | 364,948·3 |
| 4 ... ... ... | 360,161·7 | 2,666·8 | 1,333·4 | 358,828·3 |

38. Lastly, in paragraph 12 are given the mean populations derived from the Censuses of 1901 and 1911 without modification.

39. Comparing the three estimates of population thus arrived at, we have the following figures:—

*Populations. Males.*

| Age. | Births and Deaths alone. | Censuses alone. | Censuses Modified by Births and Deaths. |
|---|---|---|---|
| 0 ... ... ... | 425,457 | 398,048 | 411,475 |
| 1 ... ... ... | 398,306 | 368,644 | 386,330 |
| 2 ... ... ... | 383,839 | 380,483 | 372,436 |
| 3 ... ... ... | 376,089 | 375,174 | 364,948 |
| 4 ... ... ... | 369,768 | 371,670 | 358,828 |

40. Going through the same process for the females, and noting that for the first year of life the ratio of deaths under six months is ·7129334, we have the following figures:—

*Births and Deaths alone. Females.*

| Age. | Living. | Deaths. | Half year's Deaths. | Population. |
|---|---|---|---|---|
| 0 ... ... ... | 457,003·9 | 52,151·4 | 37,180·5 | 419,823·4 |
| 1 ... ... ... | 403,838·8 | 14,771·9 | 7,386·0 | 396,452·8 |
| 2 ... ... ... | 386,084·8 | 5,727·0 | 2,863·5 | 383,221·3 |
| 3 ... ... ... | 377,830·7 | 3,689·8 | 1,844·9 | 375,985·8 |
| 4 ... ... ... | 371,355·6 | 2,698·3 | 1,349·2 | 370,006·4 |

*Modified Census Figures. Females.*

| Age. | Living. | Deaths. | Half year's Death's | Population. |
|---|---|---|---|---|
| 0 ... ... ... | 444,089·0 | 52,151·4 | 37,180·5 | 406,908·5 |
| 1 ... ... ... | 392,426·4 | 14,771·9 | 7,386·0 | 385,040·4 |
| 2 ... ... ... | 375,174·1 | 5,727·0 | 2,863·5 | 372,310·6 |
| 3 ... ... ... | 367,153·2 | 3,689·8 | 1,844·9 | 365,308·3 |
| 4 ... ... ... | 360,861·1 | 2,698·3 | 1,349·2 | 359,511·9 |

*Populations. Females.*

| Age. | Births and Deaths alone. | Censuses alone. | Censuses Modified by Births and Deaths. |
|---|---|---|---|
| 0 | 419,823 | 392,556 | 406,909 |
| 1 | 396,453 | 366,681 | 385,040 |
| 2 | 383,221 | 380,273 | 372,311 |
| 3 | 375,986 | 377,243 | 365,308 |
| 4 | 370,006 | 372,327 | 359,512 |

41. It will be noticed from the tables of populations above that, for ages 0 and 1, the populations given by the births and deaths alone largely exceed the mean populations derived from the two Censuses of 1901 and 1911, and consequently those for the Censuses modified; whereas for ages 2, 3, and 4, the populations derived from the births and deaths alone correspond with remarkable accuracy with the mean populations enumerated at the two Censuses. This feature is repeated when we come to deal with English Life Table No. 8 and the Census of 1911 alone. The following are the male populations derived from the births and deaths alone, and these populations compared with the census populations brought down to 1st July, 1911 :—

*Births and Deaths alone. Males.*

| Age. | Living. | Deaths. | Half year's Deaths. | Three Times Population. | Population. |
|---|---|---|---|---|---|
| 0 | 1,361,932 | 164,033 | 120,629 | 1,241,303 | 413,768 |
| 1 | 1,214,346 | 41,577 | 20,788 | 1,193,558 | 397,853 |
| 2 | 1,190,872 | 15,916 | 7,958 | 1,182,914 | 394,305 |
| 3 | 1,178,218 | 9,639 | 4,820 | 1,173,398 | 391,133 |
| 4 | 1,155,804 | 6,895 | 3,447 | 1,152,357 | 384,119 |

*Populations. Males.*

| Age. | Births and Deaths alone. | Census brought down to 1st July, 1911. |
|---|---|---|
| 0 | 413,768 | 395,525 |
| 1 | 397,853 | 374,502 |
| 2 | 394,305 | 396,335 |
| 3 | 391,133 | 389,077 |
| 4 | 384,119 | 382,708 |

and, similarly, the following are the figures for the females :—

*Births and Deaths alone. Females.*

| Age. | Living. | Deaths. | Half year's Deaths. | Three Times Population. | Population. |
|---|---|---|---|---|---|
| 0 | 1,309,772 | 127,925 | 91,202 | 1,218,570 | 406,190 |
| 1 | 1,199,240 | 38,288 | 19,144 | 1,180,096 | 393,365 |
| 2 | 1,180,101 | 15,598 | 7,799 | 1,172,302 | 390,767 |
| 3 | 1,170,375 | 9,387 | 4,694 | 1,165,681 | 388,560 |
| 4 | 1,149,554 | 6,732 | 3,366 | 1,146,188 | 382,063 |



*Populations. Females.*

| Age. | Births and Deaths alone. | Census brought down to 1st July, 1911. |
|---|---|---|
| 0 | 406,190 | 386,905 |
| 1 | 393,365 | 368,983 |
| 2 | 390,767 | 393,668 |
| 3 | 388,560 | 388,971 |
| 4 | 382,063 | 381,168 |

42. If the total populations for ages 0 to 4 last birthday enumerated at the Censuses came out nearly the same as the corresponding totals calculated from the births and deaths, and if the Censuses showed a deficiency in the population of young infants and a consequent excess in the populations of children aged from 2 to 4 last birthday, then it would be reasonable to assume that, as regards total numbers, the Census enumerations were correct, but that only the ages were wrongly given, the children under two years of age being returned as over two. That is the assumption which was made formerly (although Dr. Farr in his paper in the Philosophical Transactions of 1859 does not mention the point, he having used for his table for healthy districts the births and deaths alone for young children), but when the above statements are examined it is found not to be supported by facts. In each of the two tables relating to males and females, respectively, for the two Censuses of 1901 and 1911, and in each of the two similar tables for the single Census of 1911 there is a great deficiency in the infants enumerated in each of the first two years of life, and there is no corresponding excess in the young children aged from 2 to 4 last birthday, the number of such children being in close agreement with the numbers estimated from the births and deaths. It is true that emigration disturbs a little the statistics based upon the births and deaths, and the effect of that disturbance is cumulative with increasing age. The number of infants alive under one year of age should closely agree with the calculated number derived from the births and deaths, there having been no time for emigration to tell, whereas the number of children alive in each of the succeeding four years of age should progressively be a little less—the difference being an increasing one—than the number calculated from the births and deaths. It is, however, seen that the Census returns do not comply with these conditions, and the conclusion seems to be inevitable that a large number of infants under two years of age escaped enumeration at both the Censuses of 1901 and 1911, more especially so in 1911, although why that should be it is difficult to understand. Is there any other explanation? This is a matter that is well worthy of investigation before the next census comes to be taken.

43. These considerations lead to the conclusion that greater accuracy in the rates of mortality for the first five years of life is secured by depending upon the statistics derived from births and deaths, and therefore that course has been followed in the construction of English Life Table No. 8.

44. The method of construction employed for the new tables does produce mortality curves which are of smooth graduation. This is proved if we take out the differences of successive orders of the column of $q_x$. Using English Life Table No. 8, Males, as an example, and retaining only five decimal places in $q_x$, and omitting the decimal point, the following table gives the differences of the third order.

It will be seen that for the first five years of life the differences are large, which was only to be expected, but they are regular. From age 5 onwards as far as age 75 they are very small, and, such as they are, they can be accounted for mainly by the

irregularities caused by omitting the succeeding decimal places. In fact, it would be difficult to imagine a curve of smoother graduation, unless it were a curve really of the third order with a constant third difference, which, of course, is not the case with mortality curves. From age 75 onwards the differences become larger, but still they are cyclical in character, and follow a regular law, as can be seen when we carry out the process of differencing further.

*English Life Table No.* 8. *Males.*

| Age. | 3rd Difference of $q_x$. | | Age. | 3rd Difference of $q_x$. | | Age. | 3rd Difference of $q_x$. | |
|---|---|---|---|---|---|---|---|---|
| | Positive. | Negative. | | Positive. | Negative. | | Positive. | Negative. |
| 0 | | 4965 | 40 | — | — | 80 | 12 | |
| 1 | | 1270 | 1 | 1 | | 1 | 7 | |
| 2 | | 185 | 2 | — | — | 2 | 9 | |
| 3 | | 97 | 3 | | 1 | 3 | 12 | |
| 4 | — | — | 4 | — | — | 4 | 77 | |
| 5 | 1 | | 45 | — | — | 85 | 7 | |
| 6 | — | — | 6 | 2 | | 6 | | 102 |
| 7 | | 2 | 7 | 2 | | 7 | | 127 |
| 8 | — | — | 8 | 5 | | 8 | | 146 |
| 9 | | 2 | 9 | | 2 | 9 | | 65 |
| 10 | | 3 | 50 | — | — | 90 | 5 | |
| 1 | | 3 | 1 | | 1 | 1 | 74 | |
| 2 | | 1 | 2 | 2 | | 2 | 137 | |
| 3 | | 6 | 3 | 1 | | 3 | 202 | |
| 4 | | 4 | 4 | | 2 | 4 | 261 | |
| 15 | 7 | | 55 | 2 | | 95 | 307 | |
| 6 | | 2 | 6 | — | — | 6 | 321 | |
| 7 | | 3 | 7 | 4 | | 7 | 276 | |
| 8 | | 2 | 8 | — | — | 8 | 160 | |
| 9 | | 2 | 9 | | 2 | 9 | | 47 |
| 20 | 2 | | 60 | | 1 | 100 | | 314 |
| 1 | 2 | | 1 | 8 | | 1 | | 584 |
| 2 | 4 | | 2 | 5 | | 2 | | 758 |
| 3 | 1 | | 3 | 8 | | 3 | | 756 |
| 4 | — | — | 4 | 2 | | 4 | | 542 |
| 25 | | 2 | 65 | | 3 | 105 | | 182 |
| 6 | 2 | | 6 | 5 | | 6 | 177 | |
| 7 | | 1 | 7 | 3 | | 7 | 405 | |
| 8 | 2 | | 8 | 4 | | 8 | 447 | |
| 9 | | 2 | 9 | 11 | | 9 | 347 | |
| 30 | 2 | | 70 | 3 | | 110 | 208 | |
| 1 | | 2 | 1 | | 5 | 1 | 98 | |
| 2 | — | — | 2 | | 7 | 2 | 33 | |
| 3 | | 1 | 3 | | 8 | | | |
| 4 | — | — | 4 | 9 | | | | |
| 35 | | 1 | 75 | 13 | | | | |
| 6 | 2 | | 6 | | 9 | | | |
| 7 | 2 | | 7 | | 8 | | | |
| 8 | 1 | | 8 | | 11 | | | |
| 9 | | 1 | 9 | | 6 | | | |



If from age 75 onwards we obtain the fifth difference, the following are the results :—

*English Life Table No.* 8. *Males.*

| Age. | 5th Difference of $q_x$. | | Age. | 5th Difference of $q_x$. | | Age. | 5th Difference of $q_x$. | |
|---|---|---|---|---|---|---|---|---|
| | Positive. | Negative. | | Positive. | Negative. | | Positive. | Negative. |
| 75 ... | 23 | | 90 ... | | 6 | 105 ... | | 131 |
| 6 ... | | 4 | 1 ... | 2 | | 6 ... | | 186 |
| 7 ... | 8 | | 2 ... | | 6 | 7 ... | | 142 |
| 8 ... | 13 | | 3 ... | | 13 | 8 ... | | 39 |
| 9 ... | | 23 | 4 ... | | 32 | 9 ... | 29 | |
| 80 ... | 7 | | 95 ... | | 59 | 110 ... | 45 | |
| 1 ... | 1 | | 6 ... | | 71 | | | |
| 2 ... | 62 | | 7 ... | | 91 | | | |
| 3 ... | | 135 | 8 ... | | 60 | | | |
| 4 ... | | 39 | 9 ... | | 3 | | | |
| 85 ... | 84 | | 100 ... | 96 | | | | |
| 6 ... | 6 | | 1 ... | 176 | | | | |
| 7 ... | 100 | | 2 ... | 212 | | | | |
| 8 ... | | 11 | 3 ... | 146 | | | | |
| 9 ... | | 1 | 4 ... | | 1 | | | |

These fifth differences are smaller than the third, and, from the fairly regular changes from positive to negative, and *vice versa*, it is seen that they also follow a law. From age 91 onwards the law becomes manifest, except in so far as it is disturbed by neglecting the more remote decimal places. At that part of the table log $p_x$ has a constant fourth difference, and all the functions depending upon it must therefore follow a definite law and be of smooth graduation. Carrying on the column of $q_x$ indefinitely and to a sufficient number of decimal places, it would be found that all the orders of differences would become infinitesimal. English Life Table, No. 8, Males, has been used as an illustration, but all the fifteen tables constructed are of a very similar character in this respect.

45. The mortality curves also adhere accurately to the original data. Hitherto it has not been possible to prove that this condition has been fulfilled in the construction of national life tables, because the data were not given in a form to render the calculations feasible. Now, for the first time, in English Life Table No. 8, we have the populations and the deaths for each year of age, and from the final mortality table we can ascertain the expected deaths, and compare them with the actual. To obtain the expected deaths, seeing that the data consist of populations and not of the numbers living at the commencement of the year of age, we must form a column of $m_x$, the central death rate, from the column of $q_x$, and then multiply three times the population at each age brought down to 1st July by the corresponding $m_x$, three times the population being taken because there are deaths for three years. That has been done for English Life Table No. 8 for both males and females, and the following comparison of the actual and the expected deaths in each case shows how very closely the final tables adhere to the original facts. For the first five years of life the census figures have not been adopted in calculating the expected deaths for reasons above explained, but the populations have been taken from the estimates derived from the births and deaths. There having been no graduation of these figures, the expected and the actual deaths as far as age 5 agree exactly. Also, the formula to derive $m_x$ from $q_x$ breaks down at the other extremity of life, and therefore for ages 104 and over the expected deaths have been taken as exactly equal to the actual, but here the deaths are very few in number.

*English Life Table No. 8.*
*Comparison of Actual with Expected Deaths.*

| Ages last birthday. | Population as on on 1 July, 1911. | Actual Deaths. | Expected Deaths. | Deviation, Expected less Actual. | |
|---|---|---|---|---|---|
| | | | | Positive. | Negative. |
| *Males.* | | | | | |
| 0 to 3 | 1,597,058 | 231,165 | 231,165 | — | — |
| 4 „ 8 | 1,878,823 | 22,345 | 23,441 | 1096 | — |
| 9 „ 13 | 1,768,267 | 10,211 | 10,294 | 83 | — |
| 14 „ 18 | 1,676,267 | 13,073 | 12,937 | — | 136 |
| 19 „ 23 | 1,529,538 | 16,706 | 16,563 | — | 143 |
| 24 „ 28 | 1,469,229 | 18,196 | 18,264 | 68 | — |
| 29 „ 33 | 1,400,431 | 21,213 | 21,204 | — | 9 |
| 34 „ 38 | 1,300,096 | 25,812 | 25,785 | — | 27 |
| 39 „ 43 | 1,123,739 | 29,071 | 29,027 | — | 44 |
| 44 „ 48 | 948,806 | 33,169 | 33,210 | 41 | — |
| 49 „ 53 | 804,168 | 38,603 | 38,478 | — | 125 |
| 54 „ 58 | 640,706 | 44,117 | 44,097 | — | 20 |
| 59 „ 63 | 506,430 | 50,465 | 50,241 | — | 224 |
| 64 „ 68 | 383,388 | 55,465 | 55,623 | 158 | — |
| 69 „ 73 | 268,875 | 58,191 | 57,901 | — | 290 |
| 74 „ 78 | 148,627 | 48,879 | 48,842 | — | 37 |
| 79 „ 83 | 66,129 | 32,210 | 32,247 | 37 | — |
| 84 „ 88 | 24,269 | 16,761 | 16,758 | — | 3 |
| 89 „ 93 | 5,405 | 5,158 | 5,195 | 37 | — |
| 94 „ 98 | 778 | 856 | 884 | 28 | — |
| 99 „ 103 | 59 | 87 | 92 | 5 | — |
| 104 and over | 6 | 7 | 7 | — | — |
| All Ages. | 17,541,094 | 771,760 | 772,255 | 1553 | 1058 |
| | | | | +495 | |
| *Females.* | | | | | |
| 0 to 3 | 1,578,883 | 191,198 | 191,198 | — | — |
| 4 „ 8 | 1,877,233 | 22,119 | 23,016 | 897 | — |
| 9 „ 13 | 1,771,238 | 10,466 | 10,550 | 84 | — |
| 14 „ 18 | 1,695,731 | 13,059 | 12,827 | — | 232 |
| 19 „ 23 | 1,667,756 | 15,229 | 15,231 | 2 | — |
| 24 „ 28 | 1,652,490 | 17,488 | 17,507 | 19 | — |
| 29 „ 33 | 1,528,954 | 19,805 | 19,791 | — | 14 |
| 34 „ 38 | 1,395,151 | 23,019 | 23,005 | — | 14 |
| 39 „ 43 | 1,207,377 | 25,223 | 25,186 | — | 37 |
| 44 „ 48 | 1,025,521 | 27,949 | 27,997 | 48 | — |
| 49 „ 53 | 870,115 | 32,017 | 31,938 | — | 79 |
| 54 „ 58 | 704,602 | 36,998 | 36,956 | — | 42 |
| 59 „ 63 | 570,080 | 43,080 | 42,817 | — | 263 |
| 64 „ 68 | 460,335 | 51,198 | 51,394 | 196 | — |
| 69 „ 73 | 348,248 | 61,489 | 61,220 | — | 269 |
| 74 „ 78 | 210,885 | 57,426 | 57,455 | 29 | — |
| 79 „ 83 | 100,824 | 42,473 | 42,410 | — | 63 |
| 84 „ 88 | 41,694 | 24,808 | 24,756 | — | 52 |
| 89 „ 93 | 10,862 | 9,023 | 9,052 | 29 | — |
| 94 „ 98 | 1,750 | 1,928 | 1,988 | 60 | — |
| 99 „ 103 | 153 | 235 | 244 | 9 | — |
| 104 and over | 7 | 6 | 6 | — | — |
| All Ages. | 18,719,889 | 726,236 | 726,544 | 1373 | 1065 |
| | | | | +308 | |

46. Examining the above tables, it is seen that in the case of males the final life table gives 495 more expected deaths than actual out of a total number of 771,760. The deviation is, therefore, very small and of no importance, but looking at the top of the table it is seen that that excess of expected deaths arises at the ages 4 to 8, where recourse was had to Lagrange's method of interpolation.



Evidently too much weight is given to the comparatively heavy mortality at ages 4 and 5. It might be possible to devise some method of interpolation that would avoid this small error, but in practice it is of no importance. In the case of the females similar remarks apply. There the expected deaths are only 308 in excess of the actual out of a total number of 726,236 deaths. We could hardly wish for a more close agreement.

(3) Life tables for England and Wales, for females only, according to marital condition, single, married, or widowed, based upon the Census of 1911, and the deaths of the three years 1910 to 1912.

47. These tables have been prepared from the Census of 1911, and the deaths of the three years 1910, 1911, and 1912. At the Census of 1911 the enumerations showed the marital condition of females, but not so at the Census of 1901 in suitable age groups, and therefore it was not possible to bring down the figures of the Census of 1911 to 1st July for the increase of the population as was done for English Life Table No. 8. Hence there is no doubt a very slight over-statement of the rate of mortality, because the population had slightly increased between 2nd April and 1st July, and the larger population on 1st July, had it been available, should have been used as a denominator to obtain the central death rate at the pivotal quinquennial points of age. In this respect the tables for the marital condition of females differ from English Life Table No. 8, but in every other respect the construction has been identical. Age groups with central ages 11, 16, 21, &c., were used, giving the pivotal values at these ages. For single women the earliest pivotal value that could be formed was that for age 11, and that gave, by osculatory interpolation, the values of $q_x$ for each year of age from 16 onwards. It was found that at age 16 the rate of mortality so derived was almost identical with that by English Life Table No. 8, and, therefore, for age 15 the rate of Table No. 8 was adopted, so that the table for the single women starts at age 15. For the married women and widows, the earliest pivotal point that could be obtained was that for age 26, and by osculatory interpolation we get the values of $q_x$ from age 31 onwards. Using then these values at ages 33, 32, 31, and 26, the values for ages 27 to 30 were supplied by a third difference, and the third difference was used to continue the table to age 25. The radix of all the three tables was taken as 100,000 at age 25, the table for the single women being carried back from that radix to age 15.

48. At the very old ages anomalies presented themselves, because the numbers supplied by the data when separated into the three marital conditions were too small to give any good results. Therefore, each table was completed by its own data as far as age 96, and for age 96 onwards it was carried on by a constant fourth difference of log $p_{95}$, the constant fourth difference selected being $-\cdot00047$, that being the constant which arises from combining all the females. The fourth differences at ages 93 and 94 were arbitrarily adjusted so as to run into this constant, it being thought that thereby a smoother curve would be produced. It was, however, found that no great advantage resulted from this adjustment, and it would have done just as well to start the constant fourth difference at age 93.

(4) Sectional Life Tables, for males and females, respectively, for—
- (*a*) The administrative County of London;
- (*b*) The aggregate of County Boroughs;
- (*c*) The aggregate of Urban Districts;
- (*d*) The aggregate of Rural Districts.

49. The data for the construction of the eight sectional tables under this head are given in Tables 9 to 12 of Appendix I. The populations were estimated in your Department as in the middle of each of the years 1911 and 1912, corrections having been made for changes in boundaries, and the sum of these estimates was taken as the assumed population on 31st December, 1911. The estimates were given for quinquennial age groups 0 to 4 last birthday, 5 to 9, &c., up to 80 to 84, with a last group 85 and over, and this last group was subdivided into quinquennial groups 85 to 89, &c., up to 100 to 104, and a final group, 105 and over, in the proportions which were enumerated in each section at the Census of 1911.

50. The deaths for each section in the two years were given for each year of age throughout life, and were grouped for quinquennial age periods to correspond with the populations as above. They will be found in Tables 11 and 12 of Appendix I.

51. Starting with the age group 5 to 9, pivotal quinquennial values were formed for the populations and the deaths at ages 12, 17, &c., as far as age 97, and hence the pivotal values were derived of the central death rate $m_x$, and the rate of mortality $q_x$, and by osculatory interpolation, exactly as in the case of all the tables already discussed, the final values of $q_x$ were formed from age 17 to 92 inclusive.

52. At the old ages the function log $p_x$ was used, and from the values at ages 89, 90, 91, 92, and 97 a fourth difference was formed, and each of the tables was thus completed from the actual experience as far as age 97. At the still older ages anomalies were met with which were produced by the paucity of data, and all the eight tables were completed by assuming a constant fourth difference of log $p_{94}$ equal to − ·00050, that being approximately its value for the whole of England and Wales. This method is of course empirical, but at these extreme ages any little error in the assumption is of no practical importance, and in the absence of data some reasonable method must be employed to bring the tables to a convenient end.

53. Because, before 1911 the births and deaths were recorded by registration areas and not by administrative, it was not possible to obtain the births and deaths for the individual sections at the ages of early childhood, and without this information there is no method by which the tables could be carried back to age 0 with trustworthy results. It was therefore determined to start all these eight tables at age 12, and the missing values for ages 13 to 16, inclusive, were supplied by a third difference calculated from the values for ages 12, 17, 18, and 19.

54. In the statistical tables of Appendix I. it has not been thought necessary to include the populations of the several sections as enumerated in 1911, although these were used to subdivide the estimated populations above mentioned. They will be found in Volume VII. of the "Census of England and Wales," pages 5 to 14, except as regards centenarians, particulars of whom were supplied specially.

## Part III.—Some of the more important deductions derivable from the annexed Life Tables.

55. From the fifteen life tables annexed, accompanied as they are by a large mass of statistics, many deductions may be derived, but it is not intended here to go into this matter with any elaboration. The opportunity is, however, taken to examine the progression of the national death rate by means of the new tables now presented and of tables based upon former censuses.

56. There are various methods of comparing life tables. When two tables start at the same age with the same radix, then, by looking at the numbers living from age to age, a judgment can be formed as to the comparative rates of mortality. We may see, for instance, how many reach age 50 by each of the tables, and, comparing these numbers, we shall know which of the two tables shows up to age 50 the heavier mortality. Again, we may look at the expectations of life and see which of these tables shows the heavier mortality over the whole remainder of life above a given age. Such comparisons are useful as showing the cumulative results of the action of mortality up to a given age, or for the whole of the remainder of life after a given age, but they suffer from the disadvantage of giving no indication of the ways in which these cumulative results are attained. Thus, in a particular section, one table may show a heavier mortality than the other, whereas in a succeeding section the relative positions of the tables may be reversed. It is well, therefore, to employ a method which compares the tables section by section. We may use the probability of living five years or ten years at various points of age, such as ages 10, 15, 20, &c.; or, if from the probability taken to, say, five decimal places we omit the decimal point, we have the number of a given age who complete five years or ten years out of 100,000, commencing at the given age. In this way we can judge from point to point the relative rates of mortality shown by the two tables over intervals, and we can thus see the changes in the relative rates of mortality as the age of the lives increases. If, instead of taking the numbers who complete each period we take those who die, we shall have the numbers who die within five years or ten years out of 100,000 commencing at each age, and probably this is the most effective way of comparing life tables, and it has been adopted in the present enquiry.



57. English Life Table No. 6 shows the rates of mortality which prevailed during the ten years 1891 to 1900, No. 7 during the ten years 1901 to 1910, and No. 8 during the three years 1910 to 1912. We have thus three periods in chronological order from which good comparisons may be derived. In order, however, that the best results may be obtained, all the tables compared must have been constructed on the same principles, because otherwise the results may be vitiated by the effect of the formulas used on the calculated rates of mortality from point to point, apart from any real difference in the mortality. English Life Tables No. 7 and 8 have been prepared in practically the same way, but other formulas were used for No. 6, as published in the reports of the Registrar-General. English Life Table No. 6 had been recomputed by the same methods as have now been employed for Nos. 7 and 8, the reconstructed table being given in the "Journal of the Institute of Actuaries," Vol. XLIII., page 355, and it is this reconstructed table which has been used in the following comparisons. The difference between the official table and the reconstructed table is hardly appreciable up to about age 70, but at the older ages the reconstructed table shows a rather higher rate of mortality, the methods used in constructing the official table probably overstating the vitality, as mentioned in paragraph 5 above.

58. There is also a fourth table which is available for tracing the progression of the national death rate, namely, the table prepared for the National Insurance Commissioners, and published in the "Report for 1912-13 on the Administration of the National Insurance Act," Part I., pages 578 to 581. That was based on the estimated population on 30th June, 1909, and on the deaths of the three years 1908, 1909, and 1910. The estimate of the population was, however, made eight years after the last preceding census, so that it was difficult to secure accuracy. A new estimate of the population as at the same date was supplied to me, based upon the two Censuses of 1901 and 1911, and therefore much more trustworthy than the original estimate, and were the Insurance Commisioners table to be recalculated on this new estimate, differences of some importance would result. This point is taken up lower down, and for the moment attention is confined to the three National Life Tables, Nos. 6, 7 and 8.

59. Omitting for the moment children under 5, the two following statements afford a means of tracing the changes in the national death rate. They show, for five years and for ten years respectively, the number who die out of 100,000, commencing at each age according to the different life tables.

*England and Wales.*

*Number who die within 5 years out of* 100,000 *commencing at each age, according to English Life Tables Nos.* 6, 7, *and* 8, *respectively.*

| Age. | Males. | | | Females. | | |
|---|---|---|---|---|---|---|
| | Life Table No. 6. | Life Table No. 7. | Life Table No. 8. | Life Table No. 6. | Life Table No. 7. | Life Table No. 8. |
| 5 | 2,132 | 1,656 | 1,678 | 2,155 | 1,730 | 1,656 |
| 10 | 1,215 | 1,006 | 956 | 1,279 | 1,063 | 985 |
| 15 | 1,864 | 1,533 | 1,392 | 1,794 | 1,431 | 1,320 |
| 20 | 2,492 | 2,058 | 1,857 | 2,227 | 1,732 | 1,554 |
| 25 | 2,947 | 2,422 | 2,116 | 2,781 | 2,083 | 1,814 |
| 30 | 3,772 | 3,119 | 2,629 | 3,255 | 2,651 | 2,243 |
| 35 | 4,948 | 3,978 | 3,430 | 4,217 | 3,337 | 2,844 |
| 40 | 6,332 | 5,082 | 4,483 | 5,221 | 4,135 | 3,608 |
| 45 | 7,904 | 6,737 | 6,026 | 6,190 | 5,291 | 4,707 |
| 50 | 10,443 | 9,128 | 8,272 | 8,226 | 7,048 | 6,393 |
| 55 | 13,732 | 12,622 | 11,696 | 11,082 | 10,007 | 9,023 |
| 60 | 19,007 | 17,419 | 16,478 | 15,950 | 13,740 | 12,739 |
| 65 | 25,616 | 23,882 | 23,188 | 22,229 | 19,416 | 18,560 |
| 70 | 35,728 | 33,929 | 32,922 | 31,887 | 29,824 | 27,819 |
| 75 | 47,238 | 46,302 | 45,625 | 43,016 | 41,160 | 39,892 |
| 80 | 64,121 | 59,006 | 59,342 | 59,768 | 54,364 | 53,976 |
| 85 | 78,546 | 74,321 | 72,553 | 73,530 | 69,579 | 66,794 |
| 90 | 89,512 | 86,624 | 82,602 | 84,845 | 81,801 | 78,944 |

*England and Wales.*

*Number who die within* 10 *years out of* 100,000 *commencing at each age, according to English Life Tables Nos.* 6, 7, *and* 8, *respectively.*

| Age. | Males. | | | Females. | | |
|---|---|---|---|---|---|---|
| | Life Table No. 6. | Life Table No. 7. | Life Table No. 8. | Life Table No. 6. | Life Table No. 7. | Life Table No. 8. |
| 5 | 3,321 | 2,647 | 2,618 | 3,406 | 2,775 | 2,624 |
| 10 | 3,056 | 2,523 | 2,337 | 3,050 | 2,476 | 2,292 |
| 15 | 4,309 | 3,559 | 3,226 | 3,980 | 3,139 | 2,853 |
| 20 | 5,365 | 4,430 | 3,934 | 4,946 | 3,779 | 3,339 |
| 25 | 6,608 | 5,466 | 4,687 | 5,945 | 4,681 | 4,016 |
| 30 | 8,534 | 6,973 | 5,969 | 7,334 | 5,900 | 5,023 |
| 35 | 10,967 | 8,858 | 7,760 | 9,218 | 7,334 | 6,350 |
| 40 | 13,736 | 11,476 | 10,241 | 11,088 | 9,207 | 8,143 |
| 45 | 17,522 | 15,250 | 13,799 | 13,907 | 11,966 | 10,799 |
| 50 | 22,741 | 20,598 | 18,999 | 18,396 | 16,349 | 14,839 |
| 55 | 30,129 | 27,843 | 26,247 | 25,264 | 22,372 | 20,611 |
| 60 | 39,754 | 37,141 | 35,847 | 34,633 | 30,488 | 28,934 |
| 65 | 52,192 | 49,708 | 48,476 | 47,028 | 43,449 | 41,216 |
| 70 | 66,089 | 64,521 | 63,526 | 61,187 | 58,709 | 56,615 |
| 75 | 81,070 | 77,987 | 77,892 | 77,074 | 73,148 | 72,336 |
| 80 | 92,303 | 89,473 | 88,840 | 89,351 | 86,117 | 84,718 |
| 85 | 97,750 | 96,565 | 95,224 | 95,989 | 94,464 | 93,008 |

60. It will be seen that throughout the whole of life after age 5, Life Table No. 7, based on the deaths of the years 1901 to 1910, shows lighter mortality both for males and females than does Life Table No. 6 based upon the deaths of the years 1891 to 1900. Again, Life Table No. 8, which is of the most recent date, based upon the deaths of the three years 1910, 1911, and 1912, shows a decided improvement on No. 7. In both of the tables Nos. 7 and 8 the year 1910 is included, but No. 7 may be taken to show on the average the mortality of the years 1905 and 1906, and No. 8 that of the year 1911, so that from that point of view No. 8 is of about five or six years later date than No. 7. The Insurance Commissioners' table would be between these two and show the mortality of about the year 1909.

61. The foregoing tables give the deaths that would occur out of 100,000, entering at each age, but that does not represent any actual population, and a further useful comparison may be made by taking the census enumerations of 1911, and finding by each table the number of deaths that would take place in one year in the population as recorded. The following table gives the results:—

*The number of deaths that would take place in one year in a population represented by the actual census enumerations of* 1911, *according to the rates of mortality shown by English Life Tables Nos.* 6, 7, *and* 8, *respectively.*

| Ages last birthday. | Males. | | | Females. | | |
|---|---|---|---|---|---|---|
| | Life Table No. 6. | Life Table No. 7. | Life Table No. 8. | Life Table No. 6. | Life Table No. 7. | Life Table No. 8. |
| 5 to 9 | 8,877 | 6,196 | 6,271 | 8,956 | 6,482 | 6,193 |
| 10 „ 14 | 4,301 | 3,532 | 3,357 | 4,528 | 3,738 | 3,469 |
| 15 „ 19 | 6,210 | 5,104 | 4,638 | 6,097 | 4,842 | 4,471 |
| 20 „ 24 | 7,578 | 6,243 | 5,631 | 7,537 | 5,852 | 5,240 |
| 25 „ 29 | 8,705 | 7,136 | 6,223 | 9,156 | 6,825 | 5,938 |
| 30 „ 34 | 10,544 | 8,690 | 7,307 | 9,907 | 8,041 | 6,785 |
| 35 „ 39 | 12,768 | 10,217 | 8,785 | 11,621 | 9,155 | 7,785 |
| 40 „ 44 | 13,974 | 11,131 | 9,787 | 12,360 | 9,723 | 8,453 |
| 45 „ 49 | 15,211 | 12,872 | 11,471 | 12,751 | 10,841 | 9,614 |
| 50 „ 54 | 16,805 | 14,570 | 13,134 | 14,223 | 12,101 | 10,934 |
| 55 „ 59 | 17,857 | 16,304 | 15,024 | 15,670 | 14,067 | 12,615 |
| 60 „ 64 | 19,885 | 18,055 | 16,972 | 18,662 | 15,892 | 14,638 |
| 65 „ 69 | 21,515 | 19,836 | 19,174 | 22,019 | 18,892 | 17,965 |
| 70 „ 74 | 20,582 | 19,255 | 18,549 | 23,980 | 22,066 | 20,321 |
| 75 „ 79 | 15,838 | 15,461 | 15,112 | 19,973 | 18,905 | 18,069 |
| 80 „ 84 | 11,138 | 9,747 | 9,850 | 15,478 | 13,379 | 13,268 |
| 85 „ 89 | 5,411 | 4,760 | 4,559 | 8,232 | 7,338 | 6,830 |
| Total 5 to 89 | 217,199 | 189,109 | 175,844 | 221,150 | 188,139 | 172,588 |



At every age, as before, the tables show a reduction in the mortality according to their chronological order. For males aged from 5 to 89 last birthday there would be 217,199 deaths annually according to Life Table No. 6, 189,109 according to Life Table No. 7, and 175,844 according to Life Table No. 8. Thus, annually, there are 41,355 male lives saved in this section of the population of England and Wales by the fall in the rate of mortality which took place between the period 1891 to 1900 and the period 1910 to 1912. Similarly, for females there are 48,562 lives saved. The improvement in the rate of mortality of males has been 19·04 per cent. in the period, and of females 21·96 per cent.

62. The table of the National Insurance Commissioners shows as far as about age 75 for both males and females a lighter mortality than Life Table No. 7, and a heavier mortality than Life Table No. 8, but above age 75 it shows a heavier mortality than Life Table No. 7. This table, therefore, does not quite fall into line with the others, and forms a break in the chronological order. That, however, is due to the difficulty of forming estimates of population eight years after a census, and when the revised population estimates are used, the Insurance Commissioners' table comes into complete harmony with the others. The following, for males and for females, are the two estimates of population, with the ratio of the original estimate to the revised.

*Insurance Commissioners' Table.*

*Comparison of the original estimate of the Population as on* 30 *June*, 1909, *based upon the Census of* 1901, *and the Revised Estimate based upon the two Censuses of* 1901 *and* 1911.

| Ages last birthday. | One tenth Original Estimate. | One tenth Revised Estimate. | Ratio, Original to Revised. |
|---|---|---|---|
| | *Males.* | | |
| 15 to 24 | 318,183 | 314,342 | 1·01223 |
| 25 „ 34 | 278,745 | 276,855 | 1·00682 |
| 35 „ 44 | 226,281 | 226,266 | 1·00004 |
| 45 „ 54 | 165,154 | 163,991 | 1·00707 |
| 55 „ 64 | 105,237 | 105,281 | ·99962 |
| 65 „ 74 | 55,602 | 57,997 | ·95869 |
| 75 „ 84 | 17,750 | 18,047 | ·98355 |
| 85 and over | 2,022 | 2,187 | ·92456 |
| ALL AGES | 1,168,974 | 1,164,966 | 1·00343 |
| | *Females.* | | |
| 15 to 24 | 339,432 | 334,240 | 1·01554 |
| 25 „ 34 | 311,813 | 305,983 | 1·01906 |
| 35 „ 44 | 245,300 | 242,809 | 1·01024 |
| 45 „ 54 | 178,081 | 177,407 | 1·00378 |
| 55 „ 64 | 118,801 | 118,075 | 1·00615 |
| 65 „ 74 | 69,619 | 72,849 | ·95566 |
| 75 „ 84 | 25,176 | 26,252 | ·95900 |
| 85 and over | 3,578 | 3,935 | ·90928 |
| ALL AGES | 1,291,800 | 1,281,550 | 1·00795 |

It will be seen that the two estimates of population in the aggregate agree very closely, there being a difference of only three per thousand for the males and eight per thousand for the females, but that is not so when the different age intervals are compared. Down to age 55 for males and 65 for females the original estimates are the larger, while at the older ages in each case they are the smaller. The over-estimate at the younger ages is not great, and scarcely affects the rate of mortality,

but at the older ages the under-estimate is sometimes considerable and leads to an over-statement of the rate of mortality. It has not been thought necessary to recompute the table on the new estimates, but an approximate correction has been made, and the following table gives a comparison of the revised values of $q_x$ with those of the other life tables, and it will be seen that the four tables in chronological order show a steady fall in the rate of mortality.

*The rate of mortality, $q_x$, by English Life Tables Nos. 6, 7, and 8, and by the Insurance Commissioners' Table.*

| Age. | Life Table No. 6. | Life Table No. 7. | Insce. Commrs. Table Revised. | Life Table No. 8. | Age. |
|---|---|---|---|---|---|
| | | | *Males.* | | |
| 20 | ·00460 | ·00378 | ·00350 | ·00348 | 20 |
| 30 | ·00685 | ·00566 | ·00514 | ·00478 | 30 |
| 40 | ·01180 | ·00931 | ·00837 | ·00811 | 40 |
| 50 | ·01936 | ·01657 | ·01554 | ·01482 | 50 |
| 60 | ·03581 | ·03262 | ·03164 | ·03042 | 60 |
| 70 | ·07248 | ·06708 | ·06588 | ·06470 | 70 |
| 80 | ·15523 | ·14163 | ·14577 | ·14299 | 80 |
| 90 | ·31800 | ·29566 | ·28793 | ·27395 | 90 |
| | | | *Females.* | | |
| 20 | ·00413 | ·00325 | ·00301 | ·00295 | 20 |
| 30 | ·00611 | ·00484 | ·00445 | ·00411 | 30 |
| 40 | ·00989 | ·00766 | ·00697 | ·00660 | 40 |
| 50 | ·01500 | ·01267 | ·01171 | ·01140 | 50 |
| 60 | ·02918 | ·02539 | ·02465 | ·02310 | 60 |
| 70 | ·06283 | ·05643 | ·05471 | ·05259 | 70 |
| 80 | ·13932 | ·12429 | ·12448 | ·12419 | 80 |
| 90 | ·27619 | ·25781 | ·26093 | ·23826 | 90 |

63. Only persons aged 5 and over have so far been considered, but when the case of children in the first five years of life is looked at, equally favourable features become apparent.

64. We have in English Life Tables Nos. 6 and 7 the mortality for the ten years 1891 to 1900 and 1901 to 1910, respectively, and both these tables, as regards the young children, have been constructed in the same way, the populations as enumerated at the censuses having been redistributed by means of the records of births and deaths. These tables, therefore, are comparable, and the following statement shows the number who die in one year in each year of age out of 100,000 entering on the year.

*Modified Census Figures.*

| Ages last birthday. | Males. | | Females. | |
|---|---|---|---|---|
| | Life Table No. 6. | Life Table No. 7. | Life Table No. 6. | Life Table No. 7. |
| 0 ... ... ... | 17,186 | 14,434 | 14,066 | 11,743 |
| 1 ... ... ... | 5,319 | 4,039 | 4,949 | 3,764 |
| 2 ... ... ... | 2,083 | 1,595 | 2,014 | 1,526 |
| 3 ... ... ... | 1,318 | 1,002 | 1,334 | 1,005 |
| 4 ... ... ... | 970 | 740 | 955 | 748 |



65. In paragraph 24 above, the rates of mortality in early childhood according to English Life Table No. 7 are also given as derived from the births and deaths alone to correspond with the similar rates by English Life Table No. 8. English Life Table No. 8 relates to the mortality for the years 1910 to 1912, and similar figures have been taken out for the years 1900 to 1902, so that we have two periods, each of three years, ten years apart, with English Life Table No. 7 practically covering the intervening ten years. This affords a still better test of the improvement in the mortality of childhood. The following statement shows the number dying in each year of age out of 100,000 who enter on the year.

*Births and Deaths alone.*

| Ages last birthday. | Males. | | | Females. | | |
|---|---|---|---|---|---|---|
| | Mortality 1900/1902. | Mortality 1901/1910. | Mortality 1910/1912. | Mortality 1900/1902. | Mortality 1901/1910. | Mortality 1910/1912. |
| 0 | 16,063 | 14,009 | 12,044 | 13,156 | 11,412 | 9,767 |
| 1 | 4,580 | 3,920 | 3,424 | 4,247 | 3,658 | 3,193 |
| 2 | 1,797 | 1,548 | 1,337 | 1,746 | 1,483 | 1,322 |
| 3 | 1,186 | 972 | 818 | 1,202 | 977 | 802 |
| 4 | 889 | 719 | 597 | 893 | 727 | 586 |

66. Corresponding to the table given in paragraph 61 for ages 5 and over, we have the following statement for children under 5 :—

*The number of deaths of children under 5 which would take place in one year in a population estimated as on 1st July, 1911, by the births and deaths alone.*

| Ages last birthday. | Males. | | | Females. | | |
|---|---|---|---|---|---|---|
| | Mortality 1900/1902. | Mortality 1901/1910. | Mortality 1910/1912. | Mortality 1900/1902. | Mortality 1901/1910. | Mortality 1910/1912. |
| 0 | 72,922 | 63,598 | 54,677 | 57,438 | 49,824 | 42,642 |
| 1 | 18,539 | 15,867 | 13,860 | 16,977 | 14,623 | 12,764 |
| 2 | 7,133 | 6,145 | 5,307 | 6,868 | 5,834 | 5,200 |
| 3 | 4,658 | 3,817 | 3,213 | 4,689 | 3,812 | 3,129 |
| 4 | 3,425 | 2,770 | 2,300 | 3,422 | 2,786 | 2,245 |
| Total | 106,677 | 92,197 | 79,357 | 89,394 | 76,879 | 65,980 |

67. It will be seen that according to the mortality in the years 1900 to 1902, 106,677 male children under five years of age would die in a year out of what may be taken to be the population of England and Wales in the middle of 1911, while only 79,357 would die according to the mortality of the years 1910 to 1912. Therefore the improvement in the mortality which took place during the ten years in question leads to the saving annually of the lives of 27,320 males, and, similarly there is a saving of the lives of 23,414 females. In ten years the mortality among males has improved by 25·61 per cent., and among females by 26·19 per cent.

*Marital Condition of Females.*

68. To compare the relative mortality amongst single, married, and widowed females, respectively, the following table has been prepared. It shows the number who die within 5 years, and also the number who die within 10 years out of 100,000 females commencing at each age in each marital condition.

*England and Wales, Females.*

*The number who die within* 5 *years, and the number who die within* 10 *years, out of* 100,000 *commencing at each age in each marital condition.*

| Age. | Five Years. | | | Ten Years. | | |
|---|---|---|---|---|---|---|
| | Single. | Married. | Widowed. | Single. | Married. | Widowed. |
| 25 | 1,667 | 1,936 | 2,611 | 3,766 | 4,159 | 5,581 |
| 30 | 2,134 | 2,267 | 3,050 | 4,690 | 5,084 | 6,644 |
| 35 | 2,611 | 2,882 | 3,708 | 5,924 | 6,365 | 8,137 |
| 40 | 3,402 | 3,586 | 4,600 | 7,970 | 7,932 | 10,538 |
| 45 | 4,729 | 4,507 | 6,224 | 10,661 | 10,331 | 13,656 |
| 50 | 6,227 | 6,099 | 7,925 | 14,112 | 14,170 | 17,651 |
| 55 | 8,410 | 8,595 | 10,562 | 19,386 | 19,570 | 23,373 |
| 60 | 11,984 | 12,007 | 14,324 | 27,188 | 27,419 | 31,440 |
| 65 | 17,274 | 17,516 | 19,978 | 38,335 | 38,793 | 43,641 |
| 70 | 25,458 | 25,796 | 29,571 | 53,441 | 53,612 | 58,563 |
| 75 | 37,540 | 37,486 | 41,164 | 70,460 | 70,209 | 73,305 |
| 80 | 52,706 | 52,346 | 54,628 | 84,426 | 84,309 | 85,045 |
| 85 | 67,069 | 67,073 | 67,038 | 93,170 | 93,175 | 93,149 |
| 90 | 79,260 | 79,271 | 79,215 | | | |

In the earlier years of married life the wives suffer from a heavier mortality than do their spinster sisters, but from about age 45 to 55 the position is reversed, and still later in life there is not much difference between the two classes. Throughout life until old age, widows suffer from a heavy rate of mortality, but above about age 80 all the three classes—single, married, and widowed—are scarcely distinguishable.

*Sectional Tables.*

69. For the sectional tables similar calculations have been made, and are given in the following two statements. Throughout the greater part of life the County of London shows a lighter mortality than the aggregate of County Boroughs, but these two sections show heavier mortality than the aggregate of Urban Districts, while the aggregate of Rural Districts shows the lightest mortality of all.

*The Number who die within* 5 *years, out of* 100,000 *commencing at each age in each Section.*

| Age. | Males. | | | | Females. | | | |
|---|---|---|---|---|---|---|---|---|
| | County of London. | County Boroughs. | Urban Districts. | Rural Districts. | County of London. | County Boroughs. | Urban Districts. | Rural Districts. |
| 15 | 1,370 | 1,592 | 1,483 | 1,270 | 1,172 | 1,458 | 1,306 | 1,329 |
| 20 | 1,746 | 2,013 | 1,780 | 1,687 | 1,297 | 1,696 | 1,495 | 1,631 |
| 25 | 2,206 | 2,386 | 2,010 | 1,945 | 1,622 | 1,934 | 1,739 | 1,864 |
| 30 | 3,018 | 3,076 | 2,380 | 2,256 | 2,114 | 2,404 | 2,101 | 2,202 |
| 35 | 4,197 | 4,106 | 3,103 | 2,663 | 3,012 | 3,310 | 2,647 | 2,526 |
| 40 | 5,709 | 5,405 | 4,000 | 3,377 | 4,080 | 4,153 | 3,333 | 2,911 |
| 45 | 7,620 | 7,377 | 5,544 | 4,320 | 5,468 | 5,559 | 4,510 | 3,639 |
| 50 | 10,141 | 10,021 | 7,898 | 5,909 | 7,093 | 7,449 | 6,077 | 5,121 |
| 55 | 13,776 | 13,986 | 11,235 | 8,561 | 9,733 | 10,519 | 8,801 | 7,449 |
| 60 | 18,698 | 19,455 | 16,480 | 12,707 | 13,200 | 14,751 | 12,860 | 10,608 |
| 65 | 25,005 | 26,603 | 23,280 | 18,814 | 18,578 | 20,927 | 17,963 | 15,888 |
| 70 | 35,330 | 38,711 | 34,658 | 29,145 | 27,927 | 32,069 | 29,179 | 25,408 |
| 75 | 47,568 | 50,092 | 46,412 | 42,436 | 39,261 | 43,856 | 40,636 | 37,609 |
| 80 | 60,807 | 62,107 | 58,598 | 57,724 | 54,489 | 57,269 | 54,191 | 51,670 |
| 85 | 71,981 | 74,219 | 72,833 | 72,537 | 68,906 | 69,411 | 67,083 | 67,085 |
| 90 | 84,225 | 84,607 | 81,523 | 85,433 | 79,401 | 79,850 | 78,346 | 80,406 |

*The Number who die within* 10 *years, out of* 100,000 *commencing at each age in each Section.*

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 15 | 3,092 | 3,573 | 3,237 | 2,936 | 2,454 | 3,130 | 2,781 | 2,938 |
| 20 | 3,914 | 4,351 | 3,755 | 3,599 | 2,898 | 3,597 | 3,208 | 3,464 |
| 25 | 5,158 | 5,389 | 4,342 | 4,157 | 3,701 | 4,292 | 3,803 | 4,025 |
| 30 | 7,088 | 7,056 | 5,409 | 4,858 | 5,062 | 5,635 | 4,692 | 4,672 |
| 35 | 9,666 | 9,289 | 6,979 | 5,950 | 6,969 | 7,326 | 5,891 | 5,363 |
| 40 | 12,894 | 12,383 | 9,322 | 7,551 | 9,324 | 9,481 | 7,692 | 6,444 |
| 45 | 16,988 | 16,659 | 13,004 | 9,974 | 12,173 | 12,594 | 10,313 | 8,574 |
| 50 | 22,520 | 22,606 | 18,246 | 13,964 | 16,135 | 17,185 | 14,344 | 12,189 |
| 55 | 29,898 | 30,720 | 25,864 | 20,180 | 21,648 | 23,718 | 20,529 | 17,267 |
| 60 | 39,028 | 40,882 | 35,923 | 29,130 | 29,326 | 32,591 | 28,513 | 24,810 |
| 65 | 51,501 | 55,016 | 49,870 | 42,476 | 41,317 | 46,284 | 41,901 | 37,259 |
| 70 | 66,092 | 69,412 | 64,985 | 59,213 | 56,224 | 61,861 | 57,958 | 53,462 |
| 75 | 79,450 | 81,088 | 77,813 | 75,665 | 72,357 | 76,009 | 72,806 | 69,846 |
| 80 | 89,019 | 90,670 | 88,752 | 88,390 | 85,849 | 86,929 | 84,921 | 84,092 |
| 85 | 95,580 | 96,032 | 94,980 | 95,999 | 93,595 | 93,836 | 92,872 | 93,551 |

## Part IV. A Short Method of Constructing Abridged Life Tables.

70. Medical Officers of Health and others interested in the Public Health Service of the country, frequently wish to compare the mortality of a particular district with that of other districts or of the general community, without having to go through the labour of constructing a complete mortality table. Also it may be frequently useful to make similar comparisons in the case of the mortality experience of a Life Office at the stage when only the numbers at risk and the deaths age by age are available. The following is a short and simple method of constructing an abridged mortality table for quinquennial points of age, including in the functions tabulated, in addition to $p_x$ and $q_x$, the probability of living five years, ${}_5p_x$, and the expectation of life, and it will be found to serve with ample accuracy the purposes in view.

71. The short method consists in finding, first, quinquennial values of $p_x$, the probability of living a year, and hence of log $p_x$; then quinquennial values of log ${}_5p_x$, the logarithm of the probability of living five years; then quinquennial values of $l_x$; and, finally, quinquennial values of $\mathring{e}_x$, the expectation of life. The quinquennial values of $p_x$, and hence of log $p_x$, are derived from those of $m_x$, the central death rate, which are calculated by the method explained and illustrated in Appendix II, Section 2, to which reference is made.

72. It will be convenient to begin by demonstrating the mathematical formulas to be used. Their application will become apparent later.

73. Let $u$ be a function of $x$, and let $w$ be the sum of five values of the function, so that $w_x = u_x + u_{x+1} + u_{x+2} + u_{x+3} + u_{x+4}$. The problem is to find $w_5$ and $w_6$ from the four values of $u$ at quinquennial distances, $u_0$, $u_5$, $u_{10}$, and $u_{15}$. Let the differences of these quinquennial values be represented by the symbol $\Delta$. Then employing the usual formula of finite differences

$$u_n = u_0 + n\Delta u_0 + \frac{n(n-1)}{2}\Delta^2 u_0 + \frac{n(n-1)(n-2)}{6}\Delta^3 u_0,$$

and remembering that the differences are for quinquennial periods, and taking $n$ successively

$$\frac{5}{5}, \frac{6}{5}, \frac{7}{5}, \frac{8}{5}, \frac{9}{5} \text{ and } \frac{10}{5},$$

we have the following scheme—

$$\begin{aligned}
u_5 &= u_0 + 1{\cdot}0\Delta u_0. \\
u_6 &= u_0 + 1{\cdot}2\Delta u_0 + {\cdot}12\Delta^2 u_0 - {\cdot}032\Delta^3 u_0. \\
u_7 &= u_0 + 1{\cdot}4\Delta u_0 + {\cdot}28\Delta^2 u_0 - {\cdot}056\Delta^3 u_0. \\
u_8 &= u_0 + 1{\cdot}6\Delta u_0 + {\cdot}48\Delta^2 u_0 - {\cdot}064\Delta^3 u_0. \\
u_9 &= u_0 + 1{\cdot}8\Delta u_0 + {\cdot}72\Delta^2 u_0 - {\cdot}048\Delta^3 u_0. \\
u_{10} &= u_0 + 2{\cdot}0\Delta u_0 + 1{\cdot}00\Delta^2 u_0.
\end{aligned}$$

74. If now we add the first five lines, we have $w_5$, the sum of five values of $u$ from $u_5$ to $u_9$ inclusive, that is, we have the sum in what may be called "initial form," and if we add the last five lines we have, similarly, $w_6$, the sum of five values from $u_6$ to $u_{10}$, in what may be called "terminal form." Hence the following equations result:

$$w_5 = 5u_0 + 7\Delta u_0 + 1{\cdot}6\Delta^2 u_0 - {\cdot}2\Delta^3 u_0 \quad . \ . \ . \quad \text{(i)}$$
$$w_6 = 5u_0 + 8\Delta u_0 + 2{\cdot}6\Delta^2 u_0 - {\cdot}2\Delta^3 u_0 \quad . \ . \ . \quad \text{(ii)}$$

75. These formulas are central, there being three groups of five, and the formulas giving the middle group. At the youngest age of the table, however, we cannot use the central method, but, as it happens, with very little loss of accuracy we may find the



corresponding sums for the first group of five values in the set of fifteen. In the formula of finite differences we take $n$ successively as

$$\frac{0}{5}, \frac{1}{5}, \frac{2}{5}, \frac{3}{5}, \frac{4}{5} \text{ and } \frac{5}{5},$$

and we have the following scheme

$$\begin{aligned}
u_0 &= u_0. \\
u_1 &= u_0 + {\cdot}2\Delta u_0 - {\cdot}08\Delta^2 u_0 + {\cdot}048\Delta^3 u_0 \\
u_2 &= u_0 + {\cdot}4\Delta u_0 - {\cdot}12\Delta^2 u_0 + {\cdot}064\Delta^3 u_0 \\
u_3 &= u_0 + {\cdot}6\Delta u_0 - {\cdot}12\Delta^2 u_0 + {\cdot}056\Delta^3 u_0 \\
u_4 &= u_0 + {\cdot}8\Delta u_0 - {\cdot}08\Delta^2 u_0 + {\cdot}032\Delta^3 u_0 \\
u_5 &= u_0 + 1{\cdot}0\Delta u_0
\end{aligned}$$

whence summing as before we have the initial and terminal forms

$$w_0 = 5u_0 + 2\Delta u_0 - {\cdot}4\Delta^2 u_0 + {\cdot}2\Delta^3 u_0 \quad . \ . \ . \quad \text{(iii)}$$
$$w_1 = 5u_0 + 3\Delta u_0 - {\cdot}4\Delta^2 u_0 + {\cdot}2\Delta^3 u_0 \quad . \ . \ . \quad \text{(iv)}$$

76. In order to get the values of log $l_x$, and hence of $l_x$ at quinquennial points, we must also have at the same quinquennial points the values of log ${}_5p_x$, the logarithm of the probability of living five years, because log $l_{x+5}$ = log $l_x$ + log ${}_5p_x$. But log ${}_5p_x$ = log $p_x$ + log $p_{x+1}$ + . . . + log $p_{x+4}$. Therefore when log $p_x$ is the function $u$, log ${}_5p_x$ is the function $w$. It is in initial form, and equation (i) is that to be used. The method of applying the formula is fully illustrated in the two examples given later on.

77. If $a$ be the youngest age in the table available from the statistics, formula (i) gives the value of log ${}_5p_{a+5}$, and in order to obtain log ${}_5p_a$ we use formula (iii). It will be seen how short the formulas are and how simple are the coefficients.

78. Having thus the values of log ${}_5p_x$ at quinquennial points from age $a$ onwards, we pass to the values of log $l_x$, and hence of $l_x$, by continued addition. We take for $l_a$ a suitable radix, and add to log $l_a$ successively the values found for log ${}_5p_x$.

79. As examples of the method it will be convenient to adopt English Life Tables No. 7 and No. 8, Males, and to take No. 8 first. For English Life Table No. 8 the populations and the deaths were grouped in fives, the first group being that for ages 4, 5, 6, 7, and 8. Therefore the first pivotal value of $p_x$ which can be obtained from the data is that for age 11. Also, the last value is that for age 101. Therefore the series gives three orders of difference of the column log $p_x$ as far as age 86, from which can be obtained by formula (i) the values of log ${}_5p_x$ as far as age 91. In Table A annexed these values are given. Log $p_x$ is essentially negative, and according to usual custom it is written with a positive mantissa and a negative characteristic. It is, however, more convenient here to use the actual negative form. In working with the pen it will be found to be a great advantage to write positive quantities in black ink and negative quantities in red ink. Thus the positive and negative signs are saved, and algebraical addition of the quantities is much facilitated. It is not easy for printers to have in one table both black and red ink. Therefore, in the illustrative table positive quantities are printed in heavy Ionic type, and negative in light Italic type. The logarithms are taken to five places of decimals, but for convenience the decimal points have been omitted.

80. As mentioned above, the last value of log ${}_5p_x$ which can be derived from the data is that for age 91, but the table does not end there, and in order to construct the values of $\mathring{e}_x$ we require the values of log ${}_5p_x$ as far as age 101, which will enable us to obtain the value of $l_x$ at age 106. We must therefore have three orders of differences of log $p_x$ as far as age 96. At these old ages the statistics are very uncertain, and each case must be treated on its merits, and methods must be devised to meet its special difficulties, and in order that we may carry the table of log $p_x$ beyond the point to which the original data take it we must arrange to have a final constant difference which is negative, and so to carry on the table by summation until it reaches a natural end.

81. In the case of English Life Table No. 8 it will be observed that the third difference of log $p_{86}$ is negative, and at age 81 positive. Therefore we can form a negative fourth difference at age 81 which may be used with great convenience to give the required third differences as far as age 96.

82. Formula (i) is then applied to obtain log ${}_5p_x$ from age 16 to age 101 inclusive. A complete check on this portion of the work is obtained by taking the algebraical sums of the column of log $p_x$ and its three orders of differences from age 11 to age 96 inclusive, and by applying formula (i) to these sums. The result should be the sum of the calculated values of log ${}_5p_x$ from age 16 to age 101 inclusive. After applying this check we insert the value of log ${}_5p_{11}$ by means of formula (iii).

83. The example as printed was worked out on the arithmometer, and shows every figure used. Where, however, an arithmometer is not available the work with very little more trouble can be done by ordinary multiplications. A column is formed by multiplying each value of log $p_x$ by 5. Then an adjacent column is obtained by multiplying the first differences by 7, and again another column by multiplying the second differences by 1·6, and a final column by multiplying the third differences by −·2. These columns are then added together algebraically sidewise to give the column of log ${}_5p_x$. This applies to the values of log ${}_5p_x$ from age 16 onwards, and it should be noticed that when the values of log $p_x$ and its differences at, for instance, age 16 are dealt with the result is log ${}_5p_x$ at age 21.

84. Having now log ${}_5p_x$ at quinquennial intervals from age 11 onwards, we select a suitable radix at age 11, in this case the radix 100,000 having been selected, and by adding to the logarithm of that radix successively the values of log ${}_5p_x$ we obtain the values of log $l_x$, and hence of $l_x$. At age 101, $l_x$ is equal to 22, and at age 106 it has no integers and may be treated as 0.

85. The value of the curtate expectation of life $e_x$ (see paragraphs 26 to 28) is derived by dividing by $l_x$ the sum of the column of $l_x$ from age $x+1$ to the oldest age in the table, and that sum may be made in quinquennial sections. The sum of the column from age $x+1$ onwards is denoted by the symbol $\mathrm{N}'_x$, and the sum of a quinquennial section by the symbol $\mathrm{N}'_{x\overline{5}|}$

86. We already have $l_x$ at quinquennial points, and these constitute the function $u$, and $\mathrm{N}'_{x\overline{5}|}$ constitutes the function $w$, which function is in the terminal form, and, therefore, to the quinquennial values of $l_x$ and its differences formulas (ii) and (iv) must be applied, exactly as formulas (i) and (iii) were applied to the column of quinquennial values of log $p_x$. The last value of $\mathrm{N}'_{x\overline{5}|}$ derived from the statistics is that for age 96, but we must also have it for age 101. $l_x$ at age 101 is equal to 22, and $p_x$ to ·52927, whence, multiplying, we have the value of $l_x$ at 102, equal to 12. Also the value at age 106 is 0, and by inspection we interpolate the values 6, 3, and 1, for $l_{103}$, $l_{104}$, and $l_{105}$, respectively, and this gives us $\mathrm{N}'_{101\,;\overline{5}|}$ equal to 22. Thus, we have quinquennial values of $\mathrm{N}'_{x\overline{5}|}$ from age 11 onwards, and by adding successively these values from the bottom upwards we form a column of $\mathrm{N}'_x$ at the quinquennial points. Lastly, dividing each of the values of $\mathrm{N}'_x$ by the corresponding $l_x$ we derive the curtate expectation of life, to which adding ·5 we have the complete expectation of life at quinquennial points of age. In the example ·5 has been added to $e_x$ before entering the value in the column.

87. For the second example we take English Life Table No. 7, Males. The original mean numbers living, and the original deaths, were grouped for quinquennial periods, 0 to 4 last birthday, 5 to 9, &c., and the earliest pivotal value of log $p_x$ that is obtainable is that for age 12, and the last that for age 97. The values of $p_x$ on this basis are given in Table I annexed.

88. In the following Table B the values of log $p_x$ and its differences are set forth, and it will be observed that the third difference of log $p_{82}$ is positive. We, therefore, cannot follow the plan which was adopted for English Life Table No. 8, but must seek another. The third difference of log $p_{77}$ is negative, but only 77, and that is too small to bring the table to a reasonable end. We may, however, go back to age 72 where the third difference of log $p_x$ is 1366 and negative. We use this third difference as a constant to carry the table of log $p_x$ down to age 107 as shown in Table C. Formulas (i) and (iii) are then applied in the first part of Table C to the values of log $p_x$ and its differences to obtain the values of $l_x$ from age 12 to age 102, and again, formulas (ii) and (iv) are applied in the continuation of Table C, just as in Table A for English Life Table No. 8, to obtain the expectation of life. The explanations need not be repeated. The radix in this case has been taken as the value of $l_{12}$ by the fully extended table.



89. English Life Tables Nos. 7 and 8 were selected as examples of the abridged process, partly because they illustrated two methods of dealing with the old ages, it not having been possible to treat both these tables in precisely the same way. These tables are based on very large populations, and yet they present difficulties at the old ages where the facts become comparatively few, and where they are not very trustworthy. If only restricted districts be dealt with the difficulties are accentuated, and sometimes it may even happen that data are altogether absent above say age 80. In such cases we cannot from the data obtain the third or fourth negative difference of log $p_x$ which is required to complete the table, but it will be quite legitimate to assume one arbitrarily so long as we do so reasonably and with judgment. At these old ages any small error in the assumption will have scarcely appreciable effect on the life table for all the principal period of life, say down to age 75 or 80.

90. The value of the expectation thus found for any particular age group is that for the central *integral age* of the group, but in the Public Health Service it is more usually required for the central *point of age* of the group, that central expectation of life being the mean expectation for the five ages included in the group. We can by second differences very easily and accurately obtain this central expectation, $e_{x+\frac{1}{2}}$. Taking three values of $e$, which may be written $e_0$, $e_5$, and $e_{10}$, and applying the formula of finite differences,

$$e_{\frac{1}{2}} = e_0 + \cdot1\Delta e_0 - \cdot045\Delta^2 e_0 \quad . \quad . \quad . \quad . \quad . \quad \text{(v)}$$
$$e_{5\frac{1}{2}} = e_0 + 1\cdot1\Delta e_0 + \cdot055\Delta^2 e_0 \quad . \quad . \quad . \quad . \quad . \quad \text{(vi)}$$
$$e_{10\frac{1}{2}} = e_0 + 2\cdot1\Delta e_0 + 1\cdot155\Delta^2 e_0 \quad . \quad . \quad . \quad . \quad . \quad \text{(vii)}$$

Formula (v) applies to the first value of $e$ in the table, and formula (vii) to the last; while formula (vi) applies to all the intervening values. For short distances the expectations of life do not differ much from an arithmetical progression, and the second difference employed above has very little effect. We might bring in a third difference, but that would not affect the third decimal place in the expectation. To Tables A and C have been added the expectation of life for these central points of age obtained in this way.

91. It will be seen that in Table A we have the $\mathring{e}_x$ and $\mathring{e}_{x+\frac{1}{2}}$ for ages 11, 16, 21, 26, &c., and in Table C for ages 12, 17, 22, 27, &c. Table A relates to English Life Table No. 8, which was constructed from the age grouping 9–14, 14–19, &c., and Table C to English Life Table No. 7, which was constructed from the age grouping 10–15, 15–20, &c. In fact in every case we obtain $\mathring{e}_x$ and $\mathring{e}_{x+\frac{1}{2}}$ centrally in respect of the particular grouping employed in constructing the table. The grouping of Table C, namely, 10–15, 15–20, &c., is that most commonly used in dealing with vital statistics, and is that with which Medical Officers of Health are more particularly familiar. That grouping will always give the mean expectations of life which they generally require. If, however, there should be such a grouping as that in Table A, the mean expectations of life for the groups 10–15, 15–20, &c., can still be obtained by a special application of the formula of finite differences. Instead of equations (v) to (vii) given in paragraph 90, the following equations could be applied to $e_x$ at ages 11, 16, &c. as in Table A, to obtain $\mathring{e}_{x+\frac{1}{2}}$ at ages 12, 17, &c. as in Table C, these expectations corresponding as regards age to expectations $e_{1\frac{1}{2}}$, $e_{6\frac{1}{2}}$, $e_{11\frac{1}{2}}$ in Table A.

$$e_{1\frac{1}{2}} = e_0 + \cdot3\Delta e_0 - \cdot105\Delta^2 e_0 \quad . \quad . \quad . \quad . \quad . \quad \text{(v } a\text{)}$$
$$e_{6\frac{1}{2}} = e_0 + 1\cdot3\Delta e_0 + \cdot195\Delta^2 e_0 \quad . \quad . \quad . \quad . \quad . \quad \text{(vi } a\text{)}$$
$$e_{11\frac{1}{2}} = e_0 + 2\cdot3\Delta e_0 + 1\cdot495\Delta^2 e_0 \quad . \quad . \quad . \quad . \quad . \quad \text{(vii } a\text{)}$$

The expectations for the central points of age for any method of grouping the original data may be obtained from the expectations for the central ages according to any other method of grouping, by suitably modifying equations (v) to (vii).

92. The process described above supplies the expectations of life at quinquennial points of age from about 11 or 12, according to the grouping of the original data, to the end of life. If a complete table be required without the other usual columns of a life table, that can easily be constructed by means of osculatory interpolation, fully explained in Appendix II, Section 3, and probably this is a shorter way of obtaining a complete table of expectations than if the life table were constructed in full. We cannot, however, go by these processes to a younger age than 11 or 12, and for infancy and childhood the expectations must be derived in some other way. That can be done by some such means as were employed to obtain the ordinary columns given in English Life Tables Nos. 7 and 8. These are fully explained in the earlier paragraphs of this report.

93. In Table D is given a comparison of the expectations of life derived by the abridged process with those produced by the construction of the life table at full length, and it will be seen that there is scarcely any difference between them. In fact the abridged process gives the expectations almost as exactly as the full length process. It might be said that this result is due to the abridged process being applied to the data grouped in the same way as for the full length table, but the abridged process can also be used for other life tables with equally satisfactory results. An abridged table (the $0^M$ table) constructed from the experience of healthy male lives assured in British Life Offices was prepared,* and seeing that the construction and graduation of the original full length table was effected by methods totally different from those employed in the abridged process, the test was severe. Nevertheless the expectations of life by the abridged process came out as close to those derived by the full length process as in the case of English Life Tables Nos. 7 and 8. It would thus appear that the abridged process may safely be adopted when only a skeleton table is required, no matter how the original statistics were derived and treated.

I remain, Sir,

Your obedient Servant,

GEORGE KING.

* *See* The "Journal of the Institute of Actuaries," Vol. xlviii., pp. 299 and 300.



## Table A.– ABRIDGED ENGLISH LIFE TABLE No. 8.

### MALES.

| AGE. | $\log p_x$ | $\Delta$ | $\Delta^2$ | $\Delta^3$ | $\Delta^4$ | AGE. | $\log {}_5p_x$ | $\log l_x$ | $l_x$ |
|---|---|---|---|---|---|---|---|---|---|
| 11 | *79* | *34* | *12* | 38 | — | 11 | *451* | 5·00000 | 100000 |
| 16 | *113* | *46* | 26 | *46* | — | 16 | *660* | 4·99549 | 98967 |
| 21 | *159* | *20* | *20* | *8* | — | 21 | *836* | ·98889 | 97474 |
| 26 | *179* | *40* | *28* | 9 | — | 26 | *965* | ·98053 | 95616 |
| 31 | *219* | *68* | *19* | *26* | — | 31 | *1222* | ·97088 | 93515 |
| 36 | *287* | *87* | *45* | *11* | — | 36 | *1596* | ·95866 | 90920 |
| 41 | *374* | *132* | *56* | *60* | — | 41 | *2114* | ·94270 | 87640 |
| 46 | *506* | *188* | *116* | *28* | — | 46 | *2872* | ·92156 | 83476 |
| 51 | *694* | *304* | *144* | *62* | — | 51 | *4026* | ·89284 | 78134 |
| 56 | *998* | *448* | *206* | *198* | — | 56 | *5816* | ·85258 | 71216 |
| 61 | *1446* | *654* | *404* | *224* | — | 61 | *8416* | ·79442 | 62290 |
| 66 | *2100* | *1058* | *628* | *77* | — | 66 | *12410* | ·71026 | 51317 |
| 71 | *3158* | *1686* | *705* | *14* | — | 71 | *18895* | ·58616 | 38562 |
| 76 | *4844* | *2391* | *719* | *533* | — | 76 | *28717* | ·39721 | 24958 |
| 81 | *7235* | *3110* | *1252* | 3461 | *14116* | 81 | *42001* | ·11004 | 12884 |
| 86 | *10345* | *4362* | 2209 | *10655* | *14116* | 86 | *60640* | 3·69003 | 4898 |
| 91 | *14707* | *2153* | *8446* | *24771* | *14116* | 91 | *76594* | ·08363 | 1212 |
| 96 | *15860* | *10599* | *33217* | *38887* | — | 96 | *97165* | 2·31769 | 208 |
| 101 | *27459* | — | — | — | — | 101 | *203863* | 1·34604 | 22 |
| | | | | | | 106 | — | $\bar{1}$·30741 | 0 |

| AGE. | $l_x$ | $\Delta$ | $\Delta^2$ | $\Delta^3$ | $N'_{x\overline{51}}$ | $N'_x$ | AGE. | $\mathring{e}_x$ | $\Delta$ | $\Delta^2$ | $\mathring{e}_{x+\frac{1}{2}}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 11 | 100000 | *1033* | *460* | 95 | 497104 | 5166263 | 11 | 52·16 | *448* | 17 | 51·70 |
| 16 | 98967 | *1493* | *365* | 122 | 490521 | 4669159 | 16 | 47·68 | *431* | 10 | 47·24 |
| 21 | 97474 | *1858* | *243* | *251* | 481918 | 4178638 | 21 | 43·37 | *421* | 3 | 42·94 |
| 26 | 95616 | *2101* | *494* | *191* | 471924 | 3696720 | 26 | 39·16 | *418* | 11 | 38·74 |
| 31 | 93515 | *2595* | *685* | *199* | 460026 | 3224796 | 31 | 34·98 | *407* | 13 | 34·57 |
| 36 | 90920 | *3280* | *884* | *294* | 445074 | 2764770 | 36 | 30·91 | *394* | 15 | 30·51 |
| 41 | 87640 | *4164* | *1178* | *398* | 426120 | 2319696 | 41 | 26·97 | *379* | 20 | 26·58 |
| 46 | 83476 | *5342* | *1576* | *432* | 401905 | 1893576 | 46 | 23·18 | *359* | 24 | 22·81 |
| 51 | 78134 | *6918* | *2008* | *39* | 370633 | 1491671 | 51 | 19·59 | *335* | 31 | 19·24 |
| 56 | 71216 | *8926* | *2047* | 265 | 330113 | 1121038 | 56 | 16·24 | *304* | 31 | 15·92 |
| 61 | 62290 | *10973* | *1782* | 933 | 279297 | 790925 | 61 | 13·20 | *273* | 35 | 12·91 |
| 66 | 51317 | *12755* | *849* | 2379 | 218846 | 511628 | 66 | 10·47 | *238* | 44 | 10·22 |
| 71 | 38562 | *13604* | 1530 | 2558 | 151862 | 292782 | 71 | 8·09 | *194* | 44 | 7·88 |
| 76 | 24958 | *12074* | 4088 | 212 | 87444 | 140920 | 76 | 6·15 | *150* | 35 | 5·98 |
| 81 | 12884 | *7986* | 4300 | *1618* | 38784 | 53476 | 81 | 4·65 | *115* | 34 | 4·52 |
| 86 | 4898 | *3686* | 2682 | *1864* | 12036 | 14692 | 86 | 3·50 | *81* | 11 | 3·40 |
| 91 | 1212 | *1004* | 818 | *654* | 2348 | 2656 | 91 | 2·69 | *70* | 21 | 2·62 |
| 96 | 208 | *186* | 164 | — | 286 | 308 | 96 | 1·99 | *49* | — | 1·93 |
| 101 | 22 | *22* | — | — | 22 | 22 | 101 | 1·50 | — | — | 1·46 |
| 106 | 0 | — | — | — | — | — | | | | | |

## Table B.—ABRIDGED ENGLISH LIFE TABLE No. 7.

### MALES.

| AGE. | log $p_x$ | $\Delta$ | $\Delta^2$ | $\Delta^3$ |
|---|---|---|---|---|
| 12 | *85* | *49* | 1 | 19 |
| 17 | *134* | *48* | 20 | *57* |
| 22 | *182* | *28* | *37* | 25 |
| 27 | *210* | *65* | *12* | *10* |
| 32 | *275* | *77* | *22* | *31* |
| 37 | *352* | *99* | *53* | *19* |
| 42 | *451* | *152* | *72* | *43* |
| 47 | *603* | *224* | *115* | *38* |
| 52 | *827* | *339* | *153* | *40* |
| 57 | *1166* | *492* | *193* | *354* |
| 62 | *1658* | *685* | *547* | *44* |
| 67 | *2343* | *1232* | *591* | 158 |
| 72 | *3575* | *1823* | *433* | *1366* |
| 77 | *5398* | *2256* | *1799* | *77* |
| 82 | *7654* | *4055* | *1876* | 4157 |
| 87 | *11709* | *5931* | 2281 | — |
| 92 | *17640* | *3650* | — | — |
| 97 | *21290* | — | — | — |

## Table C.—ABRIDGED ENGLISH LIFE TABLE No. 7.

### MALES.

| AGE. | log $p_x$ | $\Delta$ | $\Delta^2$ | $\Delta^3$ | log $_5p_x$ | AGE. | log $l_x$ | $l_x$ |
|---|---|---|---|---|---|---|---|---|
| 12 | *85* | *49* | 1 | 19 | *520* | 12 | 4·89097 | 77798 |
| 17 | *134* | *48* | 20 | *57* | *770* | 17 | 88577 | 76872 |
| 22 | *182* | *28* | *37* | 25 | *963* | 22 | 87807 | 75521 |
| 27 | *210* | *65* | *12* | *10* | *1170* | 27 | 86844 | 73865 |
| 32 | *275* | *77* | *22* | *31* | *1522* | 32 | 85674 | 71902 |
| 37 | *352* | *99* | *53* | *19* | *1943* | 37 | 84152 | 69426 |
| 42 | *451* | *152* | *72* | *43* | *2534* | 42 | 82209 | 66388 |
| 47 | *603* | *224* | *115* | *38* | *3426* | 47 | 79675 | 62625 |
| 52 | *827* | *339* | *153* | *40* | *4759* | 52 | 76249 | 57875 |
| 57 | *1166* | *492* | *193* | *354* | *6745* | 57 | 71490 | 51868 |
| 62 | *1658* | *685* | *547* | *44* | *9512* | 62 | 64745 | 44407 |
| 67 | *2343* | *1232* | *591* | 158 | *13951* | 67 | 55233 | 35672 |
| 72 | *3575* | *1823* | *433* | *1366* | *21316* | 72 | 41282 | 25871 |
| 77 | *5398* | *2256* | *1799* | *1366* | *31056* | 77 | 19966 | 15837 |
| 82 | *7654* | *4055* | *3165* | *1366* | *45387* | 82 | 3·88910 | 7746 |
| 87 | *11709* | *7220* | *4531* | *1366* | *71446* | 87 | 43523 | 2724 |
| 92 | *18929* | *11751* | *5897* | *1366* | *1·16061* | 92 | 2·72077 | 526 |
| 97 | *30680* | *17648* | *7263* | — | *1·86064* | 97 | 1.56016 | 36 |
| 102 | *48328* | *24911* | — | — | — | 102 | 1·69952 | 1 |
| 107 | *73239* | — | — | — | — | | | |



## Table C.—ABRIDGED ENGLISH LIFE TABLE No. 7—*continued.*

### MALES—*continued.*

| AGE. | $l_x$ | $\Delta$ | $\Delta^2$ | $\Delta^3$ | $N'_{x\overline{5}|}$ | $N'_x$ | AGE. | $\mathring{e}_x$ | $\Delta$ | $\Delta^2$ | $\mathring{e}_{x+}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 12 | 77798 | *926* | *425* | 120 | 386406 | 3851213 | 12 | 50·00 | *443* | 20 | 49·55 |
| 17 | 76872 | *1351* | *305* | *2* | 380453 | 3464807 | 17 | 45·57 | *423* | 10 | 45·14 |
| 22 | 75521 | *1656* | *307* | *206* | 372759 | 3084354 | 22 | 41·34 | *413* | 8 | 40·92 |
| 27 | 73865 | *1963* | *513* | *49* | 363600 | 2711595 | 27 | 37·21 | *405* | 14 | 36·80 |
| 32 | 71902 | *2476* | *562* | *163* | 352297 | 2347995 | 32 | 33·16 | *391* | 13 | 32·76 |
| 37 | 69426 | *3038* | *725* | *262* | 338273 | 1995698 | 37 | 29·25 | *378* | 15 | 28·87 |
| 42 | 66388 | *3763* | *987* | *270* | 320993 | 1657425 | 42 | 25·47 | *363* | 21 | 25·10 |
| 47 | 62625 | *4759* | *1257* | *197* | 299324 | 1336432 | 47 | 21·84 | *342* | 25 | 21·49 |
| 52 | 57875 | *6007* | *1454* | 180 | 271896 | 1037108 | 52 | 18·42 | *317* | 30 | 18·09 |
| 57 | 51868 | *7461* | *1274* | 208 | 237503 | 765212 | 57 | 15·25 | *287* | 28 | 14·95 |
| 62 | 44407 | *8735* | *1066* | 833 | 196298 | 527709 | 62 | 12·38 | *259* | 34 | 12·11 |
| 67 | 35672 | *9801* | *233* | 2176 | 149217 | 331411 | 67 | 9·79 | *225* | 47 | 9·55 |
| 72 | 25871 | *10034* | 1943 | 1126 | 98911 | 182194 | 72 | 7·54 | *178* | 31 | 7·34 |
| 77 | 15837 | *8091* | 3069 | *245* | 53910 | 83283 | 77 | 5·76 | *147* | 21 | 5·60 |
| 82 | 7746 | *5022* | 2824 | *1116* | 22485 | 29373 | 82 | 4·29 | *126* | 19 | 4·15 |
| 87 | 2724 | *2198* | 1708 | *1253* | 6120 | 6888 | 87 | 3·03 | *107* | 75 | 2·91 |
| 92 | 526 | *490* | 455 | — | 727 | 768 | 92 | 1·96 | *32* | — | 1·89 |
| 97 | 36 | *35* | — | — | 41 | 41 | 97 | 1·64 | — | — | 1·60 |
| 102 | 1 | — | — | — | — | — | | | | | |

## Table D.—COMPARISON OF THE EXPECTATIONS OF LIFE DERIVED BY THE ABRIDGED PROCESS WITH THOSE BY THE EXTENDED TABLE.

| English Life Table No. 7. MALES. | | | English Life Table No. 8. MALES. | | |
|---|---|---|---|---|---|
| AGE. | Abridged Process. | Extended Table. | AGE. | Abridged Process. | Extended Table. |
| 12 | 50·00 | 50·00 | 11 | 52·16 | 52·18 |
| 17 | 45·57 | 45·57 | 16 | 47·68 | 47·68 |
| 22 | 41·34 | 41·34 | 21 | 43·37 | 43·37 |
| 27 | 37·21 | 37·21 | 26 | 39·16 | 39·16 |
| 32 | 33·16 | 33·15 | 31 | 34·98 | 34·98 |
| 37 | 29·25 | 29·25 | 36 | 30·91 | 30·90 |
| 42 | 25·47 | 25·47 | 41 | 26·97 | 26·97 |
| 47 | 21·84 | 21·84 | 46 | 23·18 | 23·18 |
| 52 | 18·42 | 18·42 | 51 | 19·59 | 19·59 |
| 57 | 15·25 | 15·25 | 56 | 16·24 | 16·24 |
| 62 | 12·38 | 12·38 | 61 | 13·20 | 13·19 |
| 67 | 9·79 | 9·79 | 66 | 10·47 | 10·47 |
| 72 | 7·54 | 7·54 | 71 | 8·09 | 8·09 |
| 77 | 5·76 | 5·74 | 76 | 6·15 | 6·14 |
| 82 | 4·29 | 4·30 | 81 | 4·65 | 4·64 |
| 87 | 3·03 | 3·10 | 86 | 3·50 | 3·51 |
| 92 | 1·96 | 2·32 | 91 | 2·69 | 2·76 |
| 97 | 1·64 | 1·91 | 96 | 1·99 | 2·32 |
| | | | 101 | 1·50 | 1·40 |

# APPENDIX I.

## STATISTICAL TABLES ON WHICH THE CONSTRUCTION OF THE LIFE TABLES WAS BASED.

### CONTENTS OF APPENDIX I.



### SECTIONAL TABLES.—COUNTY OF LONDON, COUNTY BOROUGHS, URBAN DISTRICTS, AND RURAL DISTRICTS.





APPENDIX I.—TABLE 1.

## ENGLAND AND WALES.

Census, 31 March, 1901. Populations enumerated.

| Age last birthday. | Males. | Females. |
|---|---|---|
| 0 | 399,875 | 396,932 |
| 1 | 363,424 | 364,371 |
| 2 | 366,824 | 368,586 |
| 3 | 363,161 | 366,966 |
| 4 | 362,077 | 364,492 |
| 0 to 4 | 1,855,361 | 1,861,347 |
| 5 „ 9 | 1,738,993 | 1,748,298 |
| 10 „ 14 | 1,670,970 | 1,670,770 |
| 15 „ 19 | 1,607,522 | 1,638,621 |
| 20 „ 24 | 1,472,644 | 1,648,278 |
| 25 „ 29 | 1,328,288 | 1,496,221 |
| 30 „ 34 | 1,157,666 | 1,273,665 |
| 35 „ 39 | 1,034,459 | 1,110,924 |
| 40 „ 44 | 897,484 | 953,138 |
| 45 „ 49 | 759,955 | 813,233 |
| 50 „ 54 | 636,254 | 692,749 |
| 55 „ 59 | 497,498 | 555,079 |
| 60 „ 64 | 410,447 | 480,226 |
| 65 „ 69 | 282,403 | 347,270 |
| 70 „ 74 | 195,465 | 250,868 |
| 75 „ 79 | 113,096 | 151,384 |
| 80 „ 84 | 52,137 | 76,631 |
| 85 „ 89 | 14,915 | 24,046 |
| 90 „ 94 | 2,687 | 5,515 |
| 95 „ 99 | 322 | 868 |
| 100 and over | 47 | 99 |
| All Ages | 15,728,613 | 16,799,230 |

APPENDIX I.—TABLE 2.

## ENGLAND AND WALES.

Census, 2 April, 1911. Populations Enumerated.

| Age last Birthday. | Total Males. | Females. | | | | Age last Birthday. |
|---|---|---|---|---|---|---|
| | | Total Females. | Single. | Married. | Widowed. | |
| 0 | 395,110 | 386,618 | 386,618 | — | — | 0 |
| 1 | 374,109 | 368,709 | 368,709 | — | — | 1 |
| 2 | 395,919 | 393,376 | 393,376 | — | — | 2 |
| 3 | 388,669 | 388,682 | 388,682 | — | — | 3 |
| 4 | 382,306 | 380,885 | 380,885 | — | — | 4 |
| 5 | 374,037 | 373,979 | 373,979 | — | — | 5 |
| 6 | 372,572 | 372,977 | 372,977 | — | — | 6 |
| 7 | 372,988 | 373,497 | 373,497 | — | — | 7 |
| 8 | 366,223 | 367,697 | 367,697 | — | — | 8 |
| 9 | 361,475 | 361,351 | 361,351 | — | — | 9 |
| 10 | 359,062 | 359,621 | 359,621 | — | — | 10 |
| 11 | 351,287 | 352,220 | 352,220 | — | — | 11 |
| 12 | 349,205 | 350,306 | 350,306 | — | — | 12 |
| 13 | 345,144 | 345,588 | 345,588 | — | — | 13 |
| 14 | 342,933 | 344,322 | 344,322 | — | — | 14 |

Appendix I.—Table 2—*continued.*

## England and Wales—*continued.*

Census, 2 April, 1911. Populations Enumerated—*continued.*

| Age last Birthday. | Total Males. | Females. | | | | Age last Birthday. |
|---|---|---|---|---|---|---|
| | | Total Females. | Single. | Married. | Widowed. | |
| 15 | 334,241 | 335,730 | 335,722 | 8 | — | 15 |
| 16 | 335,518 | 337,451 | 337,342 | 106 | 3 | 16 |
| 17 | 329,627 | 336,608 | 335,694 | 894 | 20 | 17 |
| 18 | 332,615 | 340,351 | 335,285 | 5,044 | 22 | 18 |
| 19 | 322,894 | 331,586 | 317,483 | 14,059 | 44 | 19 |
| 20 | 308,328 | 332,427 | 299,838 | 32,459 | 130 | 20 |
| 21 | 304,131 | 331,633 | 277,284 | 54,114 | 235 | 21 |
| 22 | 296,288 | 333,323 | 253,215 | 79,684 | 424 | 22 |
| 23 | 297,065 | 338,083 | 231,522 | 105,893 | 668 | 23 |
| 24 | 296,840 | 337,600 | 204,659 | 131,911 | 1,030 | 24 |
| 25 | 293,303 | 333,923 | 180,042 | 152,527 | 1,354 | 25 |
| 26 | 295,846 | 331,447 | 157,671 | 171,920 | 1,856 | 26 |
| 27 | 283,389 | 315,641 | 134,823 | 178,616 | 2,202 | 27 |
| 28 | 297,058 | 331,114 | 126,021 | 202,036 | 3,057 | 28 |
| 29 | 286,187 | 311,152 | 106,088 | 201,336 | 3,728 | 29 |
| 30 | 310,023 | 344,446 | 108,849 | 230,537 | 5,060 | 30 |
| 31 | 259,993 | 281,761 | 78,326 | 199,053 | 4,382 | 31 |
| 32 | 280,370 | 305,068 | 80,591 | 218,694 | 5,783 | 32 |
| 33 | 258,479 | 280,976 | 69,276 | 205,660 | 6,040 | 33 |
| 34 | 267,007 | 289,052 | 68,623 | 213,023 | 7,406 | 34 |
| 35 | 266,475 | 284,126 | 66,157 | 209,640 | 8,329 | 35 |
| 36 | 262,107 | 279,752 | 60,636 | 209,881 | 9,235 | 36 |
| 37 | 235,420 | 255,236 | 52,629 | 193,163 | 9,444 | 37 |
| 38 | 262,913 | 280,477 | 56,671 | 211,700 | 12,106 | 38 |
| 39 | 234,517 | 252,247 | 48,445 | 192,006 | 11,796 | 39 |
| 40 | 262,690 | 282,281 | 55,991 | 210,087 | 16,203 | 40 |
| 41 | 198,344 | 208,303 | 37,415 | 159,311 | 11,577 | 41 |
| 42 | 226,889 | 242,412 | 42,621 | 183,545 | 16,246 | 42 |
| 43 | 196,204 | 216,351 | 36,836 | 163,960 | 15,555 | 43 |
| 44 | 190,949 | 208,188 | 35,187 | 156,554 | 16,447 | 44 |
| 45 | 202,458 | 213,063 | 37,827 | 155,950 | 19,286 | 45 |
| 46 | 184,881 | 199,948 | 33,215 | 147,554 | 19,179 | 46 |
| 47 | 176,713 | 191,863 | 30,978 | 140,990 | 19,895 | 47 |
| 48 | 189,271 | 207,318 | 33,215 | 149,850 | 24,253 | 48 |
| 49 | 172,779 | 187,295 | 29,181 | 133,951 | 24,163 | 49 |
| 50 | 195,197 | 209,676 | 34,337 | 144,141 | 31,198 | 50 |
| 51 | 140,883 | 148,946 | 22,550 | 105,225 | 21,171 | 51 |
| 52 | 152,954 | 166,682 | 24,458 | 114,611 | 27,613 | 52 |
| 53 | 138,587 | 153,439 | 21,665 | 104,302 | 27,472 | 53 |
| 54 | 140,610 | 155,706 | 21,955 | 103,404 | 30,347 | 54 |
| 55 | 131,885 | 143,946 | 20,397 | 93,961 | 29,588 | 55 |
| 56 | 133,063 | 143,008 | 19,660 | 90,556 | 32,792 | 56 |
| 57 | 112,207 | 124,647 | 16,874 | 78,038 | 29,735 | 57 |
| 58 | 119,821 | 134,033 | 17,717 | 81,760 | 34,556 | 58 |
| 59 | 111,029 | 124,792 | 16,040 | 73,919 | 34,833 | 59 |
| 60 | 123,732 | 140,434 | 18,684 | 78,411 | 43,339 | 60 |
| 61 | 87,050 | 95,947 | 12,562 | 54,164 | 29,221 | 61 |
| 62 | 96,341 | 107,762 | 13,588 | 57,801 | 36,373 | 62 |
| 63 | 86,264 | 99,222 | 12,392 | 50,956 | 35,874 | 63 |
| 64 | 83,764 | 99,438 | 12,233 | 48,783 | 38,422 | 64 |
| 65 | 81,605 | 98,132 | 12,112 | 45,491 | 40,529 | 65 |
| 66 | 75,785 | 91,337 | 10,887 | 40,995 | 39,455 | 66 |
| 67 | 69,027 | 83,416 | 10,201 | 35,382 | 37,833 | 67 |
| 68 | 70,989 | 85,595 | 10,171 | 34,476 | 40,948 | 68 |
| 69 | 68,490 | 82,438 | 9,587 | 30,752 | 42,099 | 69 |



Appendix I.—Table 2—*continued.*

## England and Wales—*continued.*

Census, 2 April, 1911. Populations Enumerated—*continued.*

| Age last Birthday. | Total Males. | Females. | | | | Age last Birthday. |
|---|---|---|---|---|---|---|
| | | Total Females. | Single. | Married. | Widowed. | |
| 70 | 61,686 | 79,137 | 10,104 | 27,276 | 41,757 | 70 |
| 71 | 47,362 | 61,057 | 7,472 | 20,229 | 33,356 | 71 |
| 72 | 48,014 | 65,860 | 7,991 | 19,965 | 37,904 | 72 |
| 73 | 41,939 | 57,750 | 6,963 | 16,136 | 34,651 | 73 |
| 74 | 37,867 | 52,881 | 6,291 | 13,605 | 32,985 | 74 |
| 75 | 34,012 | 47,351 | 5,692 | 11,373 | 30,286 | 75 |
| 76 | 29,010 | 41,855 | 5,006 | 9,154 | 27,695 | 76 |
| 77 | 24,875 | 35,185 | 4,193 | 7,113 | 23,879 | 77 |
| 78 | 22,358 | 32,584 | 3,929 | 5,857 | 22,798 | 78 |
| 79 | 17,211 | 25,488 | 3,019 | 4,062 | 18,407 | 79 |
| 80 | 16,589 | 25,465 | 3,185 | 3,597 | 18,683 | 80 |
| 81 | 12,177 | 17,893 | 2,131 | 2,309 | 13,453 | 81 |
| 82 | 11,065 | 17,271 | 2,039 | 1,943 | 13,289 | 82 |
| 83 | 8,941 | 14,338 | 1,754 | 1,444 | 11,140 | 83 |
| 84 | 7,631 | 12,794 | 1,545 | 1,092 | 10,157 | 84 |
| 85 | 5,870 | 9,769 | 1,192 | 733 | 7,844 | 85 |
| 86 | 4,571 | 8,030 | 980 | 515 | 6,535 | 86 |
| 87 | 3,541 | 6,194 | 790 | 350 | 5,054 | 87 |
| 88 | 2,554 | 4,657 | 574 | 240 | 3,843 | 88 |
| 89 | 1,921 | 3,571 | 438 | 147 | 2,986 | 89 |
| 90 | 1,448 | 2,897 | 386 | 119 | 2,392 | 90 |
| 91 | 926 | 1,936 | 274 | 66 | 1,596 | 91 |
| 92 | 676 | 1,486 | 194 | 48 | 1,244 | 92 |
| 93 | 395 | 884 | 112 | 27 | 745 | 93 |
| 94 | 294 | 618 | 104 | 8 | 506 | 94 |
| 95 | 213 | 464 | 65 | 8 | 391 | 95 |
| 96 | 131 | 324 | 43 | 7 | 274 | 96 |
| 97 | 82 | 195 | 27 | 6 | 162 | 97 |
| 98 | 50 | 135 | 18 | 6 | 111 | 98 |
| 99 | 29 | 67 | 12 | 2 | 53 | 99 |
| 100 | 17 | 45 | 7 | 3 | 35 | 100 |
| 101 | 10 | 23 | 5 | — | 18 | 101 |
| 102 | 2 | 14 | 4 | — | 10 | 102 |
| 103 | 1 | 3 | — | — | 3 | 103 |
| 104 | 1 | 2 | — | — | 2 | 104 |
| 105 | 3 | 3 | 1 | — | 2 | 105 |
| 106 | — | — | — | — | — | 106 |
| 107 | — | 1 | — | — | 1 | 107 |
| 108 | 1 | — | — | — | — | 108 |
| 109 | — | — | — | — | — | 109 |
| 110 | — | 1 | — | — | 1 | 110 |
| 111 | 1 | — | — | — | — | 111 |
| All Ages | 17,445,608 | 18,624,884 | 10,629,796 | 6,630,284 | 1,364,804 | All Ages. |

Appendix I.—Table 3.

## ENGLAND AND WALES.—MALES.

Deaths Registered in each of the Ten Calendar Years 1901 to 1910.

| Ages last Birthday. | 1901. | 1902. | 1903. | 1904. | 1905. | 1906. | 1907. | 1908. | 1909. | 1910. | Ages last Birthday. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 78,493 | 70,334 | 69,723 | 76,378 | 66,768 | 69,070 | 60,926 | 63,594 | 56,026 | 53,155 | 0 |
| 1 | 17,515 | 16,845 | 16,590 | 18,776 | 15,761 | 15,971 | 15,514 | 14,895 | 14,146 | 13,251 | 1 |
| 2 | 6,328 | 6,509 | 5,895 | 6,500 | 6,051 | 5,929 | 6,126 | 5,580 | 5,941 | 5,020 | 2 |
| 3 | 4,150 | 4,208 | 3,587 | 3,817 | 3,698 | 3,590 | 3,907 | 3,415 | 3,426 | 2,950 | 3 |
| 4 | 3,095 | 3,089 | 2,577 | 2,749 | 2,632 | 2,618 | 2,669 | 2,450 | 2,621 | 2,168 | 4 |
| 0 to 4 | 109,581 | 100,985 | 98,372 | 108,220 | 94,910 | 97,178 | 89,142 | 89,934 | 82,160 | 76,544 | 0 to 4 |
| 5 „ 9 | 7,014 | 6,915 | 6,099 | 6,318 | 6,136 | 6,252 | 6,207 | 6,059 | 6,156 | 5,550 | 5 „ 9 |
| 10 „ 14 | 3,834 | 3,720 | 3,405 | 3,531 | 3,547 | 3,496 | 3,459 | 3,387 | 3,443 | 3,233 | 10 „ 14 |
| 15 „ 19 | 5,557 | 5,320 | 4,923 | 5,107 | 5,009 | 5,167 | 4,936 | 4,808 | 4,992 | 4,524 | 15 „ 19 |
| 20 „ 24 | 6,918 | 6,750 | 6,152 | 6,422 | 6,213 | 6,133 | 6,031 | 5,999 | 5,913 | 5,607 | 20 „ 24 |
| 25 „ 34 | 15,550 | 15,550 | 14,902 | 14,862 | 14,658 | 14,766 | 14,855 | 14,566 | 14,385 | 13,229 | 25 „ 34 |
| 35 „ 44 | 20,545 | 20,530 | 18,980 | 19,329 | 18,986 | 19,431 | 19,654 | 19,216 | 19,304 | 18,139 | 35 „ 44 |
| 45 „ 54 | 25,295 | 25,435 | 24,193 | 24,713 | 24,441 | 24,870 | 25,368 | 24,899 | 25,540 | 24,225 | 45 „ 54 |
| 55 „ 64 | 30,560 | 30,965 | 29,870 | 31,165 | 30,908 | 31,998 | 32,819 | 32,576 | 32,715 | 31,496 | 55 „ 64 |
| 65 „ 74 | 32,603 | 32,852 | 31,973 | 33,959 | 33,516 | 34,845 | 36,174 | 36,545 | 38,535 | 36,656 | 65 „ 74 |
| 75 „ 84 | 23,161 | 23,188 | 22,475 | 23,967 | 23,731 | 24,004 | 24,520 | 24,784 | 25,720 | 24,005 | 75 „ 84 |
| 85 „ 99 | 4,983 | 4,988 | 4,929 | 5,596 | 5,535 | 6,077 | 6,077 | 5,924 | 6,324 | 5,786 | 85 „ 99 |
| 0 to 99 | 285,601 | 277,198 | 266,273 | 283,189 | 267,590 | 274,217 | 269,242 | 268,697 | 265,187 | 248,994 | 0 to 99 |
| 100 | 7 | 7 | 8 | 6 | 6 | 6 | 7 | 7 | 10 | } 22 | 100 |
| 101 | 5 | 6 | 2 | 3 | 2 | 5 | 6 | 3 | 2 | | 101 |
| 102 | 3 | 3 | 3 | 2 | 1 | 2 | 2 | 2 | 1 | | 102 |
| 103 | 1 | 1 | 1 | 1 | 1 | — | 2 | 3 | 1 | | 103 |
| 104 | 1 | 1 | 1 | 1 | — | 2 | — | — | 1 | | 104 |
| 105 | — | — | 1 | 1 | 1 | — | — | 1 | 1 | | 105 |
| 106 | — | — | 1 | — | — | — | — | — | — | | 106 |
| 107 | — | — | — | 1 | — | — | — | — | — | | 107 |
| 108 | — | — | — | — | — | — | — | 1 | — | | 108 |
| 109 | — | — | — | 2 | — | 1 | — | — | — | | 109 |
| All Ages | 285,618 | 277,216 | 266,290 | 283,206 | 267,601 | 274,233 | 269,259 | 268,714 | 265,203 | 249,016 | All Ages |

Appendix I.—Table 4.

## ENGLAND AND WALES.—FEMALES.

Deaths Registered in each of the Ten Calendar Years 1901 to 1910.

| Ages last Birthday. | 1901. | 1902. | 1903. | 1904. | 1905. | 1906. | 1907. | 1908. | 1909. | 1910. | Ages last Birthday. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 62,155 | 54,662 | 54,995 | 61,014 | 52,323 | 54,825 | 47,052 | 49,660 | 43,404 | 41,424 | 0 |
| 1 | 16,449 | 15,562 | 15,074 | 17,375 | 14,751 | 14,985 | 14,522 | 13,672 | 13,190 | 12,139 | 1 |
| 2 | 6,277 | 6,357 | 5,731 | 6,332 | 5,816 | 5,489 | 5,862 | 5,269 | 5,372 | 4,765 | 2 |
| 3 | 4,184 | 4,267 | 3,591 | 3,950 | 3,811 | 3,613 | 3,749 | 3,338 | 3,516 | 2,879 | 3 |
| 4 | 3,101 | 3,191 | 2,577 | 2,787 | 2,647 | 2,591 | 2,926 | 2,446 | 2,622 | 2,095 | 4 |
| 0 to 4 | 92,166 | 84,039 | 81,968 | 91,458 | 79,348 | 81,503 | 74,111 | 74,385 | 68,104 | 63,302 | 0 to 4 |
| 5 „ 9 | 7,148 | 7,310 | 6,325 | 6,462 | 6,295 | 6,652 | 6,402 | 6,196 | 6,399 | 5,666 | 5 „ 9 |
| 10 „ 14 | 3,995 | 3,897 | 3,602 | 3,737 | 3,677 | 3,856 | 3,609 | 3,532 | 3,683 | 3,417 | 10 „ 14 |
| 15 „ 19 | 5,293 | 5,106 | 4,768 | 4,917 | 4,794 | 4,748 | 4,765 | 4,534 | 4,662 | 4,379 | 15 „ 19 |
| 20 „ 24 | 6,325 | 6,369 | 5,809 | 5,832 | 5,909 | 5,764 | 5,664 | 5,631 | 5,577 | 5,191 | 20 „ 24 |
| 25 „ 34 | 14,767 | 14,873 | 14,065 | 14,112 | 13,930 | 13,918 | 13,760 | 13,488 | 13,559 | 12,775 | 25 „ 34 |
| 35 „ 44 | 18,073 | 17,730 | 17,166 | 17,125 | 16,890 | 17,087 | 17,378 | 16,588 | 16,854 | 16,143 | 35 „ 44 |
| 45 „ 54 | 20,943 | 20,748 | 20,134 | 20,603 | 20,569 | 20,761 | 21,138 | 21,094 | 21,480 | 20,027 | 45 „ 54 |
| 55 „ 64 | 27,575 | 27,391 | 26,171 | 27,982 | 27,545 | 27,884 | 29,000 | 28,184 | 29,333 | 26,806 | 55 „ 64 |
| 65 „ 74 | 34,003 | 34,367 | 33,445 | 35,837 | 35,722 | 35,680 | 38,370 | 37,657 | 40,455 | 37,137 | 65 „ 74 |
| 75 „ 84 | 28,072 | 28,465 | 27,200 | 29,805 | 28,772 | 29,867 | 31,132 | 30,913 | 32,612 | 29,966 | 75 „ 84 |
| 85 „ 99 | 7,563 | 7,989 | 7,649 | 8,666 | 8,932 | 9,279 | 9,591 | 9,493 | 10,037 | 9,379 | 85 „ 99 |
| Forward | 265,923 | 258,284 | 248,302 | 266,536 | 252,383 | 256,999 | 254,920 | 251,695 | 252,755 | 234,188 | Forward |



Appendix I.—Table 4—*continued.*

## England and Wales.—Females—*continued.*

Deaths Registered in each of the Ten Calendar Years 1901 to 1910.

| Ages last Birthday. | 1901. | 1092. | 1903. | 1904. | 1905. | 1906. | 1907. | 1908. | 1909. | 1910. | Ages last Birthday. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Forward 0 to 99 | 265,923 | 258,284 | 248,302 | 266,536 | 252,383 | 256,999 | 254,920 | 251,695 | 252,755 | 234,188 | Forward 0 to 99 |
| 100 | 19 | 15 | 12 | 23 | 20 | 18 | 17 | 22 | 16 | } 43 | 100 |
| 101 | 7 | 7 | 5 | 7 | 9 | 11 | 8 | 9 | 13 | | 101 |
| 102 | 5 | 9 | 5 | 3 | 5 | 10 | 6 | 10 | 6 | | 102 |
| 103 | 5 | 4 | 7 | 3 | 6 | 5 | 7 | 1 | 4 | | 103 |
| 104 | 2 | 1 | 4 | 3 | 3 | 2 | 1 | 1 | 1 | | 104 |
| 105 | 2 | 1 | 2 | 3 | 3 | 1 | 2 | — | 2 | | 105 |
| 106 | 2 | 1 | — | | — | 1 | — | 1 | 1 | | 106 |
| 107 | — | | — | | 1 | — | — | 1 | — | | 107 |
| 108 | 1 | | 1 | | | — | — | 1 | 2 | | 108 |
| 109 | 1 | | | | | — | — | — | | | 109 |
| 110 | | | | | | 1 | — | 1 | | | 110 |
| 111 | | | | | | | 1 | | | | 111 |
| All Ages | 265,967 | 258,322 | 248,338 | 266,578 | 252,430 | 257,048 | 254,962 | 251,742 | 252,800 | 234,231 | All Ages |

Appendix I.—Table 5.

## ENGLAND AND WALES.

Deaths registered in each of the three years 1910, 1911, and 1912.

| Ages last Birthday. | Males. | | | | Ages last Birthday. | Females. | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1910. | 1911. | 1912. | Total. | | 1910. | 1911. | 1912. | Total. |
| 0 | 53,155 | 63,874 | 47,004 | 164,033 | 0 | 41,424 | 50,726 | 35,775 | 127,925 |
| 1 | 13,251 | 16,326 | 12,000 | 41,577 | 1 | 12,139 | 15,069 | 11,080 | 38,288 |
| 2 | 5,020 | 5,822 | 5,074 | 15,916 | 2 | 4,765 | 5,733 | 5,100 | 15,598 |
| 3 | 2,950 | 3,449 | 3,240 | 9,639 | 3 | 2,879 | 3,370 | 3,138 | 9,387 |
| 4 | 2,168 | 2,386 | 2,341 | 6,895 | 4 | 2,095 | 2,315 | 2,322 | 6,732 |
| 5 | 1,733 | 2,089 | 1,782 | 5,604 | 5 | 1,689 | 1,947 | 1,840 | 5,476 |
| 6 | 1,284 | 1,463 | 1,369 | 4,116 | 6 | 1,343 | 1,466 | 1,303 | 4,112 |
| 7 | 1,005 | 1,177 | 959 | 3,141 | 7 | 1,062 | 1,084 | 1,014 | 3,160 |
| 8 | 814 | 903 | 872 | 2,589 | 8 | 859 | 947 | 833 | 2,639 |
| 9 | 714 | 779 | 777 | 2,270 | 9 | 713 | 813 | 737 | 2,263 |
| 10 | 706 | 758 | 716 | 2,180 | 10 | 698 | 729 | 699 | 2,126 |
| 1 | 600 | 756 | 657 | 2,013 | 1 | 613 | 701 | 642 | 1,956 |
| 2 | 606 | 633 | 612 | 1,851 | 2 | 615 | 660 | 668 | 1,943 |
| 3 | 639 | 649 | 609 | 1,897 | 3 | 728 | 717 | 733 | 2,178 |
| 4 | 682 | 778 | 643 | 2,103 | 4 | 763 | 829 | 761 | 2,353 |
| 15 | 753 | 785 | 780 | 2,318 | 15 | 804 | 833 | 858 | 2,495 |
| 6 | 798 | 953 | 872 | 2,623 | 6 | 820 | 926 | 888 | 2,634 |
| 7 | 935 | 1,029 | 996 | 2,960 | 7 | 885 | 933 | 911 | 2,729 |
| 8 | 1,000 | 1,067 | 1,002 | 3,069 | 8 | 969 | 920 | 959 | 2,848 |
| 9 | 1,038 | 1,204 | 1,083 | 3,325 | 9 | 901 | 982 | 976 | 2,859 |
| 20 | 1,074 | 1,154 | 1,091 | 3,319 | 20 | 962 | 967 | 985 | 2,914 |
| 1 | 1,072 | 1,102 | 1,103 | 3,277 | 1 | 1,020 | 1,128 | 1,021 | 3,169 |
| 2 | 1,157 | 1,182 | 1,046 | 3,385 | 2 | 1,018 | 992 | 1,007 | 3,017 |
| 3 | 1,130 | 1,199 | 1,071 | 3,400 | 3 | 1,087 | 1,116 | 1,067 | 3,270 |
| 4 | 1,174 | 1,165 | 1,067 | 3,406 | 4 | 1,104 | 1,179 | 1,116 | 3,399 |

Appendix I.—Table 5—*continued.*

## England and Wales—*continued.*

Deaths Registered in each of the Three Years 1910, 1911, and 1912—*continued.*

| Ages last Birthday. | Males. | | | | Ages last Birthday. | Females. | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1910. | 1911. | 1912. | Total. | | 1910. | 1911. | 1912. | Total. |
| 25 | 1,123 | 1,196 | 1,162 | 3,481 | 25 | 1,126 | 1,122 | 1,097 | 3,345 |
| 6 | 1,182 | 1,273 | 1,190 | 3,645 | 6 | 1,143 | 1,203 | 1,118 | 3,464 |
| 7 | 1,202 | 1,302 | 1,198 | 3,702 | 7 | 1,207 | 1,245 | 1,164 | 3,616 |
| 8 | 1,235 | 1,357 | 1,370 | 3,962 | 8 | 1,180 | 1,273 | 1,211 | 3,664 |
| 9 | 1,301 | 1,376 | 1,254 | 3,931 | 9 | 1,311 | 1,235 | 1,271 | 3,817 |
| 30 | 1,377 | 1,438 | 1,378 | 4,193 | 30 | 1,255 | 1,392 | 1,287 | 3,934 |
| 1 | 1,273 | 1,402 | 1,345 | 4,020 | 1 | 1,277 | 1,236 | 1,244 | 3,757 |
| 2 | 1,472 | 1,597 | 1,535 | 4,604 | 2 | 1,425 | 1,380 | 1,382 | 4,187 |
| 3 | 1,499 | 1,528 | 1,438 | 4,465 | 3 | 1,390 | 1,379 | 1,341 | 4,110 |
| 4 | 1,565 | 1,658 | 1,584 | 4,807 | 4 | 1,461 | 1,481 | 1,390 | 4,332 |
| 35 | 1,662 | 1,788 | 1,717 | 5,167 | 35 | 1,431 | 1,481 | 1,474 | 4,386 |
| 6 | 1,670 | 1,829 | 1,731 | 5,230 | 6 | 1,516 | 1,516 | 1,472 | 4,504 |
| 7 | 1,757 | 1,613 | 1,700 | 5,070 | 7 | 1,504 | 1,592 | 1,557 | 4,653 |
| 8 | 1,834 | 1,857 | 1,847 | 5,538 | 8 | 1,746 | 1,732 | 1,666 | 5,144 |
| 9 | 1,808 | 1,907 | 1,920 | 5,635 | 9 | 1,637 | 1,680 | 1,772 | 5,089 |
| 40 | 1,949 | 2,050 | 1,994 | 5,993 | 40 | 1,695 | 1,707 | 1,596 | 4,998 |
| 1 | 1,618 | 1,802 | 1,879 | 5,299 | 1 | 1,516 | 1,499 | 1,521 | 4,536 |
| 2 | 1,983 | 2,109 | 2,167 | 6,259 | 2 | 1,733 | 1,921 | 1,866 | 5,520 |
| 3 | 1,898 | 2,046 | 1,941 | 5,885 | 3 | 1,677 | 1,702 | 1,701 | 5,080 |
| 4 | 1,960 | 1,982 | 1,976 | 5,918 | 4 | 1,688 | 1,774 | 1,718 | 5,180 |
| 45 | 2,271 | 2,239 | 2,273 | 6,783 | 45 | 1,731 | 1,887 | 1,850 | 5,468 |
| 6 | 2,155 | 2,207 | 2,183 | 6,545 | 6 | 1,810 | 1,867 | 1,782 | 5,459 |
| 7 | 2,196 | 2,296 | 2,300 | 6,792 | 7 | 1,846 | 1,917 | 1,846 | 5,609 |
| 8 | 2,324 | 2,399 | 2,408 | 7,131 | 8 | 2,027 | 2,115 | 2,091 | 6,233 |
| 9 | 2,458 | 2,455 | 2.611 | 7,524 | 9 | 1,997 | 2,092 | 2,219 | 6,308 |
| 50 | 2,557 | 2,724 | 2,689 | 7,970 | 50 | 2,073 | 2,204 | 2,083 | 6,360 |
| 1 | 2,265 | 2,306 | 2,422 | 6,993 | 1 | 1,841 | 2,024 | 1,957 | 5,822 |
| 2 | 2,641 | 2,738 | 2,860 | 8,239 | 2 | 2,173 | 2,189 | 2,445 | 6,807 |
| 3 | 2,568 | 2,666 | 2,643 | 7,877 | 3 | 2,235 | 2,234 | 2,251 | 6,720 |
| 4 | 2,790 | 2,973 | 2,842 | 8,605 | 4 | 2,294 | 2,421 | 2,332 | 7,047 |
| 55 | 2,722 | 2,764 | 2,780 | 8,266 | 55 | 2,128 | 2,284 | 2,293 | 6,705 |
| 6 | 2,954 | 2,985 | 3,126 | 9,065 | 6 | 2,484 | 2,601 | 2,615 | 7,700 |
| 7 | 2,845 | 2,900 | 2,995 | 8,740 | 7 | 2,350 | 2,533 | 2,591 | 7,474 |
| 8 | 3,093 | 3,139 | 3,209 | 9,441 | 8 | 2,646 | 2,751 | 2,675 | 8,072 |
| 9 | 3,234 | 3,183 | 3,186 | 9,603 | 9 | 2,772 | 2,663 | 2,678 | 8,113 |
| 60 | 3,442 | 3,610 | 3,364 | 10,416 | 60 | 2,937 | 2,921 | 2,862 | 8,720 |
| 1 | 3,086 | 3,139 | 3,331 | 9,556 | 1 | 2,531 | 2,745 | 2,759 | 8,035 |
| 2 | 3,300 | 3,420 | 3,665 | 10,385 | 2 | 2,810 | 3,097 | 3,152 | 9,059 |
| 3 | 3,377 | 3,553 | 3,575 | 10,505 | 3 | 2,956 | 3,099 | 3,098 | 9,153 |
| 4 | 3,443 | 3,533 | 3,698 | 10,674 | 4 | 3,192 | 3,229 | 3,262 | 9,683 |
| 65 | 3,833 | 3,854 | 3,824 | 11,511 | 65 | 3,390 | 3,373 | 3,438 | 10,201 |
| 6 | 3,512 | 3,616 | 3,570 | 10,698 | 6 | 3,165 | 3,292 | 3,349 | 9,806 |
| 7 | 3,425 | 3,709 | 3,705 | 10,839 | 7 | 3,196 | 3,422 | 3,622 | 10,240 |
| 8 | 3,853 | 3,924 | 3,966 | 11,743 | 8 | 3,755 | 3,686 | 3,827 | 11,268 |
| 9 | 3,942 | 4,003 | 3,923 | 11,868 | 9 | 3,862 | 3,671 | 3,669 | 11,202 |
| 70 | 3,899 | 4,144 | 4,082 | 12,125 | 70 | 3,995 | 4,350 | 4,197 | 12,542 |
| 1 | 3,347 | 3,713 | 3,969 | 11,029 | 1 | 3,693 | 4,031 | 4,087 | 11,811 |
| 2 | 3,719 | 3,958 | 4,296 | 11,973 | 2 | 4,163 | 4,361 | 4,724 | 13,248 |
| 3 | 3,665 | 3,649 | 3,882 | 11,196 | 3 | 3,986 | 4,265 | 4,435 | 12,686 |
| 4 | 3,461 | 3,745 | 3,860 | 11,066 | 4 | 3,932 | 4,172 | 4,360 | 12,464 |
| 75 | 3,263 | 3,471 | 3,625 | 10,359 | 75 | 3,811 | 3,973 | 4,231 | 12,015 |
| 6 | 3,111 | 3,240 | 3,414 | 9,765 | 6 | 3,685 | 3,893 | 3,998 | 11,576 |
| 7 | 2,866 | 3,071 | 2,982 | 8,919 | 7 | 3,384 | 3,581 | 3,786 | 10,751 |
| 8 | 2,836 | 2,945 | 2,989 | 8,770 | 8 | 3,283 | 3,667 | 3,670 | 10,620 |
| 9 | 2,589 | 2,560 | 2,702 | 7,851 | 9 | 3,249 | 3,089 | 3,349 | 9,687 |



Appendix I.—Table 5—*continued.*

## England and Wales—*continued.*

Deaths Registered in each of the Three Years 1910, 1911, and 1912—*continued.*

| Ages last Birthday. | Males. | | | | Ages last Birthday. | Females. | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1910. | 1911. | 1912. | Total. | | 1910. | 1911. | 1912. | Total. |
| 80 | 2,374 | 2,406 | 2,379 | 7,159 | 80 | 3,164 | 3,199 | 3,167 | 9,530 |
| 1 | 1,924 | 2,113 | 2,094 | 6,131 | 1 | 2,454 | 2,809 | 2,741 | 8,004 |
| 2 | 1,875 | 1,990 | 2,115 | 5,980 | 2 | 2,501 | 2,749 | 2,885 | 8,135 |
| 3 | 1,665 | 1,664 | 1,760 | 5,089 | 3 | 2,293 | 2,371 | 2,453 | 7,117 |
| 4 | 1,502 | 1,551 | 1,708 | 4,761 | 4 | 2,142 | 2,206 | 2,305 | 6,653 |
| 85 | 1,299 | 1,319 | 1,274 | 3,892 | 85 | 1,886 | 1,839 | 1,954 | 5,679 |
| 6 | 1,045 | 1,141 | 1,144 | 3,330 | 6 | 1,557 | 1,594 | 1,762 | 4,913 |
| 7 | 826 | 909 | 948 | 2,683 | 7 | 1,343 | 1,390 | 1,483 | 4,216 |
| 8 | 670 | 737 | 688 | 2,095 | 8 | 1,043 | 1,142 | 1,162 | 3,347 |
| 9 | 563 | 587 | 515 | 1,665 | 9 | 871 | 886 | 969 | 2,726 |
| 90 | 418 | 420 | 435 | 1,273 | 90 | 783 | 686 | 718 | 2,187 |
| 1 | 322 | 303 | 333 | 958 | 1 | 569 | 597 | 569 | 1,735 |
| 2 | 226 | 255 | 257 | 738 | 2 | 374 | 491 | 529 | 1,394 |
| 3 | 150 | 181 | 193 | 524 | 3 | 316 | 295 | 370 | 981 |
| 4 | 93 | 108 | 106 | 307 | 4 | 215 | 224 | 229 | 668 |
| 95 | 67 | 71 | 81 | 219 | 95 | 162 | 147 | 181 | 490 |
| 6 | 58 | 62 | 68 | 188 | 6 | 97 | 124 | 143 | 364 |
| 7 | 28 | 26 | 39 | 93 | 7 | 76 | 81 | 89 | 246 |
| 8 | 9 | 18 | 22 | 49 | 8 | 51 | 56 | 53 | 160 |
| 9 | 12 | 10 | 15 | 37 | 9 | 36 | 36 | 31 | 103 |
| 100 and over | 22 | 18 | 17 | 57 | 100 and over | 43 | 45 | 50 | 138 |
| All Ages | 249,016 | 272,512 | 250,232 | 771,760 | All Ages | 234,231 | 255,298 | 236,707 | 726,236 |

| Centenarians. | |
|---|---|
| Age. | 1912. |
| 100 | 11 |
| 1 | 1 |
| 2 | 2 |
| 3 | 1 |
| 4 | 2 |
| 105 | — |
| 6 | — |
| 100 and over | 17 |

| Centenarians. | |
|---|---|
| Age. | 1012. |
| 100 | 19 |
| 1 | 15 |
| 2 | 10 |
| 3 | 4 |
| 4 | — |
| 105 | 1 |
| 6 | 1 |
| 100 and over | 50 |

APPENDIX I.—TABLE 6.

## ENGLAND AND WALES.

Deaths of Females registered in the three years 1910 to 1912 according to Marital Condition.

| Ages last Birthday. | Single. | Married. | Widowed. | Total. | Ages last Birthday. | Single. | Married. | Widowed. | Total. |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 127,925 | — | — | 127,925 | 55 | 894 | 4,183 | 1,628 | 6,705 |
| 1 | 38,288 | — | — | 38,288 | 56 | 965 | 4,583 | 2,152 | 7,700 |
| 2 | 15,598 | — | — | 15,598 | 57 | 941 | 4,463 | 2,070 | 7,474 |
| 3 | 9,387 | — | — | 9,387 | 58 | 956 | 4,682 | 2,434 | 8,072 |
| 4 | 6,732 | — | — | 6,732 | 59 | 954 | 4,501 | 2,658 | 8,113 |
| 5 | 5,476 | — | — | 5,476 | 60 | 1,120 | 4,620 | 2,980 | 8,720 |
| 6 | 4,112 | — | — | 4,112 | 61 | 923 | 4,170 | 2,942 | 8,035 |
| 7 | 3,160 | — | — | 3,160 | 62 | 1,087 | 4,492 | 3,480 | 9,059 |
| 8 | 2,639 | — | — | 2,639 | 63 | 1,083 | 4,371 | 3,699 | 9,153 |
| 9 | 2,263 | — | — | 2,263 | 64 | 1,150 | 4,440 | 4,093 | 9,683 |
| 10 | 2,126 | — | — | 2,126 | 65 | 1,179 | 4,324 | 4,698 | 10,201 |
| 11 | 1,956 | — | — | 1,956 | 66 | 1,059 | 4,226 | 4,521 | 9,806 |
| 12 | 1,943 | — | — | 1,943 | 67 | 1,116 | 4,082 | 5,042 | 10,240 |
| 13 | 2,178 | — | — | 2,178 | 68 | 1,263 | 4,326 | 5,679 | 11,268 |
| 14 | 2,353 | — | — | 2,353 | 69 | 1,252 | 3,947 | 6,003 | 11,202 |
| 15 | 2,494 | 1 | — | 2,495 | 70 | 1,395 | 3,929 | 7,218 | 12,542 |
| 16 | 2,631 | 3 | — | 2,634 | 71 | 1,264 | 3,511 | 7,036 | 11,811 |
| 17 | 2,711 | 18 | — | 2,729 | 72 | 1,457 | 3,691 | 8,100 | 13,248 |
| 18 | 2,734 | 114 | — | 2,848 | 73 | 1,318 | 3,212 | 8,156 | 12,686 |
| 19 | 2,617 | 240 | 2 | 2,859 | 74 | 1,366 | 2,906 | 8,192 | 12,464 |
| 20 | 2,448 | 466 | — | 2,914 | 75 | 1,276 | 2,667 | 8,072 | 12,015 |
| 21 | 2,489 | 675 | 5 | 3,169 | 76 | 1,275 | 2,294 | 8,007 | 11,576 |
| 22 | 2,148 | 862 | 7 | 3,017 | 77 | 1,204 | 1,969 | 7,578 | 10,751 |
| 23 | 2,001 | 1,253 | 16 | 3,270 | 78 | 1,154 | 1,791 | 7,675 | 10,620 |
| 24 | 1,881 | 1,499 | 19 | 3,399 | 79 | 1,115 | 1,486 | 7,086 | 9,687 |
| 25 | 1,674 | 1,655 | 16 | 3,345 | 80 | 1,067 | 1,284 | 7,179 | 9,530 |
| 26 | 1,492 | 1,944 | 28 | 3,464 | 81 | 850 | 891 | 6,263 | 8,004 |
| 27 | 1,356 | 2,218 | 42 | 3,616 | 82 | 964 | 824 | 6,347 | 8,135 |
| 28 | 1,244 | 2,375 | 45 | 3,664 | 83 | 864 | 658 | 5,595 | 7,117 |
| 29 | 1,219 | 2,525 | 73 | 3,817 | 84 | 792 | 539 | 5,322 | 6,653 |
| 30 | 1,189 | 2,671 | 74 | 3,934 | 85 | 719 | 410 | 4,550 | 5,679 |
| 31 | 1,014 | 2,666 | 77 | 3,757 | 86 | 648 | 272 | 3,993 | 4,913 |
| 32 | 1,048 | 3,040 | 99 | 4,187 | 87 | 525 | 228 | 3,463 | 4,216 |
| 33 | 989 | 2,993 | 128 | 4,110 | 88 | 393 | 169 | 2,785 | 3,347 |
| 34 | 957 | 3,228 | 147 | 4,332 | 89 | 374 | 97 | 2,255 | 2,726 |
| 35 | 957 | 3,263 | 166 | 4,386 | 90 | 256 | 60 | 1,871 | 2,187 |
| 36 | 888 | 3,403 | 213 | 4,504 | 91 | 223 | 38 | 1,474 | 1,735 |
| 37 | 885 | 3,541 | 227 | 4,653 | 92 | 200 | 28 | 1,166 | 1,394 |
| 38 | 931 | 3,933 | 280 | 5,144 | 93 | 141 | 16 | 824 | 981 |
| 39 | 875 | 3,907 | 307 | 5,089 | 94 | 87 | 4 | 577 | 668 |
| 40 | 897 | 3,740 | 361 | 4,998 | 95 | 74 | 7 | 409 | 490 |
| 41 | 758 | 3,457 | 321 | 4,536 | 96 | 45 | 5 | 314 | 364 |
| 42 | 889 | 4,170 | 461 | 5,520 | 97 | 27 | 3 | 216 | 246 |
| 43 | 835 | 3,793 | 452 | 5,080 | 98 | 20 | — | 140 | 160 |
| 44 | 906 | 3,716 | 558 | 5,180 | 99 | 17 | 3 | 83 | 103 |
| 45 | 940 | 3,867 | 661 | 5,468 | 100 and over | 19 | 3 | 116 | 138 |
| 46 | 961 | 3,821 | 677 | 5,459 | | | | | |
| 47 | 888 | 3,912 | 809 | 5,609 | | | | | |
| 48 | 946 | 4,329 | 958 | 6,233 | | | | | |
| 49 | 997 | 4,250 | 1,061 | 6,308 | | | | | |
| 50 | 979 | 4,245 | 1,136 | 6,360 | | | | | |
| 51 | 887 | 3,817 | 1,118 | 5,822 | | | | | |
| 52 | 1,026 | 4,375 | 1,406 | 6,807 | ALL AGES | 317,847 | 207,213 | 201,176 | 726,236 |
| 53 | 910 | 4,325 | 1,485 | 6,720 | | | | | |
| 54 | 949 | 4,498 | 1,600 | 7,047 | | | | | |



Appendix I.—Table 6—*continued.*

**England and Wales**—*continued.*

Deaths of Females registered in the two years 1911 to 1912 according to Marital Condition.

| Centenarians, Two Years 1911 and 1912. | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Ages last Birthday. | Single. | Married. | Widowed. | Total. | Ages last Birthday. | Single. | Married. | Widowed. | Total. |
| 100 | 5 | 1 | 30 | 36 | 105 | — | — | 3 | 3 |
| 101 | 4 | — | 24 | 28 | 106 | — | — | 2 | 2 |
| 102 | 2 | — | 16 | 18 | 107 | — | — | — | — |
| 103 | — | 2 | 4 | 6 | 108 | 1 | — | — | 1 |
| 104 | — | — | 1 | 1 | TOTAL | 12 | 3 | 80 | 95 |

APPENDIX I.—TABLE 7.

## ENGLAND AND WALES.

Births, and Deaths of Infants.

### MALES.

| Calendar Year. | Births. | Deaths. | | | | |
|---|---|---|---|---|---|---|
| | | 0—1. | 1—2. | 2—3. | 3—4. | 4—5. |
| 1894 | 453,016 | 67,786 | 18,107 | 7,046 | 4,549 | 3,220 |
| 5 | 468,886 | 82,655 | 21,491 | 7,463 | 4,441 | 3,118 |
| 6 | 465,660 | 74,966 | 19,854 | 7,737 | 5,075 | 3,721 |
| 7 | 469,180 | 79,897 | 19,649 | 7,157 | 4,183 | 3,028 |
| 8 | 468,920 | 82,147 | 19,848 | 6,954 | 4,279 | 2,969 |
| 9 | 473,172 | 83,565 | 18,653 | 7,065 | 4,297 | 3,185 |
| 1900 | 471,044 | 79,458 | 19,417 | 7,134 | 4,492 | 3,370 |
| 1 | 473,944 | 78,493 | 17,515 | 6,328 | 4,150 | 3,095 |
| 2 | 479,144 | 70,334 | 16,845 | 6,509 | 4,208 | 3,089 |
| 3 | 482,229 | 69,723 | 16,590 | 5,895 | 3,587 | 2,577 |
| 4 | 481,322 | 76,378 | 18,776 | 6,500 | 3,817 | 2,749 |
| 1905 | 472,886 | 66,768 | 15,761 | 6,051 | 3,698 | 2,632 |
| 6 | 476,939 | 69,070 | 15,971 | 5,929 | 3,590 | 2,618 |
| 7 | 467,728 | 60,926 | 15,514 | 6,126 | 3,907 | 2,669 |
| 8 | 478,410 | 63,594 | 14,895 | 5,580 | 3,415 | 2,450 |
| 9 | 466,463 | 56,026 | 14,146 | 5,941 | 3,426 | 2,621 |
| 1910 | 457,266 | 53,155 | 13,251 | 5,020 | 2,950 | 2,168 |
| 11 | 448,933 | 63,874 | 16,326 | 5,822 | 3,449 | 2,386 |
| 12 | 445,004 | 47,004 | 12,000 | 5,074 | 3,240 | 2,341 |

### FEMALES.

| | | | | | | |
|---|---|---|---|---|---|---|
| 1894 | 437,273 | 54,013 | 17,115 | 6,979 | 4,568 | 3,193 |
| 5 | 453,405 | 65,438 | 20,032 | 7,290 | 4,537 | 3,174 |
| 6 | 449,671 | 60,047 | 19,142 | 7,809 | 5,147 | 3,655 |
| 7 | 452,503 | 63,692 | 18,192 | 6,876 | 4,330 | 3,068 |
| 8 | 454,245 | 65,866 | 18,662 | 6,849 | 4,277 | 2,914 |
| 9 | 455,474 | 67,410 | 17,412 | 6,703 | 4,442 | 3,040 |
| 1900 | 456,018 | 63,454 | 17,823 | 6,839 | 4,630 | 3,343 |
| 1 | 455,863 | 62,155 | 16,449 | 6,277 | 4,184 | 3,101 |
| 2 | 461,365 | 54,662 | 15,562 | 6,357 | 4,267 | 3,191 |
| 3 | 466,042 | 54,995 | 15,074 | 5,731 | 3,591 | 2,577 |
| 4 | 464,067 | 61,014 | 17,375 | 6,332 | 3,950 | 2,787 |
| 1905 | 456,407 | 52,323 | 14,751 | 5,816 | 3,811 | 2,647 |
| 6 | 458,142 | 54,825 | 14,985 | 5,489 | 3,613 | 2,591 |
| 7 | 450,314 | 47,052 | 14,522 | 5,862 | 3,749 | 2,926 |
| 8 | 461,973 | 49,660 | 13,672 | 5,269 | 3,338 | 2,446 |
| 9 | 448,009 | 43,404 | 13,190 | 5,372 | 3,516 | 2,622 |
| 1910 | 439,696 | 41,424 | 12,139 | 4,765 | 2,879 | 2,095 |
| 1 | 432,205 | 50,726 | 15,069 | 5,733 | 3,370 | 2,315 |
| 2 | 427,733 | 35,775 | 11,080 | 5,100 | 3,138 | 2,322 |

APPENDIX I.—TABLE 8.

## ENGLAND AND WALES.

Deaths of Infants under 1 year of age registered in the years 1910, 1911, and 1912.

| AGE. | MALES. | | | | AGE. | FEMALES. | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1910. | 1911. | 1912. | Total, 3 years. | | 1910. | 1911. | 1912. | Total, 3 Years. |
| Under 1 day... | 5,950 | 5,818 | 5,666 | 17,434 | Under 1 day... | 4,400 | 4,418 | 4,180 | 12,998 |
| 1 day... ... | 6,464 | 6,521 | 6,527 | 19,512 | 1 day ... | 4,784 | 4,667 | 4,719 | 14,170 |
| 1 week ... | 2,725 | 2,949 | 2,803 | 8,477 | 1 week ... | 2,151 | 2,281 | 2,068 | 6,500 |
| 2 weeks ... | 2,644 | 3,015 | 2,477 | 8,136 | 2 weeks ... | 1,963 | 2,227 | 1,874 | 6,064 |
| 3 „ ... | 2,008 | 2,222 | 1,875 | 6,105 | 3 „ ... | 1,416 | 1,699 | 1,358 | 4,473 |
| Total under 1 month. | 19,791 | 20,525 | 19,348 | 59,664 | Total under 1 month. | 14,714 | 15,292 | 14,199 | 44,205 |
| 1 month ... | 5,806 | 7,093 | 5,268 | 18,167 | 1 month ... | 4,396 | 5,159 | 3,651 | 13,206 |
| 2 months ... | 4,391 | 5,289 | 3,791 | 13,471 | 2 months ... | 3,375 | 4,275 | 2,681 | 10,331 |
| 3 „ ... | 3,493 | 4,776 | 2,794 | 11,063 | 3 „ ... | 2,878 | 3,845 | 2,259 | 8,982 |
| 4 „ ... | 3,082 | 4,237 | 2,305 | 9,624 | 4 „ ... | 2,442 | 3,441 | 1,822 | 7,705 |
| 5 „ ... | 2,799 | 3,715 | 2,126 | 8,640 | 5 „ ... | 2,145 | 3,001 | 1,627 | 6,773 |
| Total under 6 months. | 39,362 | 45,635 | 35,632 | 120,629 | Total under 6 months. | 29,950 | 35,013 | 26,239 | 91,202 |
| 6 months ... | 2,650 | 3,582 | 2,052 | 8,284 | 6 months ... | 2,002 | 2,943 | 1,612 | 6,557 |
| 7 „ ... | 2,448 | 3,310 | 2,024 | 7,782 | 7 „ ... | 2,073 | 2,778 | 1,530 | 6,381 |
| 8 „ ... | 2,310 | 3,013 | 1,998 | 7,321 | 8 „ ... | 1,952 | 2,747 | 1,679 | 6,378 |
| 9 „ ... | 2,271 | 2,972 | 1,852 | 7,095 | 9 „ ... | 1,891 | 2,452 | 1,568 | 5,911 |
| 10 „ ... | 2,163 | 2,737 | 1,721 | 6,621 | 10 „ ... | 1,781 | 2,350 | 1,583 | 5,714 |
| 11 „ ... | 1,951 | 2,625 | 1,725 | 6,301 | 11 „ ... | 1,775 | 2,443 | 1,564 | 5,782 |
| Total under 1 year. | 53,155 | 63,874 | 47,004 | 164,033 | Total under 1 year. | 41,424 | 50,726 | 35,775 | 127,925 |



APPENDIX I.—TABLE 9.

## SECTIONAL LIFE TABLES.

Sums of the Estimated Population in the middle of the Years 1911 and 1912.

### MALES.

| Ages last Birthday. | County of London. | County Boroughs. | Urban Districts. | Rural Districts. |
|---|---|---|---|---|
| 0 to 4 | 468,852 | 1,221,104 | 1,376,790 | 836,642 |
| 5 „ 9 | 431,602 | 1,142,649 | 1,319,643 | 830,167 |
| 10 „ 14 | 397,791 | 1,073,164 | 1,239,744 | 811,922 |
| 15 „ 19 | 386,287 | 1,001,929 | 1,172,344 | 774,963 |
| 20 „ 24 | 381,816 | 923,794 | 1,070,862 | 652,535 |
| 25 „ 29 | 379,013 | 916,157 | 1,039,807 | 599,765 |
| 30 „ 34 | 347,777 | 876,614 | 990,787 | 558,553 |
| 35 „ 39 | 315,699 | 795,827 | 906,654 | 524,529 |
| 40 „ 44 | 271,846 | 667,022 | 762,241 | 465,907 |
| 45 „ 49 | 233,953 | 566,133 | 643,913 | 422,212 |
| 50 „ 54 | 193,819 | 460,432 | 527,844 | 366,040 |
| 55 „ 59 | 147,892 | 359,135 | 416,752 | 301,195 |
| 60 „ 64 | 115,263 | 274,365 | 321,730 | 249,989 |
| 65 „ 69 | 84,407 | 197,577 | 243,778 | 211,293 |
| 70 „ 74 | 52,002 | 121,130 | 157,124 | 146,921 |
| 75 „ 79 | 26,436 | 58,555 | 83,467 | 88,287 |
| 80 „ 84 | 11,268 | 23,807 | 36,727 | 41,814 |
| 85 and over | 4,484 | 8,567 | 14,588 | 18,135 |
| ALL AGES | 4,250,207 | 10,687,961 | 12,324,795 | 7,900,869 |

APPENDIX I.—TABLE 10.

### FEMALES.

| Ages last Birthday. | County of London. | County Boroughs. | Urban Districts. | Rural Districts. |
|---|---|---|---|---|
| 0 to 4 | 465,719 | 1,212,542 | 1,364,891 | 824,645 |
| 5 „ 9 | 435,444 | 1,152,547 | 1,321,273 | 819,617 |
| 10 „ 14 | 405,945 | 1,093,271 | 1,247,189 | 785,484 |
| 15 „ 19 | 424,790 | 1,084,183 | 1,212,434 | 668,349 |
| 20 „ 24 | 475,666 | 1,082,053 | 1,191,308 | 623,025 |
| 25 „ 29 | 462,207 | 1,039,581 | 1,153,513 | 616,591 |
| 30 „ 34 | 402,607 | 961,352 | 1,077,880 | 584,454 |
| 35 „ 39 | 358,529 | 853,555 | 970,121 | 542,515 |
| 40 „ 44 | 307,769 | 719,822 | 822,869 | 482,630 |
| 45 „ 49 | 264,006 | 615,921 | 702,610 | 431,427 |
| 50 „ 54 | 217,799 | 509,490 | 583,019 | 371,144 |
| 55 „ 59 | 170,196 | 402,174 | 467,245 | 311,088 |
| 60 „ 64 | 136,963 | 316,989 | 377,868 | 261,797 |
| 65 „ 69 | 107,784 | 248,563 | 305,722 | 226,106 |
| 70 „ 74 | 77,414 | 174,573 | 218,215 | 167,721 |
| 75 „ 79 | 44,979 | 93,256 | 125,040 | 104,213 |
| 80 „ 84 | 22,001 | 41,932 | 59,918 | 52,904 |
| 85 and over | 11,030 | 17,827 | 27,861 | 26,472 |
| ALL AGES | 4,790,848 | 11,619,631 | 13,228,976 | 7,900,182 |

APPENDIX I.—TABLE 11.

## SECTIONAL LIFE TABLES.

Sums of the Deaths in the two Years 1911 and 1912.

### MALES.

| Ages last Birthday. | County of London. | County Boroughs. | Urban Districts. | Rural Districts. |
|---|---|---|---|---|
| 0 to 4 | 20,687 | 60,645 | 54,888 | 25,296 |
| 5 „ 9 | 1,473 | 4,417 | 4,166 | 2,114 |
| 10 „ 14 | 849 | 2,309 | 2,294 | 1,359 |
| 15 „ 19 | 1,067 | 3,216 | 3,510 | 1,978 |
| 20 „ 24 | 1,350 | 3,763 | 3,837 | 2,230 |
| 25 „ 29 | 1,683 | 4,417 | 4,230 | 2,348 |
| 30 „ 34 | 2,126 | 5,466 | 4,755 | 2,556 |
| 35 „ 39 | 2,697 | 6,670 | 5,723 | 2,819 |
| 40 „ 44 | 3,184 | 7,368 | 6,189 | 3,205 |
| 45 „ 49 | 3,696 | 8,654 | 7,303 | 3,718 |
| 50 „ 54 | 4,119 | 9,657 | 8,651 | 4,436 |
| 55 „ 59 | 4,350 | 10,735 | 9,828 | 5,354 |
| 60 „ 64 | 4,750 | 11,818 | 11,547 | 6,773 |
| 65 „ 69 | 4,779 | 11,963 | 12,671 | 8,681 |
| 70 „ 74 | 4,458 | 11,697 | 13,177 | 9,966 |
| 75 „ 79 | 3,325 | 7,941 | 10,208 | 9,525 |
| 80 „ 84 | 2,059 | 4,478 | 6,253 | 6,990 |
| 85 „ 89 | 878 | 1,817 | 2,961 | 3,606 |
| 90 „ 94 | 256 | 487 | 753 | 1,095 |
| 95 „ 99 | 47 | 60 | 132 | 173 |
| 100 „ 104 | 4 | 3 | 13 | 12 |
| 105 and over | — | 1 | 1 | 1 |
| ALL AGES | 67,837 | 177,582 | 173,090 | 104,235 |

APPENDIX I.—TABLE 12.

### FEMALES.

| Ages last Birthday. | County of London. | County Boroughs. | Urban Districts. | Rural Districts. |
|---|---|---|---|---|
| 0 to 4 | 17,492 | 51,131 | 45,734 | 20,271 |
| 5 „ 9 | 1,373 | 4,450 | 4,113 | 2,048 |
| 10 „ 14 | 806 | 2,489 | 2,436 | 1,408 |
| 15 „ 19 | 1,005 | 3,199 | 3,195 | 1,787 |
| 20 „ 24 | 1,239 | 3,709 | 3,580 | 2,050 |
| 25 „ 29 | 1,516 | 4,057 | 4,049 | 2,317 |
| 30 „ 34 | 1,707 | 4,643 | 4,556 | 2,606 |
| 35 „ 39 | 2,189 | 5,764 | 5,212 | 2,777 |
| 40 „ 44 | 2,551 | 6,063 | 5,542 | 2,849 |
| 45 „ 49 | 2,967 | 7,034 | 6,483 | 3,182 |
| 50 „ 54 | 3,179 | 7,827 | 7,258 | 3,876 |
| 55 „ 59 | 3,471 | 8,883 | 8,527 | 4,803 |
| 60 „ 64 | 3,860 | 10,081 | 10,435 | 5,848 |
| 65 „ 69 | 4,364 | 11,455 | 11,814 | 7,716 |
| 70 „ 74 | 5,016 | 13,346 | 14,924 | 9,696 |
| 75 „ 79 | 4,371 | 10,497 | 12,730 | 9,639 |
| 80 „ 84 | 3,363 | 6,940 | 9,108 | 7,474 |
| 85 „ 89 | 1,921 | 3,218 | 4,670 | 4,372 |
| 90 „ 94 | 657 | 963 | 1,517 | 1,571 |
| 95 „ 99 | 129 | 178 | 327 | 307 |
| 100 „ 104 | 8 | 18 | 28 | 35 |
| 105 and over | 1 | — | 2 | 3 |
| ALL AGES | 63,185 | 165,945 | 166,240 | 96,635 |



# APPENDIX II.

## THE MATHEMATICAL FORMULAS EMPLOYED IN THE CONSTRUCTION OF THE LIFE TABLES.

### Section 1.—THE MEAN POPULATION.

The mean population for the interval between two censuses may be taken in various ways. We may have the arithmetical mean of the two enumerations. Let $P_1$ be the population at one census, and $P_2$ that at another taken $n$ years later. Then the arithmetical mean is $\frac{1}{2}(P_1+P_2)$, which is likewise the population at the middle of the period on the assumption of increase in arithmetical progression. Also, on the same assumption, the years lived during the period amount to $\frac{n}{2}(P_1+P_2)$.

The assumption of arithmetical progression for the increase of population is not, however, natural; and although the formula has sometimes been used, it cannot give accurate results. If, however, the rate of increase in the population be not very rapid, and if the interval between the censuses be not very long, the error is not of great importance. Nevertheless, population begets population, and it is therefore more reasonable to assume that populations increase from census to census in geometrical progression, and to frame the formulas accordingly.

As before, let $P_1$ be the population at one census, and $P_2$ that at another, $n$ years later; and let $P_2=rP_1$. Then, on the assumption of geometrical progression, the geometrical mean is $r^{\frac{n}{2}}P_1$, which is also the population at the middle of the period. Adopting this formula, it has sometimes been assumed that the years lived during the period amount to $nr^{\frac{n}{2}}P_1$, but, again, an error is thereby introduced, because the geometrical mean of the populations at the beginning and the end of the period is not the same thing as the equivalent population constantly living throughout the period. That mean population, which will give the years lived, is the function required for present purposes.

Still assuming geometrical progression, let the population at the first census be $P_1$ and at the second $P_2$, and let $P_2=rP_1$. Also, let P without suffix represent the true mean population which is required, and let the intercensal period be $n$ years. Then the population at any time, $t$, after the first census will be $r^tP_1$. To find P we must integrate $r^tP_1$, and take the integral between the limits 0 and 1, the census period being taken as the unit of time. That is

$$P=\int_0^1 P_1 r^t dt=P_1\frac{r-1}{\lambda r}=P_1\frac{\kappa(r-1)}{\log r} \quad . \quad . \quad . \quad (1)$$

where "$\lambda$" stands for Naperian and "log" for common logarithms, and where $\kappa$ is the modulus. The years lived during the $n$ years will then be $nP$.

Equation (1) would give the true mean population corresponding to the deaths of the $n$ calendar years, only if the censuses were taken on 1 January in each case, so as to have the deaths central to the census period. But if the censuses be taken at a fraction, $c$, of a year later than 1 January, a correction must be made by integrating between the limits $-\frac{c}{n}$ and $1-\frac{c}{n}$. We take $\frac{c}{n}$, because that is the fraction of the census period by which the censuses are to be antedated. The effect of the change in the limits of the integral is to multiply the result in equation (1) by $r^{-\frac{c}{n}}$, or to divide it by $r^{\frac{c}{n}}$. Therefore, we have finally,

$$P=P_1\frac{\kappa(r-1)}{r^{\frac{c}{n}}.\log r} \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (2)$$

The mean population given in equation (2) will, when multiplied by 10 for decennial censuses, give the years lived corresponding to the deaths in the 10 years.

Formula (2) gives the true mean when we apply it to the total population, taking $r$ as the rate of increase of that total population for the intercensal period; or it gives the true mean population for a group when we derive $r$ from the population of that group. But it breaks down when we have a population divided into groups, and when we wish to ascertain the mean of the total population, and of each of the several groups, separately. If we use for the groups the value of $r$ derived from the total population, we do not get the true mean populations of the groups, because they do not all increase in the same ratio; and if we treat each group with its own value of $r$ and take the sum, we do not get the true mean of the total population. By a very ingenious device, the late Mr. A. C. Waters, Chief Clerk, General Register Office, overcame this difficulty. He first published his method in a short and most interesting paper in the *Journal of the Royal Statistical Society*, vol. lxiv, p. 293; and he went again into the matter in Part I. of the Supplement to the 65th Annual Report

of the Registrar-General, p. cxvii. On both occasions he dealt with the populations of districts as compared with the population of the total area; but the method is equally applicable to age groups in the data for the construction of a mortality table, and was used for the London Life Table (*see* page 3 of Sir Shirley F. Murphy's Report) and also for the more recent tables of the Registrar-General. The following is a demonstration of the formula of Mr. Waters.

Let $P_1$ be the total population at the first census, and let it increase in geometrical progression to $rP_1$ at the second, $n$ years later: and let $\pi_1$ be the population in any particular group at the first census, and $\pi_2$ that at the second, and let

$$\pi_1=\alpha P_1 \text{ and } \pi_2=\beta(rP_1)$$

and let $\alpha$ pass to $\beta$ during the $n$ years in arithmetical progression. Then, after a period, $t$, the proportion of $\pi_t$ to $P_t$ will be $\alpha+(\beta-\alpha)t$. That is

$$\pi_t=r^tP_1\{\alpha+(\beta-\alpha)t\}$$

$$=\alpha P_1(1-t)r^t+(\beta rP_1)\frac{tr^t}{r}.$$

But $$(\alpha P_1)=\pi_1, \text{ and } (\beta rP_1)=\pi_2.$$

Therefore
$$\pi_t=\pi_1(1-t)r^t+\pi_2\frac{tr^t}{r}. \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad (4)$$

Now to obtain the mean population of the group during any time, say from $h$ to $h+t$, we must integrate, and take the integral within these limits. That is, if $\pi$ be the mean population of the group,

$$\pi=\pi_1\int_h^{h+t}r^tdt-\pi_1\int_h^{h+t}tr^tdt+\frac{\pi_2}{r}\int_h^{h+t}tr^tdt \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad (5)$$

The value of the first integral on the right of equation (5) is $\pi_1\frac{r^h(r^t-1)}{\lambda r}$. For the other two terms we must evaluate the integral $\int tr^tdt$. This is easily done by integrating by parts. We have

$$\int tr^tdt=\int t\frac{dr^t}{\lambda r}$$

$$=\frac{1}{\lambda r}(tr^t-\int r^tdt)$$

$$=\frac{tr^t}{\lambda r}-\frac{r^t}{(\lambda r)^2}$$

or between the limits $h$ and $h+t$

$$\int_h^{h+t}tr^tdt=\frac{(h+t)r^{h+t}}{\lambda r}-\frac{hr^h}{\lambda r}-\frac{r^{h+t}}{(\lambda r)^2}+\frac{r^h}{(\lambda r)^2}$$

$$=\frac{r^h}{\lambda r}\left\{(h+t)r^t-h-\frac{r^t}{\lambda r}+\frac{1}{\lambda r}\right\} \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad (6)$$

Therefore,

$$\pi=\frac{\pi_1r^h}{\lambda r}\left\{(r^t-1)-(h+t)r^t+h+\frac{r^t}{\lambda r}-\frac{1}{\lambda r}\right\}$$

$$+\frac{\pi_2r^h}{r\lambda r}\left\{(h+t)r^t-h-\frac{r^t}{\lambda r}+\frac{1}{\lambda r}\right\} \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad (7)$$

If now the censuses are taken the fraction $c$ of a year on in the year, we must write $-\frac{c}{n}$ for $h$. Also, we must take $t=1$. We thus have for the mean population of the group for the intercensal period,

$$\pi=\frac{\pi_1}{r^{\frac{c}{n}}\lambda r}\left\{(r-1)\left(\frac{c}{n}+\frac{1}{\lambda r}\right)-1\right\}$$

$$+\frac{\pi_2}{r^{\frac{c}{n}}\lambda r}\left\{1-\frac{r-1}{r}\left(\frac{c}{n}+\frac{1}{\lambda r}\right)\right\} \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad (8)$$

This value must be multiplied by $n$ to give the years lived in the intercensal period. For the purpose of numerical calculation, it is convenient to write $\frac{\log r}{\kappa}$ for $\lambda r$.

The correctness of formula (8) is evident, because if we substitute $P_1$ for $\pi_1$ and $rP_1$ for $\pi_2$ we at once have formula (2).



The above formula was used by Mr. Finch in constructing English Life Table No. 6, so that in this respect the methods for Tables Nos. 6 and 7 are identical, and the tables are strictly comparable. The late Mr. Waters, however, revised his formula, and the revision was published in the Annual Report of the Registrar-General for 1907, page cxxxii. The original and the revised formulas do not differ much in the results produced, and either may be used without affecting appreciably the life table.

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## Section 2.—GRADUATED QUINQUENNIAL PIVOTAL VALUES.

The following is a demonstration of the formula used for obtaining the graduated pivotal values employed in the construction of all the Life Tables embodied in this report.

Let there be a series of fifteen values of $u$, the function to be dealt with, from $u_0$ to $u_{14}$. To find the graduated value of $u_7$, the central term of the series.

Let $y$ be the finite integral of the function $u$, so that $y_x=\Sigma_0^{x-1}u$; and let $\Delta y$, $\Delta^2y$, etc., be the differences of $y$ for quinquennial intervals, so that $\Delta y_0=\Sigma_0^5u$, $\Delta y_5=\Sigma_5^5u$, etc.

Then
$$u_7=y_8-y_7$$

But
$$y_8=y_0+\frac{8}{5}\Delta y_0+\frac{24}{50}\Delta^2y_0-\frac{8}{125}\Delta^3y_0$$

$$y_7=y_0+\frac{7}{5}\Delta y_0+\frac{14}{50}\Delta^2y_0-\frac{7}{125}\Delta^3y_0$$

$$u_7=\frac{1}{5}\Delta y_0+\frac{1}{5}\Delta^2y_0-\frac{1}{125}\Delta^3y_0$$

$$=\cdot2\Delta y_5.-\cdot008\Delta^3y_0.$$

The differences, $\Delta$, of $y$ are the sums of five values of the function $u$, and may be represented by the symbol $w$, so that

$$w_x=u_x+u_{x+1}+\ \ldots\ +u_{x+4}.$$

Making this change in notation, we have

$$u_7=\cdot2w_5-\cdot008\Delta^2w_0.$$

In the case of Life Tables constructed from Census Returns and Records of Deaths, the function $u_x$ of the formula is the population or the deaths as the case may be at age $x$, and the function $w_x$ is the sum of five values of the population or deaths for ages $x$ to $x+4$, and it will be observed that the graduated function is that for an age seven years older than the first age in the series of fifteen values embraced in the formula.

The following is an example of the application of the formula. It relates to the populations of the Life Table for the County of London Males given in Table 9 of Appendix I. For ages under 5 the formula does not apply, because of the rapid change in the law of mortality in infancy and early childhood, and the first group that can be employed is that for ages 5 to 9 last birthday, giving the earliest available pivotal value at age 12.

In the example the differences have been placed centrally with regard to the original groups, so as to bring $\Delta^2w_0$ against the group $w_5$, as by this arrangement the arithmetical work is made much more easy.

Where the pivotal value comes out with fewer than five integral places, it is well to bring in decimal places, and for the purposes of verification it is well to retain all the three decimal places which the formula produces.

To check the pivotal values we sum the columns of estimated population, and of second differences, and apply the formula to the sums. The result should be the sum of the graduated populations. Thus, in the example, the sum of the estimated populations for the groups 10–14 to 70–74 inclusive is 3,307,565, and the algebraical sum of the second differences is +8245. By applying the formula we have 661,447. The actual sum of the corresponding portion of the column of graduated population is 661,446, the difference of unity being due to the neglected decimal places.

Again, the sum of the column of estimated populations for the groups 75–79 to 95–99 inclusive is 42,178, and the sum of the second differences is +25462, and the result of applying the formula is 8231·904, which is the exact sum of this portion of the column of graduated populations. The check is applied separately to the integral and the decimal portions of the column of graduated population, or otherwise there would be differences in the decimals.

In the example, positive quantities are printed in Ionic type, and negative in Italic type. In actual working positive quantities would be written in black ink, and negative in red ink.

## COUNTY OF LONDON—MALES.

### Population.

### GRADUATED QUINQUENNIAL PIVOTAL VALUES.

| Ages. | Estimated Population. | Δ | Δ² | Age. | Graduated Population. |
|---|---|---|---|---|---|
| | $\omega_x$ | $\Delta\omega_x$ | $\Delta^2\omega_x$ | | |
| 5– 9 | 431602 | | | | |
| | | *33811* | | | |
| 10– 14 | 397791 | | 22307 | 12 | 79380 |
| | | *11504* | | | |
| 15– 19 | 386287 | | 7033 | 17 | 77201 |
| | | *4471* | | | |
| 20– 24 | 381816 | | 1668 | 22 | 76350 |
| | | *2803* | | | |
| 25– 29 | 379013 | | *28433* | 27 | 76030 |
| | | *31236* | | | |
| 30– 34 | 347777 | | *842* | 32 | 69562 |
| | | *32078* | | | |
| 35– 39 | 315699 | | *11775* | 37 | 63234 |
| | | *43853* | | | |
| 40– 44 | 271846 | | 5960 | 42 | 54322 |
| | | *37893* | | | |
| 45– 49 | 233953 | | *2241* | 47 | 46809 |
| | | *40134* | | | |
| 50– 54 | 193819 | | *5793* | 52 | 38808 |
| | | *45927* | | | |
| 55– 59 | 147892 | | 13298 | 57 | 29472 |
| | | *32629* | | | |
| 60– 64 | 115263 | | 1773 | 62 | 23038 |
| | | *30856* | | | |
| 65– 69 | 84407 | | *1549* | 67 | 16894 |
| | | *32405* | | | |
| 70– 74 | 52002 | | 6839 | 72 | 10346 |
| | | *25566* | | | |
| 75– 79 | 26436 | | 10398 | 77 | 5204·016 |
| | | *15168* | | | |
| 80– 84 | 11268 | | 7524 | 82 | 2193·408 |
| | | *7644* | | | |
| 85– 89 | 3624 | | 4760 | 87 | 686·720 |
| | | *2884* | | | |
| 90– 94 | 740 | | 2254 | 92 | 129·968 |
| | | *630* | | | |
| 95– 99 | 110 | | 526 | 97 | 17·792 |
| | | *104* | | | |
| 100-104 | 6 | | | | |

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## Section 3.—OSCULATORY INTERPOLATION.

In the process of constructing a life table by the method employed in this report we first find the values at quinquennial intervals of a function such as $q_x$, *see* Appendix II, Section 2, and then by interpolation we insert four intervening values in each of the spaces. Were the ordinary formula of finite differences used

$$u_x=u_0+x\Delta u_0+\frac{x(x-1)}{2}\Delta^2u_0+\frac{x(x-1)(x-2)}{6}\Delta^3u_0$$

to fill in the interval $u_1$ to $u_2$ by means of the four values $u_0$, $u_1$, $u_2$, and $u_3$, and were the process repeated to fill in the interval $u_2$ to $u_3$ by means of the four values $u_1$, $u_2$, $u_3$, and $u_4$, there would be a break in the resulting curves at the point $u_2$, and were the process to be repeated down the table there would be a similar break at each quinquennial point, and the life table would have a very rough and unsatisfactory graduation. To overcome this difficulty Dr. Thomas Bond Sprague devised the method of Osculatory Interpolation, and published it in a remarkable paper in the *Journal of the Institute of Actuaries*, vol. xxii. page 270. He used five orders of differences, and, taking six consecutive equidistant values $u_0$, $u_1$, $u_2$, $u_3$, $u_4$, and $u_5$, he solved the problem by arranging that the



two curves of the fifth order which meet at the point $u_2$ should have at that point the same first differential coefficient and also the same second differential coefficient; that is that they should have at the point of junction the same gradient and the same radius of curvature.

Five orders of differences may prove of advantage for curves other than mortality curves, but it is found by experience that for the purpose of constructing life tables three orders of differences are quite sufficient. The curves are of the third order instead of the fifth, and the two curves which meet at any particular point will have at that point the same gradient, but not necessarily the same radius of curvature, because we must leave out of account the second differential coefficient.

Retaining then only three orders of differences, the following is Dr. Sprague's method (somewhat simplified) of deducing the formula.

We have four points, $u_0$, $u_1$, $u_2$, and $u_3$, and the problem is, to interpolate by third differences between the points $u_1$ and $u_2$ in such a way as to obtain a smooth junction when the series is continued in each direction by interpolation in like manner between the points $u_0$ and $u_1$, and between the points $u_2$ and $u_3$. To solve the problem we arrange that the two curves of the third order which meet at the point $u_1$ shall have the same first differential coefficient at that point; and we find the value of that differential coefficient by means of a curve of the second order passing through the points $u_0$, $u_1$, and $u_2$: and similarly for the point $u_2$.

In the analysis we use the symbol $\Delta$ for the differences when the intervals are quinquennial, and the symbol $\delta$ when the intervals are annual.

The required equation to the interpolation curve of the third order between the points $u_1$ and $u_2$ may be written,

$$u_{1+x}=u_1+ax+bx^2+cx^3 \quad \ldots\ldots \quad (1)$$

whence

$$u_2=u_1+a+b+c$$

$$a+b+c=u_2-u_1=\Delta u_1=\Delta u_0+\Delta^2u_0 \quad \ldots\ldots \quad (2)$$

Differentiating equation (1),

$$\frac{du_{1+x}}{dx}=a+2bx+3cx^2$$

whence

$$\frac{du_1}{dx}=a, \text{ and } \frac{du_2}{dx}=a+2b+3c \quad \ldots\ldots \quad (3)$$

The curve of the second order passing through the points $u_0$, $u_1$, and $u_2$ may be written

$$u_x=u_0+x\Delta u_0+\tfrac{1}{2}(x^2-x)\Delta^2u_0$$

whence

$$\frac{du_x}{dx}=\Delta u_0+\tfrac{1}{2}(2x-1)\Delta^2u_0$$

and

$$\frac{du_1}{dx}=\Delta u_0+\tfrac{1}{2}\Delta^2u_0;$$

and therefore from equation (3)

$$a=\Delta u_0+\tfrac{1}{2}\Delta^2u_0 \quad \ldots\ldots\ldots \quad (4)$$

Similarly, from the curve of the second order passing through the points $u_1$, $u_2$, and $u_3$,

$$\frac{du_2}{dx}=\Delta u_1+\tfrac{1}{2}\Delta^2u_1$$

$$=\Delta u_0+\tfrac{3}{2}\Delta^2u_0+\tfrac{1}{2}\Delta^3u_0$$

and from equation (3)

$$a+2b+3c=\Delta u_0+\tfrac{3}{2}\Delta^2u_0+\tfrac{1}{2}\Delta^3u_0 \quad \ldots\ldots\ldots \quad (5)$$

By means of equations (2), (4), and (5) we find

$$a=\Delta u_0+\tfrac{1}{2}\Delta^2u_0$$

$$b=\tfrac{1}{2}\Delta^2u_0-\tfrac{1}{2}\Delta^3u_0$$

$$c=\tfrac{1}{2}\Delta^3u_0,$$

and after reduction, equation (1) becomes

$$u_{1+x}=u_1+x\Delta u_0+\frac{x+x^2}{2}\Delta^2u_0-\frac{x^3-x^3}{2}\Delta^3u_0$$

By differencing this last equation for the interval $\frac{1}{t}$, we have the scheme

$$\delta u_1=\frac{\Delta u_0}{t}+\frac{t+1}{2}\cdot\frac{\Delta^2u_0}{t^2}-\frac{t-1}{2}\cdot\frac{\Delta^3u_0}{t^3}$$

$$\delta^2u_1=\frac{\Delta^2u_0}{t}-(t-3)\frac{\Delta^3u_0}{t^3}$$

$$\delta^3u_1=3\frac{\Delta^3u_0}{t^3}.$$

When $t$ is taken equal to 5, the differences become

$$\delta u_1 = \frac{\Delta u_0}{5} + 3\frac{\Delta^2 u_0}{25} - 2\frac{\Delta^3 u_0}{125}$$

$$\delta^2 u_1 = \frac{\Delta^2 u_0}{25} - 2\frac{\Delta^3 u_0}{125}$$

$$\delta^3 u_1 = 3\frac{\Delta^3 u_0}{125}$$

or

$$\delta u_1 = (\cdot 2)\Delta u_0 + 3(\cdot 04)\Delta^2 u_0 - 2(\cdot 008)\Delta^3 u_0$$

$$\delta^2 u_1 = (\cdot 04)\Delta^2 u_0 - 2(\cdot 008)\Delta^3 u_0$$

$$\delta^3 u_1 = 3(\cdot 008)\Delta^3 u_0$$

The second form of the differences is convenient when an arithmometer is not available. The quinquennial differences are modified by multiplying all the way down the table $\Delta$ by $(\cdot 2)$, $\Delta^2$ by $(\cdot 04)$, and $\Delta^3$ by $(\cdot 008)$; and the multiplication by the remaining coefficients can be done mentally with great ease.

The work can be done very rapidly on an arithmometer if we write the differences as follows

$$\delta u_1 = \cdot 2\Delta u_0 + \cdot 12\Delta^2 u_0 - \cdot 016\Delta^3 u_0$$

$$\delta^2 u_1 = \cdot 04\Delta^2 u_0 - \cdot 016\Delta^3 u_0$$

$$\delta^3 u_1 = \cdot 024\Delta^3 u_0$$

Other methods of applying the principle of osculatory interpolation have been devised which some people think reduce the amount of arithmetical work. In mathematical theory, however, they are certainly less simple, and therefore it has been thought better to adhere to Dr. Sprague's original plan.

A numerical example is appended to illustrate the practical application of the method of osculatory interpolation. It is taken from the construction of the life table for the County of London Males. Table A gives the calculation of the osculatory differences, and Table B the actual interpolation. Positive quantities are printed in Ionic type and negative in Italic type. In actual working positive quantities would be written in black ink, and negative in red ink.

In Table B for convenience the differences are written in reverse order and at the age points 17, 22, etc. they are of course the same as in Table A. They are carried out to eight decimal places although only five are to be retained. This is in order that a complete check may be obtained at every fifth age, because when from age 17, for instance, we come down by summation of difference to age 22, if the work be done correctly log $(q_{22}+\cdot 1)$ is exactly reproduced.

It may be mentioned that in the case of some of the life tables the transitions from positive differences to negative, and *vice versa* are much more marked than in the example chosen.

TABLE A.

CALCULATION OF OSCULATORY DIFFERENCES.

COUNTY OF LONDON—MALES.

| Age. | Log $(q_x+\cdot 1)$. | $\Delta$ | $\Delta^2$ | $\Delta^3$ | Age. | $\delta$ | $\delta^2$ | $\delta^3$ |
|---|---|---|---|---|---|---|---|---|
| 12 | $\bar{1}\cdot 00881$ | 297 | 27 | 21 | — | — | — | — |
| 17 | ·01178 | 324 | 48 | 269 | 17 | 62304 | 744 | 504 |
| 22 | ·01502 | 372 | 317 | *22* | 22 | 66256 | *2384* | 6456 |
| 27 | ·01874 | 689 | 295 | *40* | 27 | 112792 | 13032 | *528* |
| 32 | ·02563 | 984 | 255 | 46 | 32 | 173840 | 12440 | *960* |
| 37 | ·03547 | 1239 | 301 | 126 | 37 | 226664 | 9464 | 1104 |
| 42 | ·04786 | 1540 | 427 | 389 | 42 | 281904 | 10024 | 3024 |
| 47 | ·06326 | 1967 | 816 | 102 | 47 | 353016 | 10856 | 9336 |
| 52 | ·08293 | 2783 | 918 | *312* | 52 | 439688 | 31008 | 2448 |
| 57 | ·11076 | 3701 | 606 | 2296 | 57 | 671752 | 41712 | *2488* |
| 62 | ·14777 | 4307 | 2902 | *2105* | 62 | 776184 | *12496* | 55104 |
| 67 | ·19084 | 7209 | 797 | 254 | 67 | 1248320 | 149760 | *50520* |
| 72 | ·26293 | 8006 | 1051 | *2734* | 72 | 1533376 | 27816 | 6096 |
| 77 | ·34299 | 9057 | *1683* | 4982 | 77 | 1771064 | 85784 | *65616* |
| 82 | ·43356 | 7374 | 3299 | *8184* | 82 | 1529728 | *147032* | 119568 |
| 87 | ·50730 | 10673 | *4885* | | 87 | 2001624 | 262904 | *196416* |
| 92 | ·61403 | 5788 | | | | | | |
| 97 | ·67191 | | | | | | | |



TABLE B.

EXAMPLE OF OSCULATORY INTERPOLATION.

| Age. | $\delta^3$ | $\delta^2$ | $\delta$ | Log $(q_x+\cdot 1)$. |
|---|---|---|---|---|
| 17 | 504 | 744 | 62304 | $\bar{1}\cdot 01178000$ |
| 18 | | 1248 | 63048 | ·01240304 |
| 19 | | 1752 | 64296 | ·01303352 |
| 20 | | 2256 | 66048 | ·01367648 |
| 21 | | | 68304 | ·01433696 |
| 22 | 6456 | *2384* | 66256 | ·01502000 |
| 23 | | 4072 | 63872 | ·01568256 |
| 24 | | 10528 | 67944 | ·01632128 |
| 25 | | 16984 | 78472 | ·01700072 |
| 26 | | | 95456 | ·01778544 |
| 27 | *528* | 13032 | 112792 | ·01874000 |
| 28 | | 12504 | 125824 | ·01986792 |
| 29 | | 11976 | 138328 | ·02112616 |
| 30 | | 11448 | 150304 | ·02250944 |
| 31 | | | 161752 | ·02401248 |
| 32 | *960* | 12440 | 173840 | ·02563000 |
| 33 | | 11480 | 186280 | ·02736840 |
| 34 | | 10520 | 197760 | ·02923120 |
| 35 | | 9560 | 208280 | ·03120880 |
| 36 | | | 217840 | ·03329160 |
| 37 | 1104 | 9464 | 226664 | ·03547000 |
| 38 | | 10568 | 236128 | ·03773664 |
| 39 | | 11672 | 246696 | ·04009792 |
| 40 | | 12776 | 258368 | ·04256488 |
| 41 | | | 271144 | ·04514856 |
| 42 | 3024 | 10024 | 281904 | ·04786000 |
| etc. | etc. | etc. | etc. | etc. |

## Section 4.—LAGRANGE'S METHOD OF INTERPOLATION.

The object of Lagrange's method of interpolation is to supply missing terms of a series when the given terms are not equidistant.

Let $u_a$, $u_b$, $u_c$, etc., $u_n$ be the $n$ given terms, and let it be assumed that the function is rational and integral and of the degree $(n-1)$. We may then assume that

$$u_x = \mathrm{A}(x-b)\,(x-c)\,\ldots\,(x-n)$$
$$+\mathrm{B}(x-a)\,(x-c)\,\ldots\,(x-n)$$
$$+\mathrm{C}(x-a)\,(x-b)\,\ldots\,(x-n)$$
$$+\ \text{etc.}$$

to $n$ terms; each of the $n$ terms in the right-hand member having $(n-1)$ of the factors $(x-a)$, $(x-b)$, etc., and wanting one of these factors; and there being $n$ of the co-efficients A, B, C, etc., the values of which have to be found. If the right-hand member were developed in powers of $x$, it is evident that it would be of the degree $(n-1)$, and that each power of $x$ would have a constant co-efficient, thus fulfilling the hypothesis.

Making $x=a$, we have

$$u_a = \mathrm{A}(a-b)\,(a-c)\,\ldots\,(a-n).$$

Therefore

$$\mathrm{A} = \frac{u_a}{(a-b)\,(a-c)\,\ldots\,(a-n)}.$$

Similarly, making $x=b$, we have

$$\mathrm{B} = \frac{u_b}{(b-a)\,(b-c)\,\ldots\,(b-n)},$$

and so on.

Hence finally,

$$u_x = u_a \frac{(x-b)(x-c)\ldots(x-n)}{(a-b)(a-c)\ldots(a-n)} + u_b \frac{(x-a)(x-c)\ldots(x-n)}{(b-a)(b-c)\ldots(b-n)} + \ldots$$
$$\ldots + u_n \frac{(x-a)(x-b)(x-c)\ldots}{(n-a)(n-b)(n-c)\ldots}$$

Any individual values of the function may be found approximately by means of this equation, but the process is a little tedious, and if many values were required the direct application of the formula would involve a great deal of labour. It is better in such case to calculate the values which will supply the leading differences, and then to complete the series by summation of differences.

For instance (*see* paragraph 22 of the report) in the case of English Life Table No. 7 at the young ages the values of $q_x$ were available for ages 3, 4, 12, 17, and 18, supplying four orders of differences. The values for ages 5, 6, and 7 were therefore calculated by direct application of the formula; and then from the values at ages 3 to 7 inclusive the four orders of leading differences were obtained. In order that the values at ages 17 and 18 may be reproduced accurately, a considerable number of decimal places must be employed.

It may be noticed that as an efficient check on the work, the algebraical sum of the coefficients of $u_a$, $u_b$, etc. in calculating $u_x$ must always be equal to unity. Also, when the leading differences have been formed, they can be checked by the formula

$$u_n = u_0 + n\delta + \frac{n(n-1)}{2}\delta_2 + \text{etc.}$$



# KEY TO THE NOTATION.

$m_x$ = the central death rate, being the ratio of deaths to population in the year of age $x$ to $x+1$. The term "central death rate" is that in use amongst actuaries. In the Reports of the Registrar-General this function has been known by various names, such as the "rate of mortality," the "death rate," and the "mean annual death rate."

$q_x$ = the rate of mortality, or the probability of dying in a year. It is the ratio of the number of deaths in the year of age $x$ to $x+1$ to the number entering on the year.

$p_x$ = the probability of living a year, or the ratio of the number completing the year of age $x$ to $x+1$ to the number entering on the year.

${}_5p_x$ = the probability of living five years.

$l_x$ = the number according to the life table surviving to exact age $x$.

$d_x$ = the deaths in the year of age $x$ to $x+1$ among $l_x$ persons who enter on that year.

$\mathrm{L}_x$ = the population according to the life table, or the years of life lived, in the year of age $x$ to $x+1$. This function in the Reports of the Registrar-General has been denoted by the symbol $\mathrm{P}_x$.

$\mathrm{T}_x$ = the population, or the years of life lived, above the moment of age $x$. This function in the Reports of the Registrar-General has been denoted by the symbol $\mathrm{Q}_x$.

$e_x$ = the curtate expectation of life, or the number of years which on the average will be *completed* by persons aged exactly $x$.

$\mathring{e}_x$ = the complete expectation of life, or the total future lifetime which on the average will be passed through by persons aged exactly $x$. This function in the Reports of the Registrar-General has been denoted by the symbol $\mathrm{E}_x$.

*On the expectations of life see paragraphs 26 and 27 of the Report.*

$\mathrm{N}'_x$ = the sum of the column of $l_x$ of the life table from age $x+1$ to the oldest age.

$\mathrm{N}'_{x|5|}$ = the sum of five values of the column $l_x$ from age $x+1$ to age $x+5$ inclusive.

*The accent is added to the symbol* N *above in order to distinguish the functions from the corresponding functions which involve the rate of interest.*

N.B.—It will be observed from the above Key that the notation used in this Report departs in some respects from that formerly used in the Reports of the Registrar-General. The reason is that the notation of the Registrar-General differed from that which had been employed by actuaries for very many years, and that the actuaries' notation has been adopted at various International Congresses as the universal notation to be employed throughout the civilized world.

## Table I.—ENGLISH LIFE TABLE No. 7.—MALES.

| Age. $x$ | $l_x$ | $d_x$ | $p_x$ | $q_x$ | $L_x$ | $T_x$ | $\mathring{e}_x$ | Age. $x$ |
|---|---|---|---|---|---|---|---|---|
| 0 | 1000000 | 144343 | ·8556573 | ·1443427 | 893851 | 48533893 | 48·53 | 0 |
| 1 | 855657 | 34561 | ·9596077 | ·0403923 | 838377 | 47640042 | 55·68 | 1 |
| 2 | 821096 | 13097 | ·9840506 | ·0159494 | 814547 | 46801665 | 57·00 | 2 |
| 3 | 807999 | 8095 | ·9899811 | ·0100189 | 803952 | 45987118 | 56·92 | 3 |
| 4 | 799904 | 5923 | ·9925955 | ·0074045 | 796942 | 45183166 | 56·49 | 4 |
| 5 | 793981 | 4307 | ·9945752 | ·0054248 | 791828 | 44386224 | 55·90 | 5 |
| 6 | 789674 | 3142 | ·9960212 | ·0039788 | 788103 | 43594396 | 55·21 | 6 |
| 7 | 786532 | 2340 | ·9970255 | ·0029745 | 785362 | 42806293 | 54·42 | 7 |
| 8 | 784192 | 1825 | ·9976720 | ·0023280 | 783279 | 42020931 | 53·59 | 8 |
| 9 | 782367 | 1538 | ·9980355 | ·0019645 | 781598 | 41237652 | 52·71 | 9 |
| 10 | 780829 | 1419 | ·9981825 | ·0018175 | 780120 | 40456054 | 51·81 | 10 |
| 1 | 779410 | 1426 | ·9981707 | ·0018293 | 778697 | 39675934 | 50·91 | 1 |
| 2 | 777984 | 1518 | ·9980493 | ·0019507 | 777225 | 38897237 | 50·00 | 2 |
| 3 | 776466 | 1662 | ·9978587 | ·0021413 | 775635 | 38120012 | 49·09 | 3 |
| 4 | 774804 | 1836 | ·9976310 | ·0023690 | 773886 | 37344377 | 48·20 | 4 |
| 15 | 772968 | 2018 | ·9973893 | ·0026107 | 771959 | 36570491 | 47·31 | 15 |
| 6 | 770950 | 2199 | ·9971483 | ·0028517 | 769850 | 35798532 | 46·43 | 6 |
| 7 | 768751 | 2372 | ·9969140 | ·0030860 | 767565 | 35028682 | 45·57 | 7 |
| 8 | 766379 | 2542 | ·9966839 | ·0033161 | 765108 | 34261117 | 44·71 | 8 |
| 9 | 763837 | 2712 | ·9964484 | ·0035516 | 762481 | 33496009 | 43·85 | 9 |
| 20 | 761125 | 2880 | ·9962175 | ·0037825 | 759685 | 32733528 | 43·01 | 20 |
| 1 | 758245 | 3032 | ·9960013 | ·0039987 | 756729 | 31973843 | 42·17 | 1 |
| 2 | 755213 | 3164 | ·9958101 | ·0041899 | 753631 | 31217114 | 41·34 | 2 |
| 3 | 752049 | 3261 | ·9956647 | ·0043353 | 750419 | 30463483 | 40·51 | 3 |
| 4 | 748788 | 3325 | ·9955586 | ·0044414 | 747125 | 29713064 | 39·68 | 4 |
| 25 | 745463 | 3384 | ·9954607 | ·0045393 | 743771 | 28965939 | 38·86 | 25 |
| 6 | 742079 | 3458 | ·9953402 | ·0046598 | 740350 | 28222168 | 38·03 | 6 |
| 7 | 738621 | 3571 | ·9951658 | ·0048342 | 736836 | 27481818 | 37·21 | 7 |
| 8 | 735050 | 3728 | ·9949280 | ·0050720 | 733186 | 26744982 | 36·39 | 8 |
| 9 | 731322 | 3915 | ·9946472 | ·0053528 | 729364 | 26011796 | 35·57 | 9 |
| 30 | 727407 | 4120 | ·9943371 | ·0056629 | 725347 | 25282432 | 34·76 | 30 |
| 1 | 723287 | 4331 | ·9940115 | ·0059885 | 721122 | 24557085 | 33·95 | 1 |
| 2 | 718956 | 4541 | ·9936842 | ·0063158 | 716685 | 23835963 | 33·15 | 2 |
| 3 | 714415 | 4745 | ·9933584 | ·0066416 | 712043 | 23119278 | 32·36 | 3 |
| 4 | 709670 | 4950 | ·9930247 | ·0069753 | 707195 | 22407235 | 31·57 | 4 |
| 35 | 704720 | 5160 | ·9926782 | ·0073218 | 702140 | 21700040 | 30·79 | 35 |
| 6 | 699560 | 5377 | ·9923141 | ·0076859 | 696871 | 20997900 | 30·02 | 6 |
| 7 | 694183 | 5604 | ·9919275 | ·0080725 | 691381 | 20301029 | 29·25 | 7 |
| 8 | 688579 | 5833 | ·9915289 | ·0084711 | 685663 | 19609648 | 28·48 | 8 |
| 9 | 682746 | 6062 | ·9911213 | ·0088787 | 679715 | 18923985 | 27·72 | 9 |
| 40 | 676684 | 6301 | ·9906886 | ·0093114 | 673533 | 18244270 | 26·96 | 40 |
| 1 | 670383 | 6560 | ·9902137 | ·0097863 | 667103 | 17570737 | 26·21 | 1 |
| 2 | 663823 | 6851 | ·9896799 | ·0103201 | 660398 | 16903634 | 25·47 | 2 |
| 3 | 656972 | 7168 | ·9890899 | ·0109101 | 653388 | 16243236 | 24·72 | 3 |
| 4 | 649804 | 7502 | ·9884539 | ·0115461 | 646053 | 15589848 | 23·99 | 4 |
| 45 | 642302 | 7859 | ·9877656 | ·0122344 | 638372 | 14943795 | 23·27 | 45 |
| 6 | 634443 | 8235 | ·9870186 | ·0129814 | 630326 | 14305423 | 22·55 | 6 |
| 7 | 626208 | 8639 | ·9862060 | ·0137940 | 621888 | 13675097 | 21·84 | 7 |
| 8 | 617569 | 9055 | ·9853380 | ·0146620 | 613042 | 13053209 | 21·14 | 8 |
| 9 | 608514 | 9482 | ·9844173 | ·0155827 | 603773 | 12440167 | 20·44 | 9 |
| 50 | 599032 | 9929 | ·9834251 | ·0165749 | 594067 | 11836394 | 19·76 | 50 |
| 1 | 589103 | 10402 | ·9823420 | ·0176580 | 583902 | 11242327 | 19·08 | 1 |
| 2 | 578701 | 10910 | ·9811477 | ·0188523 | 573246 | 10658425 | 18·42 | 2 |
| 3 | 567791 | 11446 | ·9798431 | ·0201569 | 562068 | 10085179 | 17·76 | 3 |
| 4 | 556345 | 11996 | ·9784370 | ·0215630 | 550347 | 9523111 | 17·12 | 4 |
| 55 | 544349 | 12563 | ·9769201 | ·0230799 | 538068 | 8972764 | 16·48 | 55 |
| 6 | 531786 | 13145 | ·9752823 | ·0247177 | 525213 | 8434696 | 15·86 | 6 |
| 7 | 518641 | 13737 | ·9735130 | ·0264870 | 511773 | 7909483 | 15·25 | 7 |
| 8 | 504904 | 14336 | ·9716075 | ·0283925 | 497736 | 7397710 | 14·65 | 8 |
| 9 | 490568 | 14931 | ·9695647 | ·0304353 | 483102 | 6899974 | 14·07 | 9 |



## Table I.—English Life Table No. 7.—Males—*cont.*

| Age. $x$ | $l_x$ | $d_x$ | $p_x$ | $q_x$ | $L_x$ | $T_x$ | $\mathring{e}_x$ | Age. $x$ |
|---|---|---|---|---|---|---|---|---|
| 60 | 475637 | 15515 | ·9673788 | ·0326212 | 467880 | 6416872 | 13·49 | 60 |
| 1 | 460122 | 16085 | ·9650431 | ·0349569 | 452079 | 5948992 | 12·93 | 1 |
| 2 | 444037 | 16629 | ·9625506 | ·0374494 | 435723 | 5496913 | 12·38 | 2 |
| 3 | 427408 | 17108 | ·9599728 | ·0400272 | 418854 | 5061190 | 11·84 | 3 |
| 4 | 410300 | 17517 | ·9573067 | ·0426933 | 401541 | 4642336 | 11·31 | 4 |
| 65 | 392783 | 17900 | ·9544270 | ·0455730 | 383833 | 4240795 | 10·80 | 65 |
| 6 | 374883 | 18296 | ·9511977 | ·0488023 | 365735 | 3856962 | 10·29 | 6 |
| 7 | 356587 | 18731 | ·9474702 | ·0525298 | 347222 | 3491227 | 9·79 | 7 |
| 8 | 337856 | 19207 | ·9431499 | ·0568501 | 328252 | 3144005 | 9·31 | 8 |
| 9 | 318649 | 19666 | ·9382830 | ·0617170 | 308816 | 2815753 | 8·84 | 9 |
| 70 | 298983 | 20055 | ·9329233 | ·0670767 | 288956 | 2506937 | 8·39 | 70 |
| 1 | 278928 | 20325 | ·9271329 | ·0728671 | 268765 | 2217981 | 7·95 | 1 |
| 2 | 258603 | 20434 | ·9209839 | ·0790161 | 248386 | 1949216 | 7·54 | 2 |
| 3 | 238169 | 20400 | ·9143446 | ·0856554 | 227969 | 1700830 | 7·14 | 3 |
| 4 | 217769 | 20231 | ·9071022 | ·0928978 | 207654 | 1472861 | 6·76 | 4 |
| 75 | 197538 | 19876 | ·8993806 | ·1006194 | 187600 | 1265207 | 6·41 | 75 |
| 6 | 177662 | 19307 | ·8913271 | ·1086729 | 168008 | 1077607 | 6·07 | 6 |
| 7 | 158355 | 18509 | ·8831156 | ·1168844 | 149101 | 909599 | 5·74 | 7 |
| 8 | 139846 | 17481 | ·8749992 | ·1250008 | 131105 | 760498 | 5·44 | 8 |
| 9 | 122365 | 16289 | ·8668769 | ·1331231 | 114221 | 629393 | 5·14 | 9 |
| 80 | 106076 | 15024 | ·8583727 | ·1416273 | 98564 | 515172 | 4·86 | 80 |
| 1 | 91052 | 13744 | ·8490543 | ·1509457 | 84180 | 416608 | 4·58 | 1 |
| 2 | 77308 | 12491 | ·8384223 | ·1615777 | 71062 | 332428 | 4·30 | 2 |
| 3 | 64817 | 11273 | ·8260757 | ·1739243 | 59181 | 261366 | 4·03 | 3 |
| 4 | 53544 | 10059 | ·8121318 | ·1878682 | 48514 | 202185 | 3·78 | 4 |
| 85 | 43485 | 8834 | ·7968505 | ·2031495 | 39068 | 153671 | 3·53 | 85 |
| 6 | 34651 | 7604 | ·7805618 | ·2194382 | 30849 | 114603 | 3·31 | 6 |
| 7 | 27047 | 6392 | ·7636816 | ·2363184 | 23851 | 83754 | 3·10 | 7 |
| 8 | 20655 | 5258 | ·7454085 | ·2545915 | 18026 | 59903 | 2·90 | 8 |
| 9 | 15397 | 4231 | ·7252496 | ·2747504 | 13282 | 41877 | 2·72 | 9 |
| 90 | 11166 | 3301 | ·7043404 | ·2956596 | 9515 | 28595 | 2·56 | 90 |
| 1 | 7865 | 2485 | ·6840926 | ·3159074 | 6623 | 19080 | 2·43 | 1 |
| 2 | 5380 | 1796 | ·6661926 | ·3338074 | 4482 | 12457 | 2·32 | 2 |
| 3 | 3584 | 1249 | ·6514031 | ·3485969 | 2959 | 7975 | 2·22 | 3 |
| 4 | 2335 | 841 | ·6396949 | ·3603051 | 1915 | 5016 | 2·15 | 4 |
| 95 | 1494 | 553 | ·6303378 | ·3696622 | 1217 | 3101 | 2·07 | 95 |
| 6 | 941 | 355 | ·6219445 | ·3780555 | 764 | 1884 | 2·00 | 6 |
| 7 | 586 | 227 | ·6124967 | ·3875033 | 472 | 1120 | 1·91 | 7 |
| 8 | 359 | 144 | ·5994081 | ·4005919 | 287 | 648 | 1·80 | 8 |
| 9 | 215 | 90 | ·5796909 | ·4203091 | 170 | 361 | 1·67 | 9 |
| 100 | 125 | 56 | ·5503136 | ·4496864 | 97 | 191 | 1·53 | 100 |
| 1 | 69 | 34 | ·5087967 | ·4912033 | 52 | 94 | 1·36 | 1 |
| 2 | 35 | 19 | ·4540207 | ·5459793 | 26 | 42 | 1·20 | 2 |
| 3 | 16 | 10 | ·3870590 | ·6129410 | 11 | 16 | 1·04 | 3 |
| 4 | 6 | 4 | ·3116863 | ·6883137 | 4 | 5 | ·90 | 4 |
| 105 | 2 | 2 | ·2341329 | ·7658671 | 1 | 1 | ·78 | 105 |
| 6 | 0 | | ·1618349 | ·8381651 | | | ·68 | 6 |

## Table II.—ENGLISH LIFE TABLE No. 7.—FEMALES.

| Age. $x$ | $l_x$ | $d_x$ | $p_x$ | $q_x$ | $L_x$ | $T_x$ | $\mathring{e}_x$ | Age. $x$ |
|---|---|---|---|---|---|---|---|---|
| 0 | 1000000 | 117435 | ·8825654 | ·1174346 | 916277 | 52381962 | 52·38 | 0 |
| 1 | 882565 | 33222 | ·9623575 | ·0376425 | 865954 | 51465685 | 58·31 | 1 |
| 2 | 849343 | 12965 | ·9847351 | ·0152649 | 842861 | 50599731 | 59·58 | 2 |
| 3 | 836378 | 8405 | ·9899502 | ·0100498 | 832175 | 49756870 | 59·49 | 3 |
| 4 | 827973 | 6191 | ·9925226 | ·0074774 | 824878 | 48924695 | 59·09 | 4 |
| 5 | 821782 | 4549 | ·9944661 | ·0055339 | 819507 | 48099817 | 58·53 | 5 |
| 6 | 817233 | 3364 | ·9958826 | ·0041174 | 815551 | 47280310 | 57·85 | 6 |
| 7 | 813869 | 2551 | ·9968654 | ·0031346 | 812593 | 46464759 | 57·09 | 7 |
| 8 | 811318 | 2029 | ·9974991 | ·0025009 | 810303 | 45652166 | 56·27 | 8 |
| 9 | 809289 | 1733 | ·9978594 | ·0021406 | 808423 | 44841863 | 55·41 | 9 |
| 10 | 807556 | 1604 | ·9980133 | ·0019867 | 806754 | 44033440 | 54·53 | 10 |
| 1 | 805952 | 1597 | ·9980191 | ·0019809 | 805153 | 43226686 | 53·64 | 1 |
| 2 | 804355 | 1668 | ·9979265 | ·0020735 | 803521 | 42421533 | 52·74 | 2 |
| 3 | 802687 | 1785 | ·9977762 | ·0022238 | 801795 | 41618012 | 51·85 | 3 |
| 4 | 800902 | 1922 | ·9976003 | ·0023997 | 799941 | 40816217 | 50·96 | 4 |
| 15 | 798980 | 2060 | ·9974221 | ·0025779 | 797950 | 40016276 | 50·08 | 15 |
| 6 | 796920 | 2186 | ·9972563 | ·0027437 | 795827 | 39218326 | 49·21 | 6 |
| 7 | 794734 | 2298 | ·9971088 | ·0028912 | 793585 | 38422499 | 48·35 | 7 |
| 8 | 792436 | 2396 | ·9969766 | ·0030234 | 791238 | 37628914 | 47·49 | 8 |
| 9 | 790040 | 2482 | ·9968581 | ·0031419 | 788799 | 36837676 | 46·63 | 9 |
| 20 | 787558 | 2563 | ·9967462 | ·0032538 | 786276 | 36048877 | 45·77 | 20 |
| 1 | 784995 | 2643 | ·9966334 | ·0033666 | 783674 | 35262601 | 44·92 | 1 |
| 2 | 782352 | 2729 | ·9965120 | ·0034880 | 780987 | 34478927 | 44·07 | 2 |
| 3 | 779623 | 2815 | ·9963887 | ·0036113 | 778216 | 33697940 | 43·22 | 3 |
| 4 | 776808 | 2899 | ·9962685 | ·0037315 | 775358 | 32919724 | 42·38 | 4 |
| 25 | 773909 | 2986 | ·9961414 | ·0038586 | 772416 | 32144366 | 41·54 | 25 |
| 6 | 770923 | 3086 | ·9959978 | ·0040022 | 769380 | 31371950 | 40·69 | 6 |
| 7 | 767837 | 3203 | ·9958280 | ·0041720 | 766236 | 30602570 | 39·86 | 7 |
| 8 | 764634 | 3344 | ·9956271 | ·0043729 | 762962 | 29836334 | 39·02 | 8 |
| 9 | 761290 | 3501 | ·9954014 | ·0045986 | 759539 | 29073372 | 38·19 | 9 |
| 30 | 757789 | 3669 | ·9951578 | ·0048422 | 755955 | 28313833 | 37·36 | 30 |
| 1 | 754120 | 3844 | ·9949031 | ·0050969 | 752198 | 27557878 | 36·54 | 1 |
| 2 | 750276 | 4018 | ·9946442 | ·0053558 | 748267 | 26805680 | 35·73 | 2 |
| 3 | 746258 | 4194 | ·9943807 | ·0056193 | 744161 | 26057413 | 34·92 | 3 |
| 4 | 742064 | 4372 | ·9941079 | ·0058921 | 739878 | 25313252 | 34·11 | 4 |
| 35 | 737692 | 4555 | ·9938264 | ·0061736 | 735414 | 24573374 | 33·31 | 35 |
| 6 | 733137 | 4739 | ·9935363 | ·0064637 | 730768 | 23837960 | 32·52 | 6 |
| 7 | 728398 | 4925 | ·9932384 | ·0067616 | 725935 | 23107192 | 31·72 | 7 |
| 8 | 723473 | 5107 | ·9929413 | ·0070587 | 720920 | 22381257 | 30·94 | 8 |
| 9 | 718366 | 5284 | ·9926448 | ·0073552 | 715724 | 21660337 | 30·15 | 9 |
| 40 | 713082 | 5465 | ·9923354 | ·0076646 | 710349 | 20944613 | 29·37 | 40 |
| 1 | 707617 | 5661 | ·9919996 | ·0080004 | 704787 | 20234264 | 28·59 | 1 |
| 2 | 701956 | 5880 | ·9916237 | ·0083763 | 699016 | 19529477 | 27·82 | 2 |
| 3 | 696076 | 6117 | ·9912121 | ·0087879 | 693017 | 18830461 | 27·05 | 3 |
| 4 | 689959 | 6366 | ·9907737 | ·0092263 | 686776 | 18137444 | 26·29 | 4 |
| 45 | 683593 | 6631 | ·9903006 | ·0096994 | 680278 | 17450668 | 25·53 | 45 |
| 6 | 676962 | 6915 | ·9897847 | ·0102153 | 673504 | 16770390 | 24·77 | 6 |
| 7 | 670047 | 7225 | ·9892180 | ·0107820 | 666435 | 16096886 | 24·02 | 7 |
| 8 | 662822 | 7540 | ·9886239 | ·0113761 | 659052 | 15430451 | 23·28 | 8 |
| 9 | 655282 | 7858 | ·9880071 | ·0119929 | 651353 | 14771399 | 22·54 | 9 |
| 50 | 647424 | 8204 | ·9873306 | ·0126694 | 643322 | 14120046 | 21·81 | 50 |
| 1 | 639220 | 8593 | ·9865560 | ·0134440 | 634923 | 13476724 | 21·08 | 1 |
| 2 | 630627 | 9053 | ·9856444 | ·0143556 | 626101 | 12841801 | 20·36 | 2 |
| 3 | 621574 | 9593 | ·9845682 | ·0154318 | 616777 | 12215700 | 19·65 | 3 |
| 4 | 611981 | 10190 | ·9833485 | ·0166515 | 606886 | 11598923 | 18·95 | 4 |
| 55 | 601791 | 10822 | ·9820177 | ·0179823 | 596380 | 10992037 | 18·27 | 55 |
| 6 | 590969 | 11459 | ·9806097 | ·0193903 | 585240 | 10395657 | 17·59 | 6 |
| 7 | 579510 | 12077 | ·9791599 | ·0208401 | 573471 | 9810417 | 16·93 | 7 |
| 8 | 567433 | 12655 | ·9776973 | ·0223027 | 561106 | 9236946 | 16·28 | 8 |
| 9 | 554778 | 13206 | ·9761965 | ·0238035 | 548175 | 8675840 | 15·64 | 9 |



## Table II.—English Life Table No. 7.—Females—*cont.*

| Age. $x$ | $l_x$ | $d_x$ | $p_x$ | $q_x$ | $L_x$ | $T_x$ | $\mathring{e}_x$ | Age. $x$ |
|---|---|---|---|---|---|---|---|---|
| 60 | 541572 | 13751 | ·9746095 | ·0253905 | 534696 | 8127665 | 15·01 | 60 |
| 1 | 527821 | 14311 | ·9728858 | ·0271142 | 520666 | 7592969 | 14·39 | 1 |
| 2 | 513510 | 14907 | ·9709717 | ·0290283 | 506056 | 7072303 | 13·77 | 2 |
| 3 | 498603 | 15466 | ·9689792 | ·0310208 | 490870 | 6566247 | 13·17 | 3 |
| 4 | 483137 | 15974 | ·9669387 | ·0330613 | 475150 | 6075377 | 12·58 | 4 |
| 65 | 467163 | 16507 | ·9646639 | ·0353361 | 458910 | 5600227 | 11·99 | 65 |
| 6 | 450656 | 17146 | ·9619551 | ·0380449 | 442083 | 5141317 | 11·41 | 6 |
| 7 | 433510 | 17949 | ·9585945 | ·0414055 | 424535 | 4699234 | 10·84 | 7 |
| 8 | 415561 | 18975 | ·9543388 | ·0456612 | 406074 | 4274699 | 10·29 | 8 |
| 9 | 396586 | 20127 | ·9492504 | ·0507496 | 386522 | 3868625 | 9·76 | 9 |
| 70 | 376459 | 21243 | ·9435715 | ·0564285 | 365838 | 3482103 | 9·25 | 70 |
| 1 | 355216 | 22172 | ·9375823 | ·0624177 | 344130 | 3116265 | 8·77 | 1 |
| 2 | 333044 | 22777 | ·9316083 | ·0683917 | 321655 | 2772135 | 8·32 | 2 |
| 3 | 310267 | 23039 | ·9257445 | ·0742555 | 298748 | 2450480 | 7·90 | 3 |
| 4 | 287228 | 23044 | ·9197716 | ·0802284 | 275706 | 2151732 | 7·49 | 4 |
| 75 | 264184 | 22834 | ·9135692 | ·0864308 | 252767 | 1876026 | 7·10 | 75 |
| 6 | 241350 | 22445 | ·9070004 | ·0929996 | 230127 | 1623259 | 6·73 | 6 |
| 7 | 218905 | 21911 | ·8999094 | ·1000906 | 207950 | 1393132 | 6·36 | 7 |
| 8 | 196994 | 21211 | ·8923242 | ·1076758 | 186388 | 1185182 | 6·02 | 8 |
| 9 | 175783 | 20338 | ·8843037 | ·1156963 | 165614 | 998794 | 5·68 | 9 |
| 80 | 155445 | 19320 | ·8757094 | ·1242906 | 145785 | 833180 | 5·36 | 80 |
| 1 | 136125 | 18189 | ·8663829 | ·1336171 | 127031 | 687395 | 5·05 | 1 |
| 2 | 117936 | 16966 | ·8561417 | ·1438583 | 109453 | 560364 | 4·75 | 2 |
| 3 | 100970 | 15687 | ·8446320 | ·1553680 | 93126 | 450911 | 4·47 | 3 |
| 4 | 85283 | 14345 | ·8318061 | ·1681939 | 78111 | 357785 | 4·20 | 4 |
| 85 | 70938 | 12913 | ·8179674 | ·1820326 | 64481 | 279674 | 3·94 | 85 |
| 6 | 58025 | 11402 | ·8034946 | ·1965054 | 52324 | 215193 | 3·71 | 6 |
| 7 | 46623 | 9844 | ·7888546 | ·2111454 | 41701 | 162869 | 3·49 | 7 |
| 8 | 36779 | 8317 | ·7738715 | ·2261285 | 32621 | 121168 | 3·30 | 8 |
| 9 | 28462 | 6882 | ·7582049 | ·2417951 | 25021 | 88547 | 3·11 | 9 |
| 90 | 21580 | 5563 | ·7421932 | ·2578068 | 18798 | 63526 | 2·94 | 90 |
| 1 | 16017 | 4385 | ·7262414 | ·2737586 | 13825 | 44728 | 2·79 | 1 |
| 2 | 11632 | 3364 | ·7108224 | ·2891776 | 9950 | 30903 | 2·66 | 2 |
| 3 | 8268 | 2512 | ·6961691 | ·3038309 | 7012 | 20953 | 2·53 | 3 |
| 4 | 5756 | 1829 | ·6823001 | ·3176999 | 4841 | 13941 | 2·42 | 4 |
| 95 | 3927 | 1299 | ·6690405 | ·3309595 | 3278 | 9100 | 2·32 | 95 |
| 6 | 2628 | 904 | ·6560401 | ·3439599 | 2176 | 5822 | 2·22 | 6 |
| 7 | 1724 | 616 | ·6427910 | ·3572090 | 1416 | 3646 | 2·12 | 7 |
| 8 | 1108 | 411 | ·6286470 | ·3713530 | 902 | 2230 | 2·01 | 8 |
| 9 | 697 | 270 | ·6128485 | ·3871515 | 562 | 1328 | 1·91 | 9 |
| 100 | 427 | 173 | ·5945607 | ·4054393 | 341 | 766 | 1·80 | 100 |
| 1 | 254 | 109 | ·5729269 | ·4270731 | 199 | 425 | 1·68 | 1 |
| 2 | 145 | 65 | ·5471430 | ·4528570 | 113 | 226 | 1·56 | 2 |
| 3 | 80 | 39 | ·5165540 | ·4834460 | 60 | 113 | 1·44 | 3 |
| 4 | 41 | 21 | ·4807661 | ·5192339 | 31 | 53 | 1·32 | 4 |
| 105 | 20 | 11 | ·4397653 | ·5602347 | 14 | 22 | 1·20 | 105 |
| 6 | 9 | 6 | ·3940204 | ·6059796 | 6 | 8 | 1.08 | 6 |
| 7 | 3 | 2 | ·3445435 | ·6554565 | 2 | 2 | ·98 | 7 |
| 8 | 1 | 1 | ·2928802 | ·7071198 | | | ·88 | 8 |
| 9 | 0 | | ·2410043 | ·7589957 | | | ·81 | 9 |

## Table III.—ENGLISH LIFE TABLE No. 8.—MALES.

| Age. $x$ | $l_x$ | $d_x$ | $p_x$ | $q_x$ | $L_x$ | $T_x$ | $\mathring{e}_x$ | Age. $x$ |
|---|---|---|---|---|---|---|---|---|
| 0 | 1000000 | 120441 | ·8795586 | ·1204414 | 911428 | 51495315 | 51·50 | 0 |
| 1 | 879559 | 30115 | ·9657618 | ·0342382 | 864501 | 50583887 | 57·51 | 1 |
| 2 | 849444 | 11353 | ·9866350 | ·0133650 | 843768 | 49719386 | 58·53 | 2 |
| 3 | 838091 | 6856 | ·9918190 | ·0081810 | 834663 | 48875618 | 58·32 | 3 |
| 4 | 831235 | 4959 | ·9940345 | ·0059655 | 828755 | 48040955 | 57·80 | 4 |
| 5 | 826276 | 4038 | ·9951125 | ·0048875 | 824257 | 47212200 | 57·14 | 5 |
| 6 | 822238 | 3262 | ·9960331 | ·0039669 | 820607 | 46387943 | 56·42 | 6 |
| 7 | 818976 | 2630 | ·9967889 | ·0032111 | 817661 | 45567336 | 55·64 | 7 |
| 8 | 816346 | 2141 | ·9973774 | ·0026226 | 815276 | 44749675 | 54·82 | 8 |
| 9 | 814205 | 1791 | ·9978011 | ·0021989 | 813309 | 43934399 | 53·96 | 9 |
| 10 | 812414 | 1570 | ·9980677 | ·0019323 | 811629 | 43121090 | 53·08 | 10 |
| 1 | 810844 | 1468 | ·9981895 | ·0018105 | 810110 | 42309461 | 52·18 | 1 |
| 2 | 809376 | 1469 | ·9981841 | ·0018159 | 808642 | 41499351 | 51·27 | 2 |
| 3 | 807907 | 1556 | ·9980739 | ·0019261 | 807129 | 40690709 | 50·37 | 3 |
| 4 | 806351 | 1705 | ·9978863 | ·0021137 | 805498 | 39883580 | 49·46 | 4 |
| 15 | 804646 | 1888 | ·9976538 | ·0023462 | 803702 | 39078082 | 48·57 | 15 |
| 6 | 802758 | 2077 | ·9974132 | ·0025868 | 801720 | 38274380 | 47·68 | 6 |
| 7 | 800681 | 2236 | ·9972077 | ·0027923 | 799563 | 37472660 | 46·80 | 7 |
| 8 | 798445 | 2414 | ·9969754 | ·0030246 | 797238 | 36673097 | 45·93 | 8 |
| 9 | 796031 | 2596 | ·9967383 | ·0032617 | 794733 | 35875859 | 45·07 | 9 |
| 20 | 793435 | 2762 | ·9965187 | ·0034813 | 792054 | 35081126 | 44·21 | 20 |
| 1 | 790673 | 2895 | ·9963390 | ·0036610 | 789225 | 34289072 | 43·37 | 1 |
| 2 | 787778 | 2980 | ·9962169 | ·0037831 | 786288 | 33499847 | 42·53 | 2 |
| 3 | 784798 | 3031 | ·9961378 | ·0038622 | 783283 | 32713559 | 41·68 | 3 |
| 4 | 781767 | 3068 | ·9960754 | ·0039246 | 780233 | 31930276 | 40·84 | 4 |
| 25 | 778699 | 3112 | ·9960032 | ·0039968 | 777143 | 31150043 | 40·00 | 25 |
| 6 | 775587 | 3184 | ·9958949 | ·0041051 | 773995 | 30372900 | 39·16 | 6 |
| 7 | 772403 | 3280 | ·9957532 | ·0042468 | 770763 | 29598905 | 38·32 | 7 |
| 8 | 769123 | 3388 | ·9955956 | ·0044044 | 767429 | 28828142 | 37·48 | 8 |
| 9 | 765735 | 3508 | ·9954178 | ·0045822 | 763981 | 28060713 | 36·65 | 9 |
| 30 | 762227 | 3647 | ·9952151 | ·0047849 | 760403 | 27296732 | 35.81 | 30 |
| 1 | 758580 | 3806 | ·9949831 | ·0050169 | 756677 | 26536329 | 34·98 | 1 |
| 2 | 754774 | 3987 | ·9947172 | ·0052828 | 752781 | 25779652 | 34·16 | 2 |
| 3 | 750787 | 4190 | ·9944198 | ·0055802 | 748692 | 25026871 | 33·33 | 3 |
| 4 | 746597 | 4406 | ·9940977 | ·0059023 | 744394 | 24278179 | 32·52 | 4 |
| 35 | 742191 | 4653 | ·9937574 | ·0062426 | 739874 | 23533785 | 31·71 | 35 |
| 6 | 737558 | 4864 | ·9934056 | ·0065944 | 735126 | 22793911 | 30·90 | 6 |
| 7 | 732694 | 5091 | ·9930513 | ·0069487 | 730149 | 22058785 | 30·11 | 7 |
| 8 | 727603 | 5319 | ·9926898 | ·0073102 | 724943 | 21328636 | 29·31 | 8 |
| 9 | 722284 | 5557 | ·9923075 | ·0076925 | 719506 | 20603693 | 28.53 | 9 |
| 40 | 716727 | 5813 | ·9918900 | ·0081100 | 713820 | 19884187 | 27·74 | 40 |
| 1 | 710914 | 6097 | ·9914231 | ·0085769 | 707866 | 19170367 | 26·97 | 1 |
| 2 | 704817 | 6408 | ·9909086 | ·0090914 | 701613 | 18462501 | 26·20 | 2 |
| 3 | 698409 | 6736 | ·9903554 | ·0096446 | 695041 | 17760888 | 25·43 | 3 |
| 4 | 691673 | 7083 | ·9897591 | ·0102409 | 688131 | 17065847 | 24·67 | 4 |
| 45 | 684590 | 7452 | ·9891149 | ·0108851 | 680864 | 16377716 | 23·92 | 45 |
| 6 | 677138 | 7842 | ·9884185 | ·0115815 | 673217 | 15696852 | 23·18 | 6 |
| 7 | 669296 | 8242 | ·9876859 | ·0123141 | 665175 | 15023635 | 22·45 | 7 |
| 8 | 661054 | 8647 | ·9869192 | ·0130808 | 656731 | 14358460 | 21·72 | 8 |
| 9 | 652407 | 9074 | ·9860915 | ·0139085 | 647870 | 13701729 | 21·00 | 9 |
| 50 | 643333 | 9537 | ·9851752 | ·0148248 | 638564 | 13053859 | 20·29 | 50 |
| 1 | 633796 | 10051 | ·9841417 | ·0158583 | 628771 | 12415295 | 19·59 | 1 |
| 2 | 623745 | 10610 | ·9829900 | ·0170100 | 618440 | 11786524 | 18·90 | 2 |
| 3 | 613135 | 11199 | ·9817349 | ·0182651 | 607535 | 11168084 | 18·22 | 3 |
| 4 | 601936 | 11816 | ·9803700 | ·0196300 | 596028 | 10560549 | 17·55 | 4 |
| 55 | 590120 | 12458 | ·9788889 | ·0211111 | 583891 | 9964521 | 16·89 | 55 |
| 6 | 577662 | 13122 | ·9772843 | ·0227157 | 571101 | 9380630 | 16·24 | 6 |
| 7 | 564540 | 13798 | ·9755596 | ·0244404 | 557641 | 8809529 | 15·61 | 7 |
| 8 | 550742 | 14477 | ·9737127 | ·0262873 | 543504 | 8251888 | 14·98 | 8 |
| 9 | 536265 | 15162 | ·9717267 | ·0282733 | 528684 | 7708384 | 14·37 | 9 |



## Table III.—English Life Table No. 8.—Males—*cont.*

| Age. $x$ | $l_x$ | $d_x$ | $p_x$ | $q_x$ | $L_x$ | $T_x$ | $\mathring{e}_x$ | Age. $x$ |
|---|---|---|---|---|---|---|---|---|
| 60 | 521103 | 15850 | ·9695835 | ·0304165 | 513178 | 7179700 | 13·78 | 60 |
| 1 | 505253 | 16540 | ·9672635 | ·0327365 | 496983 | 6666522 | 13·19 | 1 |
| 2 | 488713 | 17206 | ·9647940 | ·0352060 | 480110 | 6169539 | 12·62 | 2 |
| 3 | 471507 | 17834 | ·9621769 | ·0378231 | 462590 | 5689429 | 12·07 | 3 |
| 4 | 453673 | 18441 | ·9593505 | ·0406495 | 444452 | 5226839 | 11·52 | 4 |
| 65 | 435232 | 19043 | ·9562477 | ·0437523 | 425711 | 4782387 | 10·99 | 65 |
| 6 | 416189 | 19646 | ·9527954 | ·0472046 | 406366 | 4356676 | 10·47 | 6 |
| 7 | 396543 | 20232 | ·9489792 | ·0510208 | 386427 | 3950310 | 9·96 | 7 |
| 8 | 376311 | 20766 | ·9448156 | ·0551844 | 365928 | 3563883 | 9·47 | 8 |
| 9 | 355545 | 21237 | ·9402699 | ·0597301 | 344926 | 3197955 | 9·00 | 9 |
| 70 | 334308 | 21629 | ·9353033 | ·0646967 | 323494 | 2853029 | 8·53 | 70 |
| 1 | 312679 | 21927 | ·9298722 | ·0701278 | 301715 | 2529535 | 8·09 | 1 |
| 2 | 290752 | 22134 | ·9238740 | ·0761260 | 279685 | 2227820 | 7·66 | 2 |
| 3 | 268618 | 22223 | ·9172708 | ·0827292 | 257507 | 1948135 | 7·25 | 3 |
| 4 | 246395 | 22146 | ·9101198 | ·0898802 | 235322 | 1690628 | 6·86 | 4 |
| 75 | 224249 | 21866 | ·9024896 | ·0975104 | 213316 | 1455306 | 6·49 | 75 |
| 6 | 202383 | 21359 | ·8944632 | ·1055368 | 191703 | 1241990 | 6·14 | 6 |
| 7 | 181024 | 20647 | ·8859412 | ·1140588 | 170701 | 1050287 | 5·80 | 7 |
| 8 | 160377 | 19758 | ·8768040 | ·1231960 | 150498 | 879586 | 5·49 | 8 |
| 9 | 140619 | 18684 | ·8671277 | ·1328723 | 131277 | 729088 | 5·19 | 9 |
| 80 | 121935 | 17436 | ·8570061 | ·1429939 | 113217 | 597811 | 4·90 | 80 |
| 1 | 104499 | 16035 | ·8465532 | ·1534468 | 96481 | 484594 | 4·64 | 1 |
| 2 | 88464 | 14526 | ·8358072 | ·1641928 | 81201 | 388113 | 4·39 | 2 |
| 3 | 73938 | 12963 | ·8246708 | ·1753292 | 67457 | 306912 | 4·15 | 3 |
| 4 | 60975 | 11397 | ·8130619 | ·1869381 | 55276 | 239455 | 3·93 | 4 |
| 85 | 49578 | 9873 | ·8008864 | ·1991136 | 44642 | 184179 | 3·72 | 85 |
| 6 | 39705 | 8416 | ·7880368 | ·2119632 | 35497 | 139537 | 3·51 | 6 |
| 7 | 31289 | 7079 | ·7737433 | ·2262567 | 27749 | 104040 | 3·33 | 7 |
| 8 | 24210 | 5861 | ·7579161 | ·2420839 | 21280 | 76291 | 3·15 | 8 |
| 9 | 18349 | 4741 | ·7415991 | ·2584009 | 15978 | 55011 | 3·00 | 9 |
| 90 | 13608 | 3728 | ·7260488 | ·2739512 | 11744 | 39033 | 2·87 | 90 |
| 1 | 9880 | 2838 | ·7127280 | ·2872720 | 8461 | 27289 | 2·76 | 1 |
| 2 | 7042 | 2097 | ·7022923 | ·2977077 | 5994 | 18828 | 2·67 | 2 |
| 3 | 4945 | 1510 | ·6946787 | ·3053213 | 4190 | 12834 | 2·60 | 3 |
| 4 | 3435 | 1067 | ·6891593 | ·3108407 | 2901 | 8644 | 2·52 | 4 |
| 95 | 2368 | 748 | ·6843579 | ·3156421 | 1994 | 5743 | 2·43 | 95 |
| 6 | 1620 | 521 | ·6782587 | ·3217413 | 1360 | 3749 | 2·32 | 6 |
| 7 | 1099 | 365 | ·6682471 | ·3317529 | 916 | 2389 | 2·18 | 7 |
| 8 | 734 | 256 | ·6512558 | ·3487442 | 606 | 1473 | 2·01 | 8 |
| 9 | 478 | 180 | ·6240841 | ·3759159 | 388 | 867 | 1·82 | 9 |
| 100 | 298 | 124 | ·5839522 | ·4160478 | 236 | 479 | 1·61 | 100 |
| 1 | 174 | 82 | ·5292748 | ·4707252 | 133 | 243 | 1·40 | 1 |
| 2 | 92 | 50 | ·4605145 | ·5394855 | 67 | 110 | 1·20 | 2 |
| 3 | 42 | 26 | ·3808145 | ·6191855 | 29 | 43 | 1·02 | 3 |
| 4 | 16 | 11 | ·2960075 | ·7039925 | 11 | 14 | ·87 | 4 |
| 105 | 5 | 4 | ·2136899 | ·7863101 | 3 | 3 | ·75 | 105 |
| 6 | 1 | 1 | ·1414135 | ·8585865 | | | ·65 | 6 |

## Table IV.—ENGLISH LIFE TABLE No. 8.—FEMALES.

| Age. $x$ | $l_x$ | $d_x$ | $p_x$ | $q_x$ | $L_x$ | $T_x$ | $\mathring{e}_x$ | Age. $x$ |
|---|---|---|---|---|---|---|---|---|
| 0 | 1000000 | 97670 | ·9023303 | ·0976697 | 930368 | 55347553 | 55·35 | 0 |
| 1 | 902330 | 28808 | ·9680731 | ·0319269 | 887926 | 54417185 | 60·31 | 1 |
| 2 | 873522 | 11546 | ·9867825 | ·0132175 | 867749 | 53529259 | 61·28 | 2 |
| 3 | 861976 | 6913 | ·9919795 | ·0080205 | 858519 | 52661510 | 61·09 | 3 |
| 4 | 855063 | 5008 | ·9941438 | ·0058562 | 852559 | 51802991 | 60·58 | 4 |
| 5 | 850055 | 4079 | ·9952011 | ·0047989 | 848016 | 50950432 | 59·94 | 5 |
| 6 | 845976 | 3298 | ·9961014 | ·0038986 | 844327 | 50102416 | 59·22 | 6 |
| 7 | 842678 | 2667 | ·9968357 | ·0031643 | 841344 | 49258089 | 58·46 | 7 |
| 8 | 840011 | 2183 | ·9974006 | ·0025994 | 838920 | 48416745 | 57·64 | 8 |
| 9 | 837828 | 1845 | ·9977991 | ·0022009 | 836905 | 47577825 | 56·79 | 9 |
| 10 | 835983 | 1638 | ·9980401 | ·0019599 | 835164 | 46740920 | 55·91 | 10 |
| 1 | 834345 | 1554 | ·9981383 | ·0018617 | 833568 | 45905756 | 55·02 | 1 |
| 2 | 832791 | 1569 | ·9981147 | ·0018853 | 832007 | 45072188 | 54·12 | 2 |
| 3 | 831222 | 1666 | ·9979963 | ·0020037 | 830389 | 44240181 | 53·22 | 3 |
| 4 | 829556 | 1812 | ·9978158 | ·0021842 | 828650 | 43409792 | 52·33 | 4 |
| 15 | 827744 | 1976 | ·9976122 | ·0023878 | 826756 | 42581142 | 51·44 | 15 |
| 6 | 825768 | 2122 | ·9974300 | ·0025700 | 824707 | 41754386 | 50·56 | 6 |
| 7 | 823646 | 2207 | ·9973208 | ·0026792 | 822542 | 40929679 | 49·69 | 7 |
| 8 | 821439 | 2280 | ·9972250 | ·0027750 | 820299 | 40107137 | 48·83 | 8 |
| 9 | 819159 | 2345 | ·9971370 | ·0028630 | 817987 | 39286838 | 47·96 | 9 |
| 20 | 816814 | 2409 | ·9970508 | ·0029492 | 815609 | 38468851 | 47·10 | 20 |
| 1 | 814405 | 2475 | ·9969606 | ·0030394 | 813168 | 37653242 | 46·23 | 1 |
| 2 | 811930 | 2541 | ·9968713 | ·0031287 | 810659 | 36840074 | 45·37 | 2 |
| 3 | 809389 | 2600 | ·9967869 | ·0032131 | 808089 | 36029415 | 44·51 | 3 |
| 4 | 806789 | 2663 | ·9966999 | .0033001 | 805458 | 35221326 | 43·66 | 4 |
| 25 | 804126 | 2731 | ·9966029 | ·0033971 | 802760 | 34415868 | 42·80 | 25 |
| 6 | 801395 | 2815 | ·9964883 | ·0035117 | 799988 | 33613108 | 41·94 | 6 |
| 7 | 798580 | 2908 | ·9963574 | ·0036426 | 797126 | 32813120 | 41·09 | 7 |
| 8 | 795672 | 3012 | ·9962150 | ·0037850 | 794166 | 32015994 | 40·24 | 8 |
| 9 | 792660 | 3124 | ·9960593 | ·0039407 | 791098 | 31221828 | 39·39 | 9 |
| 30 | 789536 | 3246 | ·9958884 | ·0041116 | 787913 | 30430730 | 38·54 | 30 |
| 1 | 786290 | 3381 | ·9957005 | ·0042995 | 784599 | 29642817 | 37·70 | 1 |
| 2 | 782909 | 3528 | ·9954931 | ·0045069 | 781145 | 28858218 | 36·86 | 2 |
| 3 | 779381 | 3689 | ·9952674 | ·0047326 | 777537 | 28077073 | 36·03 | 3 |
| 4 | 775692 | 3857 | ·9950267 | ·0049733 | 773763 | 27299536 | 35·19 | 4 |
| 35 | 771835 | 4034 | ·9947745 | ·0052255 | 769818 | 26525773 | 34·37 | 35 |
| 6 | 767801 | 4211 | ·9945142 | ·0054858 | 765696 | 25755955 | 33·55 | 6 |
| 7 | 763590 | 4390 | ·9942515 | ·0057485 | 761395 | 24990259 | 32·73 | 7 |
| 8 | 759200 | 4567 | ·9939842 | ·0060158 | 756916 | 24228864 | 31·91 | 8 |
| 9 | 754633 | 4752 | ·9937033 | ·0062967 | 752257 | 23471948 | 31·10 | 9 |
| 40 | 749881 | 4949 | ·9934000 | ·0066000 | 747407 | 22719691 | 30·30 | 40 |
| 1 | 744932 | 5166 | ·9930650 | ·0069350 | 742349 | 21972284 | 29·50 | 1 |
| 2 | 739766 | 5398 | ·9927033 | ·0072967 | 737067 | 21229935 | 28·70 | 2 |
| 3 | 734368 | 5639 | ·9923208 | ·0076792 | 731548 | 20492868 | 27·91 | 3 |
| 4 | 728729 | 5896 | ·9919090 | ·0080910 | 725781 | 19761320 | 27·12 | 4 |
| 45 | 722833 | 6173 | ·9914598 | ·0085402 | 719747 | 19035539 | 26·34 | 45 |
| 6 | 716660 | 6476 | ·9909645 | ·0090355 | 713422 | 18315792 | 25·56 | 6 |
| 7 | 710184 | 6792 | ·9904365 | ·0095635 | 706788 | 17602370 | 24·79 | 7 |
| 8 | 703392 | 7118 | ·9898807 | ·0101193 | 699833 | 16895582 | 24·02 | 8 |
| 9 | 696274 | 7466 | ·9892758 | ·0107242 | 692541 | 16195749 | 23·26 | 9 |
| 50 | 688808 | 7853 | ·9885993 | ·0114007 | 684881 | 15503208 | 22·51 | 50 |
| 1 | 680955 | 8288 | ·9878288 | ·0121712 | 676811 | 14818327 | 21·76 | 1 |
| 2 | 672667 | 8770 | ·9869622 | ·0130378 | 668282 | 14141516 | 21·02 | 2 |
| 3 | 663897 | 9287 | ·9860117 | ·0139883 | 659254 | 13473234 | 20·29 | 3 |
| 4 | 654610 | 9835 | ·9849757 | ·0150243 | 649692 | 12813980 | 19·58 | 4 |
| 55 | 644775 | 10412 | ·9838523 | ·0161477 | 639569 | 12164288 | 18·87 | 55 |
| 6 | 634363 | 11013 | ·9826390 | ·0173610 | 628857 | 11524719 | 18·17 | 6 |
| 7 | 623350 | 11625 | ·9813505 | ·0186495 | 617537 | 10895862 | 17·48 | 7 |
| 8 | 611725 | 12244 | ·9799843 | ·0200157 | 605603 | 10278325 | 16·80 | 8 |
| 9 | 599481 | 12882 | ·9785119 | ·0214881 | 593040 | 9672722 | 16·14 | 9 |



## Table IV.—English Life Table No. 8.—Females—*cont.*

| Age. $x$ | $l_x$ | $d_x$ | $p_x$ | $q_x$ | $L_x$ | $T_x$ | $\mathring{e}_x$ | Age. $x$ |
|---|---|---|---|---|---|---|---|---|
| 60 | 586599 | 13548 | ·9769037 | ·0230963 | 579825 | 9079682 | 15·48 | 60 |
| 1 | 573051 | 14253 | ·9751277 | ·0248723 | 565925 | 8499857 | 14·83 | 1 |
| 2 | 558798 | 14954 | ·9732403 | ·0267597 | 551321 | 7933932 | 14·20 | 2 |
| 3 | 543844 | 15632 | ·9712555 | ·0287445 | 536028 | 7382611 | 13·58 | 3 |
| 4 | 528212 | 16336 | ·9690726 | ·0309274 | 520044 | 6846583 | 12·96 | 4 |
| 65 | 511876 | 17106 | ·9665831 | ·0334169 | 503323 | 6326539 | 12·36 | 65 |
| 6 | 494770 | 17975 | ·9636697 | ·0363303 | 485782 | 5823216 | 11·77 | 6 |
| 7 | 476795 | 18952 | ·9602511 | ·0397489 | 467319 | 5337434 | 11·19 | 7 |
| 8 | 457843 | 19978 | ·9563638 | ·0436362 | 447854 | 4870115 | 10·64 | 8 |
| 9 | 437865 | 20990 | ·9520626 | ·0479374 | 427370 | 4422261 | 10·10 | 9 |
| 70 | 416875 | 21924 | ·9474084 | ·0525916 | 405913 | 3994891 | 9·58 | 70 |
| 1 | 394951 | 22722 | ·9424709 | ·0575291 | 383590 | 3588978 | 9·09 | 1 |
| 2 | 372229 | 23352 | ·9372625 | ·0627375 | 360553 | 3205388 | 8·61 | 2 |
| 3 | 348877 | 23829 | ·9316998 | ·0683002 | 336963 | 2844835 | 8·15 | 3 |
| 4 | 325048 | 24148 | ·9257096 | ·0742904 | 312974 | 2507872 | 7·72 | 4 |
| 75 | 300900 | 24310 | ·9192095 | ·0807905 | 288745 | 2194898 | 7·29 | 75 |
| 6 | 276590 | 24310 | ·9121061 | ·0878939 | 264435 | 1906153 | 6·89 | 6 |
| 7 | 252280 | 24185 | ·9041354 | ·0958646 | 240187 | 1641718 | 6·51 | 7 |
| 8 | 228095 | 23893 | ·8952495 | ·1047505 | 216149 | 1401531 | 6·14 | 8 |
| 9 | 204202 | 23339 | ·8857051 | ·1142949 | 192532 | 1185382 | 5·81 | 9 |
| 80 | 180863 | 22461 | ·8758134 | ·1241866 | 169633 | 992850 | 5·49 | 80 |
| 1 | 158402 | 21234 | ·8659487 | ·1340513 | 147785 | 823217 | 5·20 | 1 |
| 2 | 137168 | 19707 | ·8563268 | ·1436732 | 127314 | 675432 | 4·92 | 2 |
| 3 | 117461 | 18003 | ·8467374 | ·1532626 | 108460 | 548118 | 4·67 | 3 |
| 4 | 99458 | 16218 | ·8369346 | ·1630654 | 91349 | 439658 | 4·42 | 4 |
| 85 | 83240 | 14430 | ·8266345 | ·1733655 | 76025 | 348309 | 4·19 | 85 |
| 6 | 68810 | 12696 | ·8154963 | ·1845037 | 62462 | 272284 | 3·96 | 6 |
| 7 | 56114 | 11040 | ·8032726 | ·1967274 | 50594 | 209822 | 3·74 | 7 |
| 8 | 45074 | 9462 | ·7900803 | ·2099197 | 40343 | 159228 | 3·53 | 8 |
| 9 | 35612 | 7971 | ·7761460 | ·2238540 | 31626 | 118885 | 3·34 | 9 |
| 90 | 27641 | 6586 | ·7617445 | ·2382555 | 24348 | 87259 | 3·16 | 90 |
| 1 | 21055 | 5322 | ·7472045 | ·2527955 | 18394 | 62911 | 2·99 | 1 |
| 2 | 15733 | 4206 | ·7326566 | ·2673434 | 13630 | 44517 | 2·83 | 2 |
| 3 | 11527 | 3250 | ·7180512 | ·2819488 | 9902 | 30887 | 2·68 | 3 |
| 4 | 8277 | 2457 | ·7031753 | ·2968247 | 7049 | 20985 | 2·54 | 4 |
| 95 | 5820 | 1818 | ·6876691 | ·3123309 | 4911 | 13936 | 2·39 | 95 |
| 6 | 4002 | 1317 | ·6710510 | ·3289490 | 3343 | 9025 | 2·26 | 6 |
| 7 | 2685 | 932 | ·6527389 | ·3472611 | 2219 | 5682 | 2·12 | 7 |
| 8 | 1753 | 645 | ·6320844 | ·3679156 | 1431 | 3463 | 1·98 | 8 |
| 9 | 1108 | 434 | ·6084189 | ·3915811 | 891 | 2032 | 1·83 | 9 |
| 100 | 674 | 282 | ·5811105 | ·4188895 | 533 | 1141 | 1·69 | 100 |
| 1 | 392 | 177 | ·5496368 | ·4503632 | 303 | 608 | 1·55 | 1 |
| 2 | 215 | 104 | ·5136685 | ·4863315 | 163 | 305 | 1·42 | 2 |
| 3 | 111 | 59 | ·4731568 | ·5268432 | 82 | 142 | 1·29 | 3 |
| 4 | 52 | 30 | ·4284139 | ·5715861 | 37 | 60 | 1·16 | 4 |
| 105 | 22 | 13 | ·3801683 | ·6198317 | 15 | 23 | 1·05 | 105 |
| 6 | 9 | 6 | ·3295763 | ·6704237 | 6 | 8 | ·95 | 6 |
| 7 | 3 | 2 | ·2781720 | ·7218280 | 2 | 2 | ·85 | 7 |
| 8 | 1 | 1 | ·2277481 | ·7722519 | — | — | ·77 | 8 |

## Table V.—LIFE TABLE FOR ENGLAND AND WALES.—UNMARRIED FEMALES (SPINSTERS).

| Age. $x$ | $l_x$ | $d_x$ | $p_x$ | $q_x$ | $L_x$ | $T_x$ | $\mathring{e}_x$ | Age. $x$ |
|---|---|---|---|---|---|---|---|---|
| 15 | 102783 | 246 | ·99760 | ·00240 | 102660 | 5369727 | 52·25 | 15 |
| 6 | 102537 | 262 | ·99744 | ·00256 | 102406 | 5267067 | 51·37 | 6 |
| 7 | 102275 | 270 | ·99736 | ·00264 | 102140 | 5164661 | 50·50 | 7 |
| 8 | 102005 | 275 | ·99730 | ·00270 | 101867 | 5062521 | 49·64 | 8 |
| 9 | 101730 | 278 | ·99726 | ·00274 | 101591 | 4960654 | 48·76 | 9 |
| 20 | 101452 | 282 | ·99722 | ·00278 | 101311 | 4859063 | 47·89 | 20 |
| 1 | 101170 | 287 | ·99717 | ·00283 | 101027 | 4757752 | 47·02 | 1 |
| 2 | 100883 | 289 | ·99712 | ·00288 | 100738 | 4656725 | 46·16 | 2 |
| 3 | 100594 | 294 | ·99707 | ·00293 | 100447 | 4555987 | 45·29 | 3 |
| 4 | 100300 | 300 | ·99702 | ·00298 | 100150 | 4455540 | 44·42 | 4 |
| 25 | 100000 | 306 | ·99694 | ·00306 | 99847 | 4355390 | 43·55 | 25 |
| 6 | 99694 | 316 | ·99683 | ·00317 | 99536 | 4255543 | 42·69 | 6 |
| 7 | 99378 | 329 | ·99668 | ·00332 | 99214 | 4156007 | 41·82 | 7 |
| 8 | 99049 | 348 | ·99649 | ·00351 | 98875 | 4056793 | 40·95 | 8 |
| 9 | 98701 | 368 | ·99627 | ·00373 | 98517 | 3957918 | 40·11 | 9 |
| 30 | 98333 | 386 | ·99606 | ·00394 | 98140 | 3859401 | 39·25 | 30 |
| 1 | 97947 | 405 | ·99586 | ·00414 | 97744 | 3761261 | 38·40 | 1 |
| 2 | 97542 | 422 | ·99568 | ·00432 | 97331 | 3663517 | 37·57 | 2 |
| 3 | 97120 | 435 | ·99551 | ·00449 | 96903 | 3566186 | 36·72 | 3 |
| 4 | 96685 | 451 | ·99534 | ·00466 | 96459 | 3469283 | 35·88 | 4 |
| 35 | 96234 | 466 | ·99516 | ·00484 | 96001 | 3372824 | 35·05 | 35 |
| 6 | 95768 | 484 | ·99495 | ·00505 | 95526 | 3276823 | 34·22 | 6 |
| 7 | 95284 | 501 | ·99473 | ·00527 | 95034 | 3181297 | 33·39 | 7 |
| 8 | 94783 | 520 | ·99451 | ·00549 | 94523 | 3086263 | 32·56 | 8 |
| 9 | 94263 | 541 | ·99427 | ·00573 | 93992 | 2991740 | 31·75 | 9 |
| 40 | 93722 | 564 | ·99398 | ·00602 | 93440 | 2897748 | 30·92 | 40 |
| 1 | 93158 | 594 | ·99362 | ·00638 | 92861 | 2804308 | 30·10 | 1 |
| 2 | 92564 | 633 | ·99317 | ·00683 | 92248 | 2711447 | 29·29 | 2 |
| 3 | 91931 | 675 | ·99265 | ·00735 | 91593 | 2619199 | 28·48 | 3 |
| 4 | 91256 | 722 | ·99209 | ·00791 | 90895 | 2527606 | 27·70 | 4 |
| 45 | 90534 | 768 | ·99150 | ·00850 | 90150 | 2436711 | 26·92 | 45 |
| 6 | 89766 | 817 | ·99092 | ·00908 | 89358 | 2346561 | 26·15 | 6 |
| 7 | 88949 | 858 | ·99036 | ·00964 | 88520 | 2257203 | 25·37 | 7 |
| 8 | 88091 | 898 | ·98980 | ·01020 | 87642 | 2168683 | 24·63 | 8 |
| 9 | 87193 | 941 | ·98922 | ·01078 | 86722 | 2081041 | 23·87 | 9 |
| 50 | 86252 | 981 | ·98861 | ·01139 | 85762 | 1994319 | 23·12 | 50 |
| 1 | 85271 | 1029 | ·98794 | ·01206 | 84756 | 1908557 | 22·39 | 1 |
| 2 | 84242 | 1073 | ·98725 | ·01275 | 83706 | 1823801 | 21·65 | 2 |
| 3 | 83169 | 1121 | ·98654 | ·01346 | 82608 | 1740095 | 20·92 | 3 |
| 4 | 82048 | 1166 | ·98578 | ·01422 | 81465 | 1657487 | 20·19 | 4 |
| 55 | 80882 | 1220 | ·98491 | ·01509 | 80272 | 1576022 | 19·48 | 55 |
| 6 | 79662 | 1283 | ·98389 | ·01611 | 79021 | 1495750 | 18·78 | 6 |
| 7 | 78379 | 1354 | ·98272 | ·01728 | 77702 | 1416729 | 18·08 | 7 |
| 8 | 77025 | 1432 | ·98142 | ·01858 | 76309 | 1339027 | 17·39 | 8 |
| 9 | 75593 | 1513 | ·97998 | ·02002 | 74836 | 1262718 | 16·71 | 9 |
| 60 | 74080 | 1598 | ·97842 | ·02158 | 73281 | 1187882 | 16·04 | 60 |
| 1 | 72482 | 1687 | ·97672 | ·02328 | 71639 | 1114601 | 15·39 | 1 |
| 2 | 70795 | 1776 | ·97492 | ·02508 | 69907 | 1042962 | 14·73 | 2 |
| 3 | 69019 | 1864 | ·97300 | ·02700 | 68087 | 973055 | 14·10 | 3 |
| 4 | 67155 | 1953 | ·97092 | ·02908 | 66178 | 904968 | 13·47 | 4 |
| 65 | 65202 | 2048 | ·96860 | ·03140 | 64178 | 838790 | 12·86 | 65 |
| 6 | 63154 | 2147 | ·96599 | ·03401 | 62081 | 774612 | 12·27 | 6 |
| 7 | 61007 | 2254 | ·96308 | ·03692 | 59880 | 712531 | 11·68 | 7 |
| 8 | 58753 | 2355 | ·95991 | ·04009 | 57575 | 652651 | 11·11 | 8 |
| 9 | 56398 | 2459 | ·95641 | ·04359 | 55169 | 595076 | 10·55 | 9 |



## Table V.—Life Table for England and Wales.—Unmarried Females (Spinsters)—*cont.*

| Age. $x$ | $l_x$ | $d_x$ | $p_x$ | $q_x$ | $L_x$ | $T_x$ | $\mathring{e}_x$ | Age. $x$ |
|---|---|---|---|---|---|---|---|---|
| 70 | 53939 | 2561 | ·95254 | ·04746 | 52658 | 539907 | 10·01 | 70 |
| 1 | 51378 | 2660 | ·94822 | ·05178 | 50048 | 487249 | 9·48 | 1 |
| 2 | 48718 | 2756 | ·94344 | ·05656 | 47340 | 437201 | 8·97 | 2 |
| 3 | 45962 | 2841 | ·93819 | ·06181 | 44542 | 389861 | 8·48 | 3 |
| 4 | 43121 | 2914 | ·93242 | ·06758 | 41664 | 345319 | 8·01 | 4 |
| 75 | 40207 | 2973 | ·92606 | ·07394 | 38720 | 303655 | 7·55 | 75 |
| 6 | 37234 | 3014 | ·91905 | ·08095 | 35727 | 264935 | 7·12 | 6 |
| 7 | 34220 | 3040 | ·91115 | ·08885 | 32700 | 229208 | 6·70 | 7 |
| 8 | 31180 | 3047 | ·90229 | ·09771 | 29657 | 196508 | 6·30 | 8 |
| 9 | 28133 | 3020 | ·89265 | ·10735 | 26623 | 166851 | 5·93 | 9 |
| 80 | 25113 | 2951 | ·88249 | ·11751 | 23637 | 140228 | 5·58 | 80 |
| 1 | 22162 | 2835 | ·87209 | ·12791 | 20745 | 116591 | 5·26 | 1 |
| 2 | 19327 | 2677 | ·86147 | ·13853 | 17988 | 95846 | 4·96 | 2 |
| 3 | 16650 | 2491 | ·85039 | ·14961 | 15405 | 77858 | 4·68 | 3 |
| 4 | 14159 | 2282 | ·83885 | ·16115 | 13018 | 62453 | 4·41 | 4 |
| 85 | 11877 | 2056 | ·82687 | ·17313 | 10849 | 49435 | 4·16 | 85 |
| 6 | 9821 | 1822 | ·81445 | ·18555 | 8910 | 38586 | 3·93 | 6 |
| 7 | 7999 | 1588 | ·80153 | ·19847 | 7205 | 29676 | 3·71 | 7 |
| 8 | 6411 | 1359 | ·78807 | ·21193 | 5731 | 22471 | 3·51 | 8 |
| 9 | 5052 | 1141 | ·77414 | ·22586 | 4482 | 16740 | 3·31 | 9 |
| 90 | 3911 | 939 | ·75985 | ·24015 | 3441 | 12258 | 3·13 | 90 |
| 1 | 2972 | 757 | ·74532 | ·25468 | 2594 | 8817 | 2·97 | 1 |
| 2 | 2215 | 597 | ·73058 | ·26942 | 1916 | 6223 | 2·81 | 2 |
| 3 | 1618 | 460 | ·71563 | ·28437 | 1388 | 4307 | 2·66 | 3 |
| 4 | 1158 | 347 | ·70044 | ·29956 | 985 | 2919 | 2·52 | 4 |
| 95 | 811 | 255 | ·68487 | ·31513 | 683 | 1934 | 2·38 | 95 |
| 6 | 556 | 184 | ·66882 | ·33118 | 464 | 1251 | 2·25 | 6 |
| 7 | 372 | 130 | ·65185 | ·34815 | 307 | 787 | 2·12 | 7 |
| 8 | 242 | 89 | ·63315 | ·36685 | 198 | 480 | 1·98 | 8 |
| 9 | 153 | 59 | ·61135 | ·38865 | 123 | 282 | 1·84 | 9 |
| 100 | 94 | 39 | ·58468 | ·41532 | 75 | 159 | 1·69 | 100 |
| 1 | 55 | 25 | ·55126 | ·44874 | 42 | 84 | 1·54 | 1 |
| 2 | 30 | 15 | ·50945 | ·49055 | 23 | 42 | 1·38 | 2 |
| 3 | 15 | 8 | ·45831 | ·54169 | 11 | 19 | 1·22 | 3 |
| 4 | 7 | 4 | ·39819 | ·60181 | 5 | 8 | 1·07 | 4 |
| 105 | 3 | 2 | ·33111 | ·66889 | 2 | 3 | ·94 | 105 |
| 6 | 1 | 1 | ·26086 | ·73914 | 1 | 1 | ·82 | 6 |
| 7 | 0 | | ·19255 | ·80745 | | | ·72 | 7 |

## Table VI.—LIFE TABLE FOR ENGLAND AND WALES.—MARRIED FEMALES (WIVES).

| Age. $x$ | $l_x$ | $d_x$ | $p_x$ | $q_x$ | $L_x$ | $T_x$ | $\mathring{e}_x$ | Age. $x$ |
|---|---|---|---|---|---|---|---|---|
| 25 | 100000 | 377 | ·99624 | ·00376 | 99811 | 4326850 | 43·27 | 25 |
| 6 | 99623 | 380 | ·99618 | ·00382 | 99433 | 4227039 | 42·42 | 6 |
| 7 | 99243 | 385 | ·99611 | ·00389 | 99051 | 4127606 | 41·59 | 7 |
| 8 | 98858 | 393 | ·99603 | ·00397 | 98661 | 4028555 | 40·76 | 8 |
| 9 | 98465 | 401 | ·99593 | ·00407 | 98265 | 3929894 | 39·91 | 9 |
| 30 | 98064 | 410 | ·99581 | ·00419 | 97859 | 3831629 | 39·08 | 30 |
| 1 | 97654 | 424 | ·99565 | ·00435 | 97442 | 3733770 | 38·24 | 1 |
| 2 | 97230 | 442 | ·99546 | ·00454 | 97009 | 3636328 | 37·40 | 2 |
| 3 | 96788 | 463 | ·99523 | ·00477 | 96556 | 3539319 | 36·57 | 3 |
| 4 | 96325 | 484 | ·99497 | ·00503 | 96083 | 3442763 | 35·74 | 4 |
| 35 | 95841 | 507 | ·99471 | ·00529 | 95588 | 3346680 | 34·91 | 35 |
| 6 | 95334 | 529 | ·99444 | ·00556 | 95069 | 3251092 | 34·10 | 6 |
| 7 | 94805 | 553 | ·99417 | ·00583 | 94529 | 3156023 | 33·29 | 7 |
| 8 | 94252 | 576 | ·99390 | ·00610 | 93964 | 3061494 | 32·48 | 8 |
| 9 | 93676 | 597 | ·99362 | ·00638 | 93377 | 2967530 | 31·68 | 9 |
| 40 | 93079 | 622 | ·99333 | ·00667 | 92768 | 2874153 | 30·88 | 40 |
| 1 | 92457 | 645 | ·99302 | ·00698 | 92135 | 2781385 | 30·09 | 1 |
| 2 | 91812 | 668 | ·99272 | ·00728 | 91478 | 2689250 | 29·29 | 2 |
| 3 | 91144 | 690 | ·99242 | ·00758 | 90799 | 2597772 | 28·50 | 3 |
| 4 | 90454 | 713 | ·99210 | ·00790 | 90097 | 2506973 | 27·72 | 4 |
| 45 | 89741 | 741 | ·99175 | ·00825 | 89371 | 2416876 | 26·93 | 45 |
| 6 | 89000 | 771 | ·99133 | ·00867 | 88614 | 2327505 | 26·15 | 6 |
| 7 | 88229 | 807 | ·99086 | ·00914 | 87826 | 2238891 | 25·38 | 7 |
| 8 | 87422 | 844 | ·99036 | ·00964 | 87000 | 2151065 | 24·61 | 8 |
| 9 | 86578 | 882 | ·98981 | ·01019 | 86137 | 2064065 | 23·84 | 9 |
| 50 | 85696 | 928 | ·98917 | ·01083 | 85232 | 1977928 | 23·08 | 50 |
| 1 | 84768 | 980 | ·98844 | ·01156 | 84278 | 1892696 | 22·33 | 1 |
| 2 | 83788 | 1040 | ·98759 | ·01241 | 83268 | 1808418 | 21·58 | 2 |
| 3 | 82748 | 1105 | ·98665 | ·01335 | 82195 | 1725150 | 20·85 | 3 |
| 4 | 81643 | 1174 | ·98561 | ·01439 | 81056 | 1642955 | 20·12 | 4 |
| 55 | 80469 | 1246 | ·98451 | ·01549 | 79846 | 1561899 | 19·41 | 55 |
| 6 | 79223 | 1317 | ·98337 | ·01663 | 78565 | 1482053 | 18·71 | 6 |
| 7 | 77906 | 1385 | ·98222 | ·01778 | 77213 | 1403488 | 18·01 | 7 |
| 8 | 76521 | 1450 | ·98104 | ·01896 | 75796 | 1326275 | 17·33 | 8 |
| 9 | 75071 | 1518 | ·97979 | ·02021 | 74312 | 1250479 | 16·66 | 9 |
| 60 | 73553 | 1590 | ·97838 | ·02162 | 72758 | 1176167 | 15·99 | 60 |
| 1 | 71963 | 1672 | ·97676 | ·02324 | 71127 | 1103409 | 15·33 | 1 |
| 2 | 70291 | 1763 | ·97493 | ·02507 | 69410 | 1032282 | 14·69 | 2 |
| 3 | 68528 | 1855 | ·97293 | ·02707 | 67600 | 962872 | 14·05 | 3 |
| 4 | 66673 | 1951 | ·97073 | ·02927 | 65698 | 895272 | 13·43 | 4 |
| 65 | 64722 | 2053 | ·96828 | ·03172 | 63695 | 829574 | 12·82 | 65 |
| 6 | 62669 | 2160 | ·96555 | ·03445 | 61589 | 765879 | 12·22 | 6 |
| 7 | 60509 | 2268 | ·96253 | ·03747 | 59375 | 704290 | 11·64 | 7 |
| 8 | 58241 | 2375 | ·95922 | ·04078 | 57054 | 644915 | 11·07 | 8 |
| 9 | 55866 | 2481 | ·95559 | ·04441 | 54625 | 587861 | 10·52 | 9 |
| 70 | 53385 | 2583 | ·95161 | ·04839 | 52094 | 533236 | 9·99 | 70 |
| 1 | 50802 | 2679 | ·94726 | ·05274 | 49462 | 481142 | 9·47 | 1 |
| 2 | 48123 | 2766 | ·94252 | ·05748 | 46740 | 431680 | 8·97 | 2 |
| 3 | 45357 | 2841 | ·93737 | ·06263 | 43937 | 384940 | 8·49 | 3 |
| 4 | 42516 | 2902 | ·93175 | ·06825 | 41065 | 341003 | 8·02 | 4 |
| 75 | 39614 | 2948 | ·92558 | ·07442 | 38140 | 299938 | 7·57 | 75 |
| 6 | 36666 | 2978 | ·91880 | ·08120 | 35177 | 261798 | 7·14 | 6 |
| 7 | 33688 | 2991 | ·91121 | ·08879 | 32192 | 226621 | 6·73 | 7 |
| 8 | 30697 | 2984 | ·90278 | ·09722 | 29205 | 194429 | 6·33 | 8 |
| 9 | 27713 | 2948 | ·89361 | ·10639 | 26239 | 165224 | 5·96 | 9 |



## Table VI.—Life Table for England and Wales.—Married Females (Wives)—*cont.*

| Age. $x$ | $l_x$ | $d_x$ | $p_x$ | $q_x$ | $L_x$ | $T_x$ | $\mathring{e}_x$ | Age. $x$ |
|---|---|---|---|---|---|---|---|---|
| 80 | 24765 | 2877 | ·88385 | ·11615 | 23327 | 138985 | 5·61 | 80 |
| 1 | 21888 | 2764 | ·87369 | ·12631 | 20506 | 115658 | 5·28 | 1 |
| 2 | 19124 | 2620 | ·86302 | ·13698 | 17814 | 95152 | 4·98 | 2 |
| 3 | 16504 | 2449 | ·85163 | ·14837 | 15279 | 77338 | 4·69 | 3 |
| 4 | 14055 | 2254 | ·83964 | ·16036 | 12928 | 62059 | 4·42 | 4 |
| 85 | 11801 | 2039 | ·82720 | ·17280 | 10782 | 49131 | 4·16 | 85 |
| 6 | 9762 | 1811 | ·81445 | ·18555 | 8856 | 38349 | 3·93 | 6 |
| 7 | 7951 | 1580 | ·80139 | ·19861 | 7161 | 29493 | 3·71 | 7 |
| 8 | 6371 | 1351 | ·78791 | ·21209 | 5696 | 22332 | 3·51 | 8 |
| 9 | 5020 | 1134 | ·77403 | ·22597 | 4453 | 16636 | 3·31 | 9 |
| 90 | 3886 | 933 | ·75982 | ·24018 | 3419 | 12183 | 3·14 | 90 |
| 1 | 2953 | 752 | ·74532 | ·25468 | 2577 | 8764 | 2·97 | 1 |
| 2 | 2201 | 593 | ·73055 | ·26945 | 1905 | 6187 | 2·81 | 2 |
| 3 | 1608 | 458 | ·71553 | ·28447 | 1379 | 4282 | 2·66 | 3 |
| 4 | 1150 | 345 | ·70025 | ·29975 | 977 | 2903 | 2·52 | 4 |
| 95 | 805 | 253 | ·68468 | ·31532 | 679 | 1926 | 2·39 | 95 |
| 6 | 552 | 183 | ·66882 | ·33118 | 460 | 1247 | 2·26 | 6 |
| 7 | 369 | 128 | ·65236 | ·34764 | 305 | 787 | 2·13 | 7 |
| 8 | 241 | 88 | ·63464 | ·36536 | 197 | 482 | 2·00 | 8 |
| 9 | 153 | 59 | ·61440 | ·38560 | 124 | 285 | 1·87 | 9 |
| 100 | 94 | 39 | ·58993 | ·41007 | 74 | 161 | 1·72 | 100 |
| 1 | 55 | 24 | ·55932 | ·44068 | 43 | 87 | 1·57 | 1 |
| 2 | 31 | 15 | ·52076 | ·47924 | 24 | 44 | 1·42 | 2 |
| 3 | 16 | 8 | ·47302 | ·52698 | 12 | 20 | 1·26 | 3 |
| 4 | 8 | 5 | ·41596 | ·58404 | 5 | 8 | 1·11 | 4 |
| 105 | 3 | 2 | ·35103 | ·64897 | 2 | 3 | ·97 | 105 |
| 6 | 1 | 1 | ·28152 | ·71848 | 1 | 1 | ·85 | 6 |
| 7 | 0 | | ·21222 | ·78778 | | | ·75 | 7 |

## Table VII.—LIFE TABLE FOR ENGLAND AND WALES.—WIDOWED FEMALES (WIDOWS).

| Age. $x$ | $l_x$ | $d_x$ | $p_x$ | $q_x$ | $L_x$ | $T_x$ | $\mathring{e}_x$ | Age. $x$ |
|---|---|---|---|---|---|---|---|---|
| 25 | 100000 | 508 | ·99492 | ·00508 | 99746 | 4046440 | 40·45 | 25 |
| 6 | 99492 | 514 | ·99484 | ·00516 | 99235 | 3946694 | 39·67 | 6 |
| 7 | 98978 | 520 | ·99474 | ·00526 | 98718 | 3847459 | 38·87 | 7 |
| 8 | 98458 | 529 | ·99462 | ·00538 | 98193 | 3748741 | 38·07 | 8 |
| 9 | 97929 | 540 | ·99448 | ·00552 | 97659 | 3650548 | 37·28 | 9 |
| 30 | 97389 | 555 | ·99430 | ·00570 | 97112 | 3552889 | 36·48 | 30 |
| 1 | 96834 | 571 | ·99410 | ·00590 | 96548 | 3455777 | 35·69 | 1 |
| 2 | 96263 | 590 | ·99386 | ·00614 | 95968 | 3359229 | 34·89 | 2 |
| 3 | 95673 | 615 | ·99358 | ·00642 | 95366 | 3263261 | 34·10 | 3 |
| 4 | 95058 | 639 | ·99328 | ·00672 | 94738 | 3167895 | 33·33 | 4 |
| 35 | 94419 | 663 | ·99298 | ·00702 | 94088 | 3073157 | 32·55 | 35 |
| 6 | 93756 | 686 | ·99269 | ·00731 | 93413 | 2979069 | 31·78 | 6 |
| 7 | 93070 | 702 | ·99245 | ·00755 | 92719 | 2885656 | 31·01 | 7 |
| 8 | 92368 | 719 | ·99223 | ·00777 | 92008 | 2792937 | 30·24 | 8 |
| 9 | 91649 | 731 | ·99201 | ·00799 | 91284 | 2700929 | 29·47 | 9 |
| 40 | 90918 | 753 | ·99172 | ·00828 | 90541 | 2609645 | 28·70 | 40 |
| 1 | 90165 | 783 | ·99131 | ·00869 | 89774 | 2519104 | 27·94 | 1 |
| 2 | 89382 | 828 | ·99075 | ·00925 | 88968 | 2429330 | 27·17 | 2 |
| 3 | 88554 | 880 | ·99006 | ·00994 | 88114 | 2340362 | 26·42 | 3 |
| 4 | 87674 | 938 | ·98931 | ·01069 | 87205 | 2252248 | 25·69 | 4 |
| 45 | 86736 | 993 | ·98855 | ·01145 | 86239 | 2165043 | 24·96 | 45 |
| 6 | 85743 | 1044 | ·98783 | ·01217 | 85221 | 2078804 | 24·25 | 6 |
| 7 | 84699 | 1085 | ·98719 | ·01281 | 84157 | 1993583 | 23·54 | 7 |
| 8 | 83614 | 1120 | ·98659 | ·01341 | 83054 | 1909426 | 22·83 | 8 |
| 9 | 82494 | 1157 | ·98598 | ·01402 | 81915 | 1826372 | 22·14 | 9 |
| 50 | 81337 | 1193 | ·98532 | ·01468 | 80741 | 1744457 | 21·44 | 50 |
| 1 | 80144 | 1238 | ·98455 | ·01545 | 79525 | 1663716 | 20·76 | 1 |
| 2 | 78906 | 1287 | ·98369 | ·01631 | 78262 | 1584191 | 20·08 | 2 |
| 3 | 77619 | 1337 | ·98277 | ·01723 | 76951 | 1505929 | 19·40 | 3 |
| 4 | 76282 | 1391 | ·98177 | ·01823 | 75586 | 1428978 | 18·73 | 4 |
| 55 | 74891 | 1448 | ·98066 | ·01934 | 74167 | 1353392 | 18·07 | 55 |
| 6 | 73443 | 1511 | ·97943 | ·02057 | 72688 | 1279225 | 17·41 | 6 |
| 7 | 71932 | 1578 | ·97806 | ·02194 | 71143 | 1206537 | 16·78 | 7 |
| 8 | 70354 | 1650 | ·97655 | ·02345 | 69529 | 1135394 | 16·13 | 8 |
| 9 | 68704 | 1723 | ·97493 | ·02507 | 67842 | 1065865 | 15·52 | 9 |
| 60 | 66981 | 1796 | ·97320 | ·02680 | 66083 | 998023 | 14·90 | 60 |
| 1 | 65185 | 1865 | ·97138 | ·02862 | 64253 | 931940 | 14·30 | 1 |
| 2 | 63320 | 1927 | ·96958 | ·03042 | 62356 | 867687 | 13·71 | 2 |
| 3 | 61393 | 1977 | ·96779 | ·03221 | 60405 | 805331 | 13·12 | 3 |
| 4 | 59416 | 2029 | ·96584 | ·03416 | 58401 | 744926 | 12·54 | 4 |
| 65 | 57387 | 2093 | ·96353 | ·03647 | 56341 | 686525 | 11·96 | 65 |
| 6 | 55294 | 2175 | ·96065 | ·03935 | 54206 | 630184 | 11·40 | 6 |
| 7 | 53119 | 2282 | ·95705 | ·04295 | 51978 | 575978 | 10·84 | 7 |
| 8 | 50837 | 2400 | ·95280 | ·04720 | 49637 | 524000 | 10·31 | 8 |
| 9 | 48437 | 2515 | ·94806 | ·05194 | 47180 | 474363 | 9·79 | 9 |
| 70 | 45922 | 2618 | ·94300 | ·05700 | 44613 | 427183 | 9·30 | 70 |
| 1 | 43304 | 2693 | ·93780 | ·06220 | 41957 | 382570 | 8·83 | 1 |
| 2 | 40611 | 2741 | ·93253 | ·06747 | 39241 | 340613 | 8·39 | 2 |
| 3 | 37870 | 2762 | ·92705 | ·07295 | 36489 | 301372 | 7·96 | 3 |
| 4 | 35108 | 2766 | ·92123 | ·07877 | 33725 | 264883 | 7·55 | 4 |
| 75 | 32342 | 2750 | ·91495 | ·08505 | 30967 | 231158 | 7·15 | 75 |
| 6 | 29592 | 2721 | ·90804 | ·09196 | 28231 | 200191 | 6·77 | 6 |
| 7 | 26871 | 2681 | ·90025 | ·09975 | 25531 | 171960 | 6·40 | 7 |
| 8 | 24190 | 2622 | ·89158 | ·10842 | 22879 | 146429 | 6·05 | 8 |
| 9 | 21568 | 2539 | ·88228 | ·11772 | 20298 | 123550 | 5·73 | 9 |



## Table VII.—Life Table for England and Wales.—Widowed Females (Widows)—*cont.*

| Age. $x$ | $l_x$ | $d_x$ | $p_x$ | $q_x$ | $L_x$ | $T_x$ | $\mathring{e}_x$ | Age. $x$ |
|---|---|---|---|---|---|---|---|---|
| 80 | 19029 | 2423 | ·87266 | ·12734 | 17818 | 103252 | 5·43 | 80 |
| 1 | 16606 | 2274 | ·86309 | ·13691 | 15469 | 85434 | 5·14 | 1 |
| 2 | 14332 | 2095 | ·85382 | ·14618 | 13284 | 69965 | 4·88 | 2 |
| 3 | 12237 | 1901 | ·84465 | ·15535 | 11287 | 56681 | 4·63 | 3 |
| 4 | 10336 | 1702 | ·83528 | ·16472 | 9485 | 45394 | 4·39 | 4 |
| 85 | 8634 | 1508 | ·82534 | ·17466 | 7880 | 35909 | 4·16 | 85 |
| 6 | 7126 | 1322 | ·81445 | ·18555 | 6465 | 28029 | 3·93 | 6 |
| 7 | 5804 | 1148 | ·80226 | ·19774 | 5230 | 21564 | 3·71 | 7 |
| 8 | 4656 | 983 | ·78894 | ·21106 | 4164 | 16334 | 3·51 | 8 |
| 9 | 3673 | 827 | ·77475 | ·22525 | 3260 | 12170 | 3·31 | 9 |
| 90 | 2846 | 683 | ·76006 | ·23994 | 2504 | 8910 | 3·13 | 90 |
| 1 | 2163 | 551 | ·74532 | ·25468 | 1888 | 6406 | 2·96 | 1 |
| 2 | 1612 | 434 | ·73067 | ·26933 | 1395 | 4518 | 2·80 | 2 |
| 3 | 1178 | 335 | ·71608 | ·28392 | 1010 | 3123 | 2·65 | 3 |
| 4 | 843 | 252 | ·70125 | ·29875 | 717 | 2113 | 2·51 | 4 |
| 95 | 591 | 185 | ·68569 | ·31431 | 499 | 1396 | 2·36 | 95 |
| 6 | 406 | 135 | ·66882 | ·33118 | 338 | 897 | 2·21 | 6 |
| 7 | 271 | 95 | ·64968 | ·35032 | 224 | 559 | 2·06 | 7 |
| 8 | 176 | 65 | ·62700 | ·37300 | 143 | 335 | 1·91 | 8 |
| 9 | 111 | 45 | ·59911 | ·40089 | 89 | 192 | 1·74 | 9 |
| 100 | 66 | 29 | ·56421 | ·43579 | 51 | 103 | 1·58 | 100 |
| 1 | 37 | 18 | ·52073 | ·47927 | 28 | 52 | 1·41 | 1 |
| 2 | 19 | 10 | ·46784 | ·53216 | 14 | 24 | 1·24 | 2 |
| 3 | 9 | 5 | ·40599 | ·59401 | 7 | 10 | 1·09 | 3 |
| 4 | 4 | 3 | ·33730 | ·66270 | 2 | 3 | ·95 | 4 |
| 105 | 1 | 1 | ·26561 | ·73439 | 1 | 1 | ·83 | 105 |
| 6 | 0 | | ·19607 | ·80393 | | | ·72 | 6 |

## Table VIII.—COUNTY OF LONDON, 1911-12.—MALES.

| Age. $x$ | $l_x$ | $d_x$ | $p_x$ | $q_x$ | $L_x$ | $T_x$ | $\mathring{e}_x$ | Age. $x$ |
|---|---|---|---|---|---|---|---|---|
| 12 | 100000 | 205 | ·99795 | ·00205 | 99897 | 4943121 | 49·43 | 12 |
| 3 | 99795 | 218 | ·99782 | ·00218 | 99686 | 4843224 | 48·53 | 3 |
| 4 | 99577 | 229 | ·99769 | ·00231 | 99463 | 4743538 | 47·63 | 4 |
| 15 | 99348 | 244 | ·99755 | ·00245 | 99226 | 4644075 | 46·74 | 15 |
| 6 | 99104 | 258 | ·99740 | ·00260 | 98975 | 4544849 | 45·86 | 6 |
| 7 | 98846 | 273 | ·99725 | ·00275 | 98709 | 4445874 | 44·98 | 7 |
| 8 | 98573 | 285 | ·99710 | ·00290 | 98431 | 4347165 | 44·11 | 8 |
| 9 | 98288 | 301 | ·99695 | ·00305 | 98137 | 4248734 | 43·23 | 9 |
| 20 | 97987 | 313 | ·99680 | ·00320 | 97831 | 4150597 | 42·35 | 20 |
| 1 | 97674 | 328 | ·99664 | ·00336 | 97510 | 4052766 | 41·50 | 1 |
| 2 | 97346 | 342 | ·99648 | ·00352 | 97175 | 3955256 | 40·63 | 2 |
| 3 | 97004 | 357 | ·99632 | ·00368 | 96825 | 3858081 | 39·77 | 3 |
| 4 | 96647 | 371 | ·99617 | ·00383 | 96462 | 3761256 | 38·92 | 4 |
| 25 | 96276 | 385 | ·99601 | ·00399 | 96083 | 3664794 | 38·06 | 25 |
| 6 | 95891 | 401 | ·99582 | ·00418 | 95691 | 3568711 | 37·21 | 6 |
| 7 | 95490 | 421 | ·99559 | ·00441 | 95279 | 3473020 | 36·37 | 7 |
| 8 | 95069 | 445 | ·99532 | ·00468 | 94847 | 3377741 | 35·53 | 8 |
| 9 | 94624 | 472 | ·99501 | ·00499 | 94388 | 3282894 | 34·70 | 9 |
| 30 | 94152 | 502 | ·99468 | ·00532 | 93901 | 3188506 | 33·87 | 30 |
| 1 | 93650 | 531 | ·99432 | ·00568 | 93384 | 3094605 | 33·04 | 1 |
| 2 | 93119 | 566 | ·99392 | ·00608 | 92836 | 3001221 | 32·23 | 2 |
| 3 | 92553 | 603 | ·99349 | ·00651 | 92252 | 2908385 | 31·43 | 3 |
| 4 | 91950 | 640 | ·99304 | ·00696 | 91630 | 2816133 | 30·63 | 4 |
| 35 | 91310 | 680 | ·99255 | ·00745 | 90970 | 2724503 | 29·84 | 35 |
| 6 | 90630 | 724 | ·99203 | ·00797 | 90268 | 2633533 | 29·06 | 6 |
| 7 | 89906 | 764 | ·99149 | ·00851 | 89524 | 2543265 | 28·29 | 7 |
| 8 | 89142 | 810 | ·99092 | ·00908 | 88737 | 2453741 | 27·52 | 8 |
| 9 | 88332 | 854 | ·99033 | ·00967 | 87905 | 2365004 | 26·77 | 9 |
| 40 | 87478 | 901 | ·98970 | ·01030 | 87027 | 2277099 | 26·03 | 40 |
| 1 | 86577 | 950 | ·98904 | ·01096 | 86102 | 2190072 | 25·30 | 1 |
| 2 | 85627 | 998 | ·98835 | ·01165 | 85128 | 2103970 | 24·57 | 2 |
| 3 | 84629 | 1048 | ·98762 | ·01238 | 84105 | 2018842 | 23·86 | 3 |
| 4 | 83581 | 1097 | ·98686 | ·01314 | 83033 | 1934737 | 23·15 | 4 |
| 45 | 82484 | 1149 | ·98607 | ·01393 | 81909 | 1851704 | 22·45 | 45 |
| 6 | 81335 | 1202 | ·98522 | ·01478 | 80734 | 1769795 | 21·76 | 6 |
| 7 | 80133 | 1256 | ·98432 | ·01568 | 79505 | 1689061 | 21·08 | 7 |
| 8 | 78877 | 1311 | ·98338 | ·01662 | 78222 | 1609556 | 20·41 | 8 |
| 9 | 77566 | 1367 | ·98239 | ·01761 | 76882 | 1531334 | 19·74 | 9 |
| 50 | 76199 | 1422 | ·98135 | ·01865 | 75488 | 1454452 | 19·09 | 50 |
| 1 | 74777 | 1479 | ·98021 | ·01979 | 74038 | 1378964 | 18·44 | 1 |
| 2 | 73298 | 1543 | ·97896 | ·02104 | 72526 | 1304926 | 17·80 | 2 |
| 3 | 71755 | 1608 | ·97759 | ·02241 | 70951 | 1232400 | 17·18 | 3 |
| 4 | 70147 | 1675 | ·97611 | ·02389 | 69310 | 1161449 | 16·56 | 4 |
| 55 | 68472 | 1745 | ·97452 | ·02548 | 67599 | 1092139 | 15·95 | 55 |
| 6 | 66727 | 1816 | ·97280 | ·02720 | 65819 | 1024540 | 15·35 | 6 |
| 7 | 64911 | 1885 | ·97095 | ·02905 | 63969 | 958721 | 14·77 | 7 |
| 8 | 63026 | 1957 | ·96894 | ·03106 | 62047 | 894752 | 14·20 | 8 |
| 9 | 61069 | 2030 | ·96677 | ·03323 | 60054 | 832705 | 13·64 | 9 |
| 60 | 59039 | 2099 | ·96445 | ·03555 | 57990 | 772651 | 13·09 | 60 |
| 1 | 56940 | 2163 | ·96202 | ·03798 | 55858 | 714661 | 12·55 | 1 |
| 2 | 54777 | 2220 | ·95947 | ·04053 | 53667 | 658803 | 12·03 | 2 |
| 3 | 52557 | 2264 | ·95694 | ·04306 | 51425 | 605136 | 11·51 | 3 |
| 4 | 50293 | 2293 | ·95440 | ·04560 | 49147 | 553711 | 11·01 | 4 |
| 65 | 48000 | 2320 | ·95167 | ·04833 | 46840 | 504564 | 10·51 | 65 |
| 6 | 45680 | 2350 | ·94855 | ·05145 | 44505 | 457724 | 10·02 | 6 |
| 7 | 43330 | 2391 | ·94482 | ·05518 | 42134 | 413219 | 9·54 | 7 |
| 8 | 40939 | 2443 | ·94031 | ·05969 | 39718 | 371085 | 9·06 | 8 |
| 9 | 38496 | 2499 | ·93511 | ·06489 | 37246 | 331367 | 8·61 | 9 |



## Table VIII.—County of London, 1911-12.—Males—*cont.*

| Age. $x$ | $l_x$ | $d_x$ | $p_x$ | $q_x$ | $L_x$ | $T_x$ | $\mathring{e}_x$ | Age. $x$ |
|---|---|---|---|---|---|---|---|---|
| 70 | 35997 | 2544 | ·92934 | ·07066 | 34725 | 294121 | 8·17 | 70 |
| 1 | 33453 | 2569 | ·92318 | ·07682 | 32169 | 259396 | 7·75 | 1 |
| 2 | 30884 | 2570 | ·91680 | ·08320 | 29599 | 227227 | 7·36 | 2 |
| 3 | 28314 | 2542 | ·91022 | ·08978 | 27043 | 197628 | 6·98 | 3 |
| 4 | 25772 | 2493 | ·90327 | ·09673 | 24525 | 170585 | 6·62 | 4 |
| 75 | 23279 | 2423 | ·89591 | ·10409 | 22068 | 146060 | 6·28 | 75 |
| 6 | 20856 | 2334 | ·88808 | ·11192 | 19689 | 123992 | 5·95 | 6 |
| 7 | 18522 | 2228 | ·87971 | ·12029 | 17408 | 104303 | 5·63 | 7 |
| 8 | 16294 | 2110 | ·87054 | ·12946 | 15239 | 86895 | 5·33 | 8 |
| 9 | 14184 | 1978 | ·86052 | ·13948 | 13195 | 71656 | 5·05 | 9 |
| 80 | 12206 | 1832 | ·84994 | ·15006 | 11290 | 58461 | 4·79 | 80 |
| 1 | 10374 | 1668 | ·83917 | ·16083 | 9540 | 47171 | 4·55 | 1 |
| 2 | 8706 | 1492 | ·82863 | ·17137 | 7960 | 37631 | 4·32 | 2 |
| 3 | 7214 | 1307 | ·81890 | ·18110 | 6561 | 29671 | 4·11 | 3 |
| 4 | 5907 | 1123 | ·80981 | ·19019 | 5345 | 23110 | 3·91 | 4 |
| 85 | 4784 | 954 | ·80061 | ·19939 | 4307 | 17765 | 3·71 | 85 |
| 6 | 3830 | 802 | ·79046 | ·20954 | 3429 | 13458 | 3·51 | 6 |
| 7 | 3028 | 671 | ·77841 | ·22159 | 2693 | 10029 | 3·31 | 7 |
| 8 | 2357 | 558 | ·76324 | ·23676 | 2078 | 7336 | 3·11 | 8 |
| 9 | 1799 | 459 | ·74522 | ·25478 | 1569 | 5258 | 2·92 | 9 |
| 90 | 1340 | 367 | ·72566 | ·27434 | 1157 | 3689 | 2·75 | 90 |
| 1 | 973 | 286 | ·70620 | ·29380 | 830 | 2532 | 2·60 | 1 |
| 2 | 687 | 214 | ·68882 | ·31118 | 580 | 1702 | 2·48 | 2 |
| 3 | 473 | 154 | ·67437 | ·32563 | 396 | 1122 | 2·37 | 3 |
| 4 | 319 | 108 | ·66269 | ·33731 | 265 | 726 | 2·28 | 4 |
| 95 | 211 | 73 | ·65278 | ·34722 | 174 | 461 | 2·19 | 95 |
| 6 | 138 | 49 | ·64282 | ·35718 | 114 | 287 | 2·08 | 6 |
| 7 | 89 | 33 | ·63020 | ·36980 | 72 | 173 | 1·96 | 7 |
| 8 | 56 | 22 | ·61186 | ·38814 | 45 | 101 | 1·82 | 8 |
| 9 | 34 | 14 | ·58453 | ·41547 | 27 | 56 | 1·66 | 9 |
| 100 | 20 | 9 | ·54534 | ·45466 | 15 | 29 | 1·48 | 100 |
| 1 | 11 | 6 | ·49254 | ·50746 | 8 | 14 | 1·30 | 1 |
| 2 | 5 | 3 | ·42641 | ·57359 | 4 | 6 | 1·12 | 2 |
| 3 | 2 | 1 | ·34999 | ·65001 | 1 | 2 | ·96 | 3 |
| 4 | 1 | 1 | ·26904 | ·73096 | 1 | 1 | ·83 | 4 |

## Table IX.—COUNTY OF LONDON, 1911-12.—FEMALES.

| Age. $x$ | $l_x$ | $d_x$ | $p_x$ | $q_x$ | $L_x$ | $T_x$ | $\mathring{e}_x$ | Age. $x$ |
|---|---|---|---|---|---|---|---|---|
| 12 | 100000 | 191 | ·99808 | ·00192 | 99904 | 5381285 | 53·81 | 12 |
| 3 | 99809 | 202 | ·99797 | ·00203 | 99708 | 5281381 | 52·92 | 3 |
| 4 | 99607 | 213 | ·99787 | ·00213 | 99501 | 5181673 | 52·02 | 4 |
| 15 | 99394 | 222 | ·99778 | ·00222 | 99283 | 5082172 | 51·13 | 15 |
| 6 | 99172 | 228 | ·99770 | ·00230 | 99058 | 4982889 | 50·25 | 6 |
| 7 | 98944 | 234 | ·99763 | ·00237 | 98827 | 4883831 | 49·36 | 7 |
| 8 | 98710 | 239 | ·99758 | ·00242 | 98590 | 4785004 | 48·48 | 8 |
| 9 | 98471 | 242 | ·99755 | ·00245 | 98350 | 4686414 | 47·59 | 9 |
| 20 | 98229 | 242 | ·99753 | ·00247 | 98108 | 4588064 | 46·71 | 20 |
| 1 | 97987 | 245 | ·99749 | ·00251 | 97865 | 4489956 | 45·82 | 1 |
| 2 | 97742 | 252 | ·99742 | ·00258 | 97616 | 4392091 | 44·94 | 2 |
| 3 | 97490 | 262 | ·99732 | ·00268 | 97359 | 4294475 | 44·05 | 3 |
| 4 | 97228 | 273 | ·99719 | ·00281 | 97091 | 4197116 | 43·17 | 4 |
| 25 | 96955 | 285 | ·99705 | ·00295 | 96813 | 4100025 | 42·29 | 25 |
| 6 | 96670 | 300 | ·99689 | ·00311 | 96520 | 4003212 | 41·41 | 6 |
| 7 | 96370 | 315 | ·99673 | ·00327 | 96212 | 3906692 | 40·54 | 7 |
| 8 | 96055 | 329 | ·99657 | ·00343 | 95891 | 3810480 | 39·67 | 8 |
| 9 | 95726 | 343 | ·99642 | ·00358 | 95554 | 3714589 | 38·80 | 9 |
| 30 | 95383 | 360 | ·99624 | ·00376 | 95203 | 3619035 | 37·94 | 30 |
| 1 | 95023 | 375 | ·99604 | ·00396 | 94836 | 3523832 | 37·08 | 1 |
| 2 | 94648 | 398 | ·99579 | ·00421 | 94449 | 3428996 | 36·23 | 2 |
| 3 | 94250 | 427 | ·99548 | ·00452 | 94036 | 3334547 | 35·38 | 3 |
| 4 | 93823 | 457 | ·99512 | ·00488 | 93595 | 3240511 | 34·54 | 4 |
| 35 | 93366 | 493 | ·99472 | ·00528 | 93119 | 3146916 | 33·71 | 35 |
| 6 | 92873 | 529 | ·99431 | ·00569 | 92609 | 3053797 | 32·88 | 6 |
| 7 | 92344 | 564 | ·99390 | ·00610 | 92062 | 2961188 | 32·07 | 7 |
| 8 | 91780 | 596 | ·99350 | ·00650 | 91482 | 2869126 | 31·26 | 8 |
| 9 | 91184 | 630 | ·99309 | ·00691 | 90869 | 2777644 | 30·46 | 9 |
| 40 | 90554 | 662 | ·99268 | ·00732 | 90223 | 2686775 | 29·67 | 40 |
| 1 | 89892 | 699 | ·99223 | ·00777 | 89542 | 2596552 | 28·89 | 1 |
| 2 | 89193 | 736 | ·99175 | ·00825 | 88825 | 2507010 | 28·11 | 2 |
| 3 | 88457 | 777 | ·99122 | ·00878 | 88069 | 2418185 | 27·34 | 3 |
| 4 | 87680 | 820 | ·99064 | ·00936 | 87270 | 2330116 | 26·58 | 4 |
| 45 | 86860 | 866 | ·99004 | ·00996 | 86427 | 2242846 | 25·82 | 45 |
| 6 | 85994 | 910 | ·98942 | ·01058 | 85539 | 2156419 | 25·08 | 6 |
| 7 | 85084 | 952 | ·98880 | ·01120 | 84608 | 2070880 | 24·34 | 7 |
| 8 | 84132 | 992 | ·98821 | ·01179 | 83636 | 1986272 | 23·61 | 8 |
| 9 | 83140 | 1029 | ·98763 | ·01237 | 82625 | 1902636 | 22·88 | 9 |
| 50 | 82111 | 1065 | ·98703 | ·01297 | 81579 | 1820011 | 22·17 | 50 |
| 1 | 81046 | 1107 | ·98634 | ·01366 | 80492 | 1738432 | 21·45 | 1 |
| 2 | 79939 | 1156 | ·98553 | ·01447 | 79361 | 1657940 | 20·74 | 2 |
| 3 | 78783 | 1215 | ·98457 | ·01543 | 78176 | 1578579 | 20·04 | 3 |
| 4 | 77568 | 1281 | ·98350 | ·01650 | 76927 | 1500403 | 19·34 | 4 |
| 55 | 76287 | 1349 | ·98232 | ·01768 | 75613 | 1423476 | 18·66 | 55 |
| 6 | 74938 | 1419 | ·98107 | ·01893 | 74228 | 1347863 | 17·99 | 6 |
| 7 | 73519 | 1488 | ·97977 | ·02023 | 72775 | 1273635 | 17·32 | 7 |
| 8 | 72031 | 1554 | ·97844 | ·02156 | 71254 | 1200860 | 16·67 | 8 |
| 9 | 70477 | 1615 | ·97707 | ·02293 | 69670 | 1129606 | 16·03 | 9 |
| 60 | 68862 | 1679 | ·97561 | ·02439 | 68022 | 1059936 | 15·39 | 60 |
| 1 | 67183 | 1747 | ·97401 | ·02599 | 66310 | 991914 | 14·76 | 1 |
| 2 | 65436 | 1818 | ·97221 | ·02779 | 64527 | 925604 | 14·15 | 2 |
| 3 | 63618 | 1889 | ·97030 | ·02970 | 62673 | 861077 | 13·54 | 3 |
| 4 | 61729 | 1957 | ·96830 | ·03170 | 60751 | 798404 | 12·93 | 4 |
| 65 | 59772 | 2028 | ·96608 | ·03392 | 58758 | 737653 | 12·34 | 65 |
| 6 | 57744 | 2107 | ·96349 | ·03651 | 56690 | 678895 | 11·76 | 6 |
| 7 | 55637 | 2205 | ·96038 | ·03962 | 54535 | 622205 | 11·18 | 7 |
| 8 | 53432 | 2319 | ·95659 | ·04341 | 52272 | 567670 | 10·62 | 8 |
| 9 | 51113 | 2445 | ·95217 | ·04783 | 49891 | 515398 | 10·08 | 9 |



## Table IX.—County of London, 1911-12.—Females—*cont.*

| Age. $x$ | $l_x$ | $d_x$ | $p_x$ | $q_x$ | $L_x$ | $T_x$ | $\mathring{e}_x$ | Age. $x$ |
|---|---|---|---|---|---|---|---|---|
| 70 | 48668 | 2567 | ·94726 | ·05274 | 47384 | 465507 | 9·57 | 70 |
| 1 | 46101 | 2672 | ·94204 | ·05796 | 44765 | 418123 | 9·07 | 1 |
| 2 | 43429 | 2750 | ·93668 | ·06332 | 42054 | 373358 | 8·60 | 2 |
| 3 | 40679 | 2794 | ·93133 | ·06867 | 39282 | 331304 | 8·14 | 3 |
| 4 | 37885 | 2809 | ·92585 | ·07415 | 36481 | 292022 | 7·71 | 4 |
| 75 | 35076 | 2805 | ·92002 | ·07998 | 33673 | 255541 | 7·29 | 75 |
| 6 | 32271 | 2789 | ·91359 | ·08641 | 30877 | 221868 | 6·88 | 6 |
| 7 | 29482 | 2763 | ·90628 | ·09372 | 28100 | 190991 | 6·48 | 7 |
| 8 | 26719 | 2731 | ·89779 | ·10221 | 25354 | 162891 | 6·10 | 8 |
| 9 | 23988 | 2683 | ·88816 | ·11184 | 22646 | 137537 | 5·73 | 9 |
| 80 | 21305 | 2608 | ·87761 | ·12239 | 20001 | 114891 | 5·39 | 80 |
| 1 | 18697 | 2497 | ·86644 | ·13356 | 17449 | 94890 | 5·08 | 1 |
| 2 | 16200 | 2349 | ·85500 | ·14500 | 15025 | 77441 | 4·78 | 2 |
| 3 | 13851 | 2173 | ·84306 | ·15694 | 12765 | 62416 | 4·51 | 3 |
| 4 | 11678 | 1982 | ·83032 | ·16968 | 10687 | 49651 | 4·25 | 4 |
| 85 | 9696 | 1773 | ·81710 | ·18290 | 8809 | 38964 | 4·02 | 85 |
| 6 | 7923 | 1555 | ·80380 | ·19620 | 7146 | 30155 | 3·81 | 6 |
| 7 | 6368 | 1331 | ·79087 | ·20913 | 5702 | 23009 | 3·61 | 7 |
| 8 | 5037 | 1112 | ·77908 | ·22092 | 4481 | 17307 | 3·44 | 8 |
| 9 | 3924 | 909 | ·76833 | ·23167 | 3469 | 12826 | 3·27 | 9 |
| 90 | 3015 | 731 | ·75765 | ·24235 | 2650 | 9357 | 3·10 | 90 |
| 1 | 2284 | 580 | ·74597 | ·25403 | 1994 | 6707 | 2·94 | 1 |
| 2 | 1704 | 457 | ·73207 | ·26793 | 1475 | 4713 | 2·77 | 2 |
| 3 | 1247 | 355 | ·71537 | ·28463 | 1070 | 3238 | 2·60 | 3 |
| 4 | 892 | 271 | ·69594 | ·30406 | 756 | 2168 | 2·43 | 4 |
| 95 | 621 | 202 | ·67434 | ·32566 | 520 | 1412 | 2·27 | 95 |
| 6 | 419 | 146 | ·65164 | ·34836 | 346 | 892 | 2·13 | 6 |
| 7 | 273 | 101 | ·62926 | ·37074 | 223 | 546 | 2·00 | 7 |
| 8 | 172 | 68 | ·60773 | ·39227 | 138 | 323 | 1·88 | 8 |
| 9 | 104 | 43 | ·58684 | ·41316 | 82 | 185 | 1·77 | 9 |
| 100 | 61 | 26 | ·56576 | ·43424 | 48 | 103 | 1·66 | 100 |
| 1 | 35 | 16 | ·54314 | ·45686 | 27 | 55 | 1·56 | 1 |
| 2 | 19 | 9 | ·51729 | ·48271 | 15 | 28 | 1·45 | 2 |
| 3 | 10 | 5 | ·48636 | ·51364 | 7 | 13 | 1·33 | 3 |
| 4 | 5 | 3 | ·44871 | ·55129 | 4 | 6 | 1·22 | 4 |
| 105 | 2 | 1 | ·40330 | ·59670 | 1 | 2 | 1·10 | 105 |
| 6 | 1 | 1 | ·35020 | ·64980 | 1 | 1 | ·98 | 6 |

## Table X.—AGGREGATE OF COUNTY BOROUGHS, 1911-12.—MALES.

| Age. $x$ | $l_x$ | $d_x$ | $p_x$ | $q_x$ | $L_x$ | $T_x$ | $\mathring{e}_x$ | Age. $x$ |
|---|---|---|---|---|---|---|---|---|
| 12 | 100000 | 205 | ·99796 | ·00204 | 99897 | 4895101 | 48·96 | 12 |
| 3 | 99795 | 232 | ·99768 | ·00232 | 99679 | 4795204 | 48·05 | 3 |
| 4 | 99563 | 256 | ·99743 | ·00257 | 99435 | 4695525 | 47·16 | 4 |
| 15 | 99307 | 279 | ·99720 | ·00280 | 99168 | 4596090 | 46·28 | 15 |
| 6 | 99028 | 298 | ·99698 | ·00302 | 98879 | 4496922 | 45·42 | 6 |
| 7 | 98730 | 318 | ·99678 | ·00322 | 98571 | 4398043 | 44·55 | 7 |
| 8 | 98412 | 334 | ·99659 | ·00341 | 98245 | 4299472 | 43·69 | 8 |
| 9 | 98078 | 352 | ·99641 | ·00359 | 97902 | 4201227 | 42·84 | 9 |
| 20 | 97726 | 368 | ·99624 | ·00376 | 97542 | 4103325 | 41·99 | 20 |
| 1 | 97358 | 383 | ·99608 | ·00392 | 97166 | 4005783 | 41·14 | 1 |
| 2 | 96975 | 394 | ·99593 | ·00407 | 96778 | 3908617 | 40·31 | 2 |
| 3 | 96581 | 406 | ·99579 | ·00421 | 96378 | 3811839 | 39·46 | 3 |
| 4 | 96175 | 416 | ·99567 | ·00433 | 95967 | 3715461 | 38·64 | 4 |
| 25 | 95759 | 427 | ·99555 | ·00445 | 95546 | 3619494 | 37·80 | 25 |
| 6 | 95332 | 438 | ·99541 | ·00459 | 95113 | 3523948 | 36·97 | 6 |
| 7 | 94894 | 453 | ·99522 | ·00478 | 94667 | 3428835 | 36·13 | 7 |
| 8 | 94441 | 473 | ·99499 | ·00501 | 94205 | 3334168 | 35·30 | 8 |
| 9 | 93968 | 494 | ·99474 | ·00526 | 93721 | 3239963 | 34·48 | 9 |
| 30 | 93474 | 520 | ·99445 | ·00555 | 93214 | 3146242 | 33·66 | 30 |
| 1 | 92954 | 544 | ·99414 | ·00586 | 92682 | 3053028 | 32·85 | 1 |
| 2 | 92410 | 573 | ·99380 | ·00620 | 92123 | 2960346 | 32·03 | 2 |
| 3 | 91837 | 602 | ·99343 | ·00657 | 91536 | 2868223 | 31·23 | 3 |
| 4 | 91235 | 637 | ·99302 | ·00698 | 90917 | 2776687 | 30·44 | 4 |
| 35 | 90598 | 671 | ·99258 | ·00742 | 90262 | 2685770 | 29·65 | 35 |
| 6 | 89927 | 710 | ·99212 | ·00788 | 89572 | 2595508 | 28·86 | 6 |
| 7 | 89217 | 744 | ·99165 | ·00835 | 88845 | 2505936 | 28·09 | 7 |
| 8 | 88473 | 781 | ·99118 | ·00882 | 88083 | 2417091 | 27·32 | 8 |
| 9 | 87692 | 814 | ·99071 | ·00929 | 87285 | 2329008 | 26·56 | 9 |
| 40 | 86878 | 850 | ·99021 | ·00979 | 86453 | 2241723 | 25·80 | 40 |
| 1 | 86028 | 889 | ·98966 | ·01034 | 85583 | 2155270 | 25·06 | 1 |
| 2 | 85139 | 934 | ·98903 | ·01097 | 84672 | 2069687 | 24·31 | 2 |
| 3 | 84205 | 985 | ·98831 | ·01169 | 83713 | 1985015 | 23·57 | 3 |
| 4 | 83220 | 1037 | ·98753 | ·01247 | 82701 | 1901302 | 22·85 | 4 |
| 45 | 82183 | 1094 | ·98668 | ·01332 | 81636 | 1818601 | 22·13 | 45 |
| 6 | 81089 | 1153 | ·98577 | ·01423 | 80513 | 1736965 | 21·42 | 6 |
| 7 | 79936 | 1213 | ·98482 | ·01518 | 79329 | 1656452 | 20·73 | 7 |
| 8 | 78723 | 1273 | ·98384 | ·01616 | 78087 | 1577123 | 20·04 | 8 |
| 9 | 77450 | 1330 | ·98283 | ·01717 | 76785 | 1499036 | 19·36 | 9 |
| 50 | 76120 | 1389 | ·98175 | ·01825 | 75425 | 1422251 | 18·69 | 50 |
| 1 | 74731 | 1452 | ·98057 | ·01943 | 74005 | 1346826 | 18·02 | 1 |
| 2 | 73279 | 1521 | ·97924 | ·02076 | 72519 | 1272821 | 17·37 | 2 |
| 3 | 71758 | 1595 | ·97777 | ·02223 | 70960 | 1200302 | 16·73 | 3 |
| 4 | 70163 | 1671 | ·97617 | ·02383 | 69328 | 1129342 | 16·10 | 4 |
| 55 | 68492 | 1751 | ·97443 | ·02557 | 67616 | 1060014 | 15·48 | 55 |
| 6 | 66741 | 1833 | ·97254 | ·02746 | 65825 | 992398 | 14·87 | 6 |
| 7 | 64908 | 1914 | ·97050 | ·02950 | 63951 | 926573 | 14·28 | 7 |
| 8 | 62994 | 1998 | ·96827 | ·03173 | 61995 | 862622 | 13·69 | 8 |
| 9 | 60996 | 2083 | ·96584 | ·03416 | 59954 | 800627 | 13·13 | 9 |
| 60 | 58913 | 2165 | ·96325 | ·03675 | 57831 | 740673 | 12·57 | 60 |
| 1 | 56748 | 2241 | ·96051 | ·03949 | 55627 | 682842 | 12·03 | 1 |
| 2 | 54507 | 2308 | ·95765 | ·04235 | 53353 | 627215 | 11·51 | 2 |
| 3 | 52199 | 2358 | ·95484 | ·04516 | 51020 | 573862 | 11·00 | 3 |
| 4 | 49841 | 2389 | ·95205 | ·04795 | 48647 | 522842 | 10·49 | 4 |
| 65 | 47452 | 2419 | ·94904 | ·05096 | 46242 | 474195 | 9·99 | 65 |
| 6 | 45033 | 2454 | ·94551 | ·05449 | 43806 | 427953 | 9·50 | 6 |
| 7 | 42579 | 2505 | ·94115 | ·05885 | 41327 | 384147 | 9·02 | 7 |
| 8 | 40074 | 2581 | ·93559 | ·06441 | 38783 | 342820 | 8·56 | 8 |
| 9 | 37493 | 2665 | ·92893 | ·07107 | 36161 | 304037 | 8·11 | 9 |



## Table X.—Aggregate of County Boroughs, 1911-12.—Males—*cont.*

| Age. $x$ | $l_x$ | $d_x$ | $p_x$ | $q_x$ | $L_x$ | $T_x$ | $\mathring{e}_x$ | Age. $x$ |
|---|---|---|---|---|---|---|---|---|
| 70 | 34828 | 2733 | ·92153 | ·07847 | 33461 | 267876 | 7·69 | 70 |
| 1 | 32095 | 2765 | ·91385 | ·08615 | 30713 | 234415 | 7·31 | 1 |
| 2 | 29330 | 2745 | ·90643 | ·09357 | 27957 | 203702 | 6·95 | 2 |
| 3 | 26585 | 2672 | ·89947 | ·10053 | 25249 | 175745 | 6·61 | 3 |
| 4 | 23913 | 2567 | ·89265 | ·10735 | 22630 | 150496 | 6·29 | 4 |
| 75 | 21346 | 2439 | ·88577 | ·11423 | 20126 | 127866 | 5·99 | 75 |
| 6 | 18907 | 2295 | ·87860 | ·12140 | 17760 | 107740 | 5·70 | 6 |
| 7 | 16612 | 2145 | ·87087 | ·12913 | 15539 | 89980 | 5·42 | 7 |
| 8 | 14467 | 1989 | ·86255 | ·13745 | 13473 | 74441 | 5·15 | 8 |
| 9 | 12478 | 1825 | ·85375 | ·14625 | 11565 | 60968 | 4·89 | 9 |
| 80 | 10653 | 1657 | ·84446 | ·15554 | 9825 | 49403 | 4·64 | 80 |
| 1 | 8996 | 1487 | ·83467 | ·16533 | 8252 | 39578 | 4·39 | 1 |
| 2 | 7509 | 1319 | ·82435 | ·17565 | 6850 | 31326 | 4·17 | 2 |
| 3 | 6190 | 1155 | ·81340 | ·18660 | 5612 | 24476 | 3·95 | 3 |
| 4 | 5035 | 998 | ·80178 | ·19822 | 4536 | 18864 | 3·75 | 4 |
| 85 | 4037 | 850 | ·78954 | ·21046 | 3612 | 14328 | 3·55 | 85 |
| 6 | 3187 | 711 | ·77673 | ·22327 | 2832 | 10716 | 3·36 | 6 |
| 7 | 2476 | 586 | ·76343 | ·23657 | 2183 | 7884 | 3·18 | 7 |
| 8 | 1890 | 474 | ·74946 | ·25054 | 1653 | 5701 | 3·02 | 8 |
| 9 | 1416 | 375 | ·73475 | ·26525 | 1228 | 4048 | 2·86 | 9 |
| 90 | 1041 | 292 | ·71945 | ·28055 | 895 | 2820 | 2·71 | 90 |
| 1 | 749 | 222 | ·70382 | ·29618 | 638 | 1925 | 2·57 | 1 |
| 2 | 527 | 164 | ·68813 | ·31187 | 445 | 1287 | 2·44 | 2 |
| 3 | 363 | 119 | ·67250 | ·32750 | 304 | 842 | 2·32 | 3 |
| 4 | 244 | 84 | ·65690 | ·34310 | 202 | 538 | 2·20 | 4 |
| 95 | 160 | 57 | ·64117 | ·35883 | 131 | 336 | 2·09 | 95 |
| 6 | 103 | 39 | ·62506 | ·37494 | 84 | 205 | 1·99 | 6 |
| 7 | 64 | 25 | ·60818 | ·39182 | 51 | 121 | 1·88 | 7 |
| 8 | 39 | 16 | ·58956 | ·41044 | 31 | 70 | 1·77 | 8 |
| 9 | 23 | 10 | ·56770 | ·43230 | 18 | 39 | 1·65 | 9 |
| 100 | 13 | 6 | ·54077 | ·45923 | 10 | 21 | 1·52 | 100 |
| 1 | 7 | 3 | ·50689 | ·49311 | 6 | 11 | 1·39 | 1 |
| 2 | 4 | 2 | ·46455 | ·53545 | 3 | 5 | 1·25 | 2 |
| 3 | 2 | 1 | ·41312 | ·58688 | 1 | 2 | 1·11 | 3 |
| 4 | 1 | 1 | ·35340 | ·64660 | 1 | 1 | ·98 | 4 |

## Table XI.—AGGREGATE OF COUNTY BOROUGHS, 1911-12.—FEMALES.

| Age. $x$ | $l_x$ | $d_x$ | $p_x$ | $q_x$ | $L_x$ | $T_x$ | $\mathring{e}_x$ | Age. $x$ |
|---|---|---|---|---|---|---|---|---|
| 12 | 100000 | 219 | ·99782 | ·00218 | 99890 | 5228006 | 52·28 | 12 |
| 3 | 99781 | 236 | ·99763 | ·00237 | 99663 | 5128116 | 51·39 | 3 |
| 4 | 99545 | 252 | ·99746 | ·00254 | 99419 | 5028453 | 50·52 | 4 |
| 15 | 99293 | 267 | ·99731 | ·00269 | 99160 | 4929034 | 49·64 | 15 |
| 6 | 99026 | 280 | ·99717 | ·00283 | 98886 | 4829874 | 48·77 | 6 |
| 7 | 98746 | 290 | ·99705 | ·00295 | 98601 | 4730988 | 47·91 | 7 |
| 8 | 98456 | 302 | ·99694 | ·00306 | 98305 | 4632387 | 47·05 | 8 |
| 9 | 98154 | 309 | ·99684 | ·00316 | 97999 | 4534082 | 46·19 | 9 |
| 20 | 97845 | 317 | ·99675 | ·00325 | 97687 | 4436083 | 45·34 | 20 |
| 1 | 97528 | 325 | ·99667 | ·00333 | 97365 | 4338396 | 44·48 | 1 |
| 2 | 97203 | 333 | ·99658 | ·00342 | 97037 | 4241031 | 43·63 | 2 |
| 3 | 96870 | 338 | ·99650 | ·00350 | 96701 | 4143994 | 42·78 | 3 |
| 4 | 96532 | 346 | ·99642 | ·00358 | 96359 | 4047293 | 41·93 | 4 |
| 25 | 96186 | 352 | ·99634 | ·00366 | 96010 | 3950934 | 41·08 | 25 |
| 6 | 95834 | 361 | ·99624 | ·00376 | 95653 | 3854924 | 40·22 | 6 |
| 7 | 95473 | 371 | ·99612 | ·00388 | 95288 | 3759271 | 39·38 | 7 |
| 8 | 95102 | 382 | ·99598 | ·00402 | 94911 | 3663983 | 38·53 | 8 |
| 9 | 94720 | 394 | ·99584 | ·00416 | 94523 | 3569072 | 37·68 | 9 |
| 30 | 94326 | 408 | ·99567 | ·00433 | 94122 | 3474549 | 36·84 | 30 |
| 1 | 93918 | 425 | ·99547 | ·00453 | 93705 | 3380427 | 35·99 | 1 |
| 2 | 93493 | 449 | ·99521 | ·00479 | 93269 | 3286722 | 35·15 | 2 |
| 3 | 93044 | 476 | ·99488 | ·00512 | 92806 | 3193453 | 34·32 | 3 |
| 4 | 92568 | 510 | ·99448 | ·00552 | 92313 | 3100647 | 33·50 | 4 |
| 35 | 92058 | 548 | ·99406 | ·00594 | 91784 | 3008334 | 32·68 | 35 |
| 6 | 91510 | 584 | ·99363 | ·00637 | 91218 | 2916550 | 31·87 | 6 |
| 7 | 90926 | 615 | ·99324 | ·00676 | 90618 | 2825332 | 31·07 | 7 |
| 8 | 90311 | 640 | ·99292 | ·00708 | 89991 | 2734714 | 30·28 | 8 |
| 9 | 89671 | 661 | ·99264 | ·00736 | 89341 | 2644723 | 29·49 | 9 |
| 40 | 89010 | 680 | ·99236 | ·00764 | 88670 | 2555382 | 28·71 | 40 |
| 1 | 88330 | 703 | ·99204 | ·00796 | 87978 | 2466712 | 27·93 | 1 |
| 2 | 87627 | 733 | ·99164 | ·00836 | 87261 | 2378734 | 27·15 | 2 |
| 3 | 86894 | 769 | ·99114 | ·00886 | 86509 | 2291473 | 26·37 | 3 |
| 4 | 86125 | 811 | ·99058 | ·00942 | 85720 | 2204964 | 25·60 | 4 |
| 45 | 85314 | 856 | ·98996 | ·01004 | 84886 | 2119244 | 24·84 | 45 |
| 6 | 84458 | 903 | ·98931 | ·01069 | 84006 | 2034358 | 24·09 | 6 |
| 7 | 83555 | 951 | ·98863 | ·01137 | 83080 | 1950352 | 23·34 | 7 |
| 8 | 82604 | 995 | ·98796 | ·01204 | 82106 | 1867272 | 22·61 | 8 |
| 9 | 81609 | 1038 | ·98728 | ·01272 | 81090 | 1785166 | 21·88 | 9 |
| 50 | 80571 | 1083 | ·98655 | ·01345 | 80030 | 1704076 | 21·15 | 50 |
| 1 | 79488 | 1134 | ·98573 | ·01427 | 78921 | 1624046 | 20·43 | 1 |
| 2 | 78354 | 1193 | ·98478 | ·01522 | 77757 | 1545125 | 19·72 | 2 |
| 3 | 77161 | 1260 | ·98368 | ·01632 | 76531 | 1467368 | 19·02 | 3 |
| 4 | 75901 | 1332 | ·98245 | ·01755 | 75235 | 1390837 | 18·32 | 4 |
| 55 | 74569 | 1408 | ·98112 | ·01888 | 73865 | 1315602 | 17·64 | 55 |
| 6 | 73161 | 1487 | ·97967 | ·02033 | 72418 | 1241737 | 16·97 | 6 |
| 7 | 71674 | 1569 | ·97812 | ·02188 | 70889 | 1169319 | 16·32 | 7 |
| 8 | 70105 | 1649 | ·97648 | ·02352 | 69281 | 1098430 | 15·67 | 8 |
| 9 | 68456 | 1731 | ·97473 | ·02527 | 67590 | 1029149 | 15·03 | 9 |
| 60 | 66725 | 1811 | ·97285 | ·02715 | 65820 | 961559 | 14·41 | 60 |
| 1 | 64914 | 1894 | ·97083 | ·02917 | 63967 | 895739 | 13·80 | 1 |
| 2 | 63020 | 1975 | ·96865 | ·03135 | 62032 | 831772 | 13·20 | 2 |
| 3 | 61045 | 2049 | ·96643 | ·03357 | 60021 | 769740 | 12·61 | 3 |
| 4 | 58996 | 2113 | ·96418 | ·03582 | 57939 | 709719 | 12·03 | 4 |
| 65 | 56883 | 2179 | ·96169 | ·03831 | 55794 | 651780 | 11·46 | 65 |
| 6 | 54704 | 2257 | ·95874 | ·04126 | 53575 | 595986 | 10·90 | 6 |
| 7 | 52447 | 2356 | ·95507 | ·04493 | 51269 | 542411 | 10·34 | 7 |
| 8 | 50091 | 2484 | ·95040 | ·04960 | 48849 | 491142 | 9·81 | 8 |
| 9 | 47607 | 2628 | ·94480 | ·05520 | 46293 | 442293 | 9·29 | 9 |



## Table XI.—Aggregate of County Boroughs, 1911-12.—Females—*cont.*

| Age. $x$ | $l_x$ | $d_x$ | $p_x$ | $q_x$ | $L_x$ | $T_x$ | $\mathring{e}_x$ | Age. $x$ |
|---|---|---|---|---|---|---|---|---|
| 70 | 44979 | 2764 | ·93855 | ·06145 | 43597 | 396000 | 8·80 | 70 |
| 1 | 42215 | 2871 | ·93198 | ·06802 | 40780 | 352403 | 8·35 | 1 |
| 2 | 39344 | 2932 | ·92548 | ·07452 | 37878 | 311623 | 7·92 | 2 |
| 3 | 36412 | 2942 | ·91920 | ·08080 | 34941 | 273745 | 7·52 | 3 |
| 4 | 33470 | 2915 | ·91289 | ·08711 | 32012 | 238804 | 7·13 | 4 |
| 75 | 30555 | 2861 | ·90637 | ·09363 | 29125 | 206792 | 6·77 | 75 |
| 6 | 27694 | 2785 | ·89943 | ·10057 | 26301 | 177667 | 6·42 | 6 |
| 7 | 24909 | 2694 | ·89185 | ·10815 | 23562 | 151366 | 6·08 | 7 |
| 8 | 22215 | 2590 | ·88339 | ·11661 | 20920 | 127804 | 5·75 | 8 |
| 9 | 19625 | 2470 | ·87413 | ·12587 | 18390 | 106884 | 5·45 | 9 |
| 80 | 17155 | 2329 | ·86427 | ·13573 | 15991 | 88494 | 5·16 | 80 |
| 1 | 14826 | 2164 | ·85405 | ·14595 | 13744 | 72503 | 4·89 | 1 |
| 2 | 12662 | 1978 | ·84377 | ·15623 | 11673 | 58759 | 4·64 | 2 |
| 3 | 10684 | 1779 | ·83352 | ·16648 | 9794 | 47086 | 4·41 | 3 |
| 4 | 8905 | 1575 | ·82313 | ·17687 | 8118 | 37292 | 4·19 | 4 |
| 85 | 7330 | 1374 | ·81249 | ·18751 | 6643 | 29174 | 3·98 | 85 |
| 6 | 5956 | 1182 | ·80150 | ·19850 | 5365 | 22531 | 3·78 | 6 |
| 7 | 4774 | 1003 | ·79000 | ·21000 | 4272 | 17166 | 3·60 | 7 |
| 8 | 3771 | 838 | ·77768 | ·22232 | 3352 | 12894 | 3·42 | 8 |
| 9 | 2933 | 691 | ·76456 | ·23544 | 2588 | 9542 | 3·25 | 9 |
| 90 | 2242 | 558 | ·75108 | ·24892 | 1963 | 6954 | 3·10 | 90 |
| 1 | 1684 | 441 | ·73776 | ·26224 | 1463 | 4991 | 2·96 | 1 |
| 2 | 1243 | 342 | ·72516 | ·27484 | 1072 | 3528 | 2·84 | 2 |
| 3 | 901 | 258 | ·71351 | ·28649 | 772 | 2456 | 2·73 | 3 |
| 4 | 643 | 191 | ·70281 | ·29719 | 548 | 1684 | 2·62 | 4 |
| 95 | 452 | 139 | ·69282 | ·30718 | 382 | 1136 | 2·51 | 95 |
| 6 | 313 | 99 | ·68306 | ·31694 | 264 | 754 | 2·41 | 6 |
| 7 | 214 | 70 | ·67284 | ·32716 | 179 | 490 | 2·29 | 7 |
| 8 | 144 | 49 | ·66074 | ·33926 | 119 | 311 | 2·16 | 8 |
| 9 | 95 | 34 | ·64473 | ·35527 | 78 | 192 | 2·02 | 9 |
| 100 | 61 | 23 | ·62233 | ·37767 | 50 | 114 | 1·85 | 100 |
| 1 | 38 | 15 | ·59089 | ·40911 | 30 | 64 | 1·67 | 1 |
| 2 | 23 | 11 | ·54816 | ·45184 | 18 | 34 | 1·49 | 2 |
| 3 | 12 | 6 | ·49292 | ·50708 | 9 | 16 | 1·30 | 3 |
| 4 | 6 | 3 | ·42577 | ·57423 | 4 | 7 | 1·12 | 4 |
| 105 | 3 | 2 | ·34968 | ·65032 | 2 | 3 | ·96 | 105 |
| 6 | 1 | 1 | ·26997 | ·73003 | 1 | 1 | ·83 | 6 |

## Table XII.—AGGREGATE OF URBAN DISTRICTS, 1911-12.—MALES.

| Age. $x$ | $l_x$ | $d_x$ | $p_x$ | $q_x$ | $L_x$ | $T_x$ | $\mathring{e}_x$ | Age. $x$ |
|---|---|---|---|---|---|---|---|---|
| 12 | 100000 | 175 | ·99825 | ·00175 | 99912 | 5170125 | 51·70 | 12 |
| 3 | 99825 | 204 | ·99795 | ·00205 | 99723 | 5070213 | 50·79 | 3 |
| 4 | 99621 | 232 | ·99767 | ·00233 | 99505 | 4970490 | 49·90 | 4 |
| 15 | 99389 | 258 | ·99741 | ·00259 | 99260 | 4870985 | 49·01 | 15 |
| 6 | 99131 | 280 | ·99718 | ·00282 | 98991 | 4771725 | 48·14 | 6 |
| 7 | 98851 | 298 | ·99698 | ·00302 | 98702 | 4672734 | 47·27 | 7 |
| 8 | 98553 | 313 | ·99682 | ·00318 | 98397 | 4574032 | 46·41 | 8 |
| 9 | 98240 | 325 | ·99670 | ·00330 | 98077 | 4475635 | 45·56 | 9 |
| 20 | 97915 | 333 | ·99660 | ·00340 | 97749 | 4377558 | 44·71 | 20 |
| 1 | 97582 | 341 | ·99651 | ·00349 | 97411 | 4279809 | 43·86 | 1 |
| 2 | 97241 | 349 | ·99642 | ·00358 | 97067 | 4182398 | 43·01 | 2 |
| 3 | 96892 | 356 | ·99632 | ·00368 | 96714 | 4085331 | 42·16 | 3 |
| 4 | 96536 | 364 | ·99624 | ·00376 | 96354 | 3988617 | 41·31 | 4 |
| 25 | 96172 | 371 | ·99615 | ·00385 | 95986 | 3892263 | 40·48 | 25 |
| 6 | 95801 | 376 | ·99606 | ·00394 | 95613 | 3796277 | 39·63 | 6 |
| 7 | 95425 | 386 | ·99595 | ·00405 | 95232 | 3700664 | 38·78 | 7 |
| 8 | 95039 | 396 | ·99584 | ·00416 | 94841 | 3605432 | 37·94 | 8 |
| 9 | 94643 | 404 | ·99572 | ·00428 | 94441 | 3510591 | 37·09 | 9 |
| 30 | 94239 | 416 | ·99559 | ·00441 | 94031 | 3416150 | 36·25 | 30 |
| 1 | 93823 | 427 | ·99544 | ·00456 | 93610 | 3322119 | 35·41 | 1 |
| 2 | 93396 | 444 | ·99524 | ·00476 | 93174 | 3228509 | 34·57 | 2 |
| 3 | 92952 | 465 | ·99499 | ·00501 | 92719 | 3135335 | 33·73 | 3 |
| 4 | 92487 | 491 | ·99469 | ·00531 | 92242 | 3042616 | 32·90 | 4 |
| 35 | 91996 | 517 | ·99437 | ·00563 | 91737 | 2950374 | 32·07 | 35 |
| 6 | 91479 | 546 | ·99404 | ·00596 | 91206 | 2858637 | 31·25 | 6 |
| 7 | 90933 | 572 | ·99370 | ·00630 | 90647 | 2767431 | 30·44 | 7 |
| 8 | 90361 | 597 | ·99338 | ·00662 | 90063 | 2676784 | 29·62 | 8 |
| 9 | 89764 | 622 | ·99308 | ·00692 | 89453 | 2586721 | 28·82 | 9 |
| 40 | 89142 | 647 | ·99276 | ·00724 | 88818 | 2497268 | 28·02 | 40 |
| 1 | 88495 | 674 | ·99239 | ·00761 | 88158 | 2408450 | 27·21 | 1 |
| 2 | 87821 | 707 | ·99194 | ·00806 | 87468 | 2320292 | 26·42 | 2 |
| 3 | 87114 | 747 | ·99142 | ·00858 | 86740 | 2232824 | 25·63 | 3 |
| 4 | 86367 | 791 | ·99084 | ·00916 | 85972 | 2146084 | 24·85 | 4 |
| 45 | 85576 | 838 | ·99021 | ·00979 | 85157 | 2060112 | 24·07 | 45 |
| 6 | 84738 | 889 | ·98951 | ·01049 | 84293 | 1974955 | 23·31 | 6 |
| 7 | 83849 | 944 | ·98873 | ·01127 | 83377 | 1890662 | 22·55 | 7 |
| 8 | 82905 | 1006 | ·98788 | ·01212 | 82402 | 1807285 | 21·80 | 8 |
| 9 | 81899 | 1068 | ·98696 | ·01304 | 81365 | 1724883 | 21·06 | 9 |
| 50 | 80831 | 1134 | ·98596 | ·01404 | 80264 | 1643518 | 20·33 | 50 |
| 1 | 79697 | 1206 | ·98488 | ·01512 | 79094 | 1563254 | 19·62 | 1 |
| 2 | 78491 | 1276 | ·98373 | ·01627 | 77853 | 1484160 | 18·91 | 2 |
| 3 | 77215 | 1349 | ·98253 | ·01747 | 76541 | 1406307 | 18·21 | 3 |
| 4 | 75866 | 1419 | ·98130 | ·01870 | 75156 | 1329766 | 17·53 | 4 |
| 55 | 74447 | 1491 | ·97996 | ·02004 | 73702 | 1254610 | 16·85 | 55 |
| 6 | 72956 | 1572 | ·97845 | ·02155 | 72170 | 1180908 | 16·19 | 6 |
| 7 | 71384 | 1662 | ·97671 | ·02329 | 70553 | 1108738 | 15·53 | 7 |
| 8 | 69722 | 1764 | ·97469 | ·02531 | 68840 | 1038185 | 14·89 | 8 |
| 9 | 67958 | 1875 | ·97241 | ·02759 | 67020 | 969345 | 14·26 | 9 |
| 60 | 66083 | 1987 | ·96992 | ·03008 | 65090 | 902325 | 13·66 | 60 |
| 1 | 64096 | 2096 | ·96730 | ·03270 | 63043 | 837235 | 13·06 | 1 |
| 2 | 62000 | 2195 | ·96460 | ·03540 | 60902 | 774187 | 12·49 | 2 |
| 3 | 59805 | 2274 | ·96196 | ·03804 | 58668 | 713285 | 11·93 | 3 |
| 4 | 57531 | 2339 | ·95935 | ·04065 | 56362 | 654617 | 11·38 | 4 |
| 65 | 55192 | 2399 | ·95654 | ·04346 | 53992 | 598255 | 10·84 | 65 |
| 6 | 52793 | 2466 | ·95328 | ·04672 | 51560 | 544263 | 10·31 | 6 |
| 7 | 50327 | 2551 | ·94931 | ·05069 | 49052 | 492703 | 9·79 | 7 |
| 8 | 47776 | 2658 | ·94436 | ·05564 | 46447 | 443651 | 9·29 | 8 |
| 9 | 45118 | 2774 | ·93852 | ·06148 | 43731 | 397204 | 8·80 | 9 |



## Table XII.—Aggregate of Urban Districts, 1911-12.—Males—*cont.*

| Age. $x$ | $l$ | $d_x$ | $p_x$ | $q_x$ | $L_x$ | $T_x$ | $\mathring{e}_x$ | Age. $x$ |
|---|---|---|---|---|---|---|---|---|
| 70 | 42344 | 2878 | ·93203 | ·06797 | 40905 | 353473 | 8·35 | 70 |
| 1 | 39466 | 2951 | ·92522 | ·07478 | 37990 | 312568 | 7·92 | 1 |
| 2 | 36515 | 2978 | ·91844 | ·08156 | 35026 | 274578 | 7·52 | 2 |
| 3 | 33537 | 2960 | ·91174 | ·08826 | 32057 | 239552 | 7·14 | 3 |
| 4 | 30577 | 2909 | ·90488 | ·09512 | 29123 | 207495 | 6·79 | 4 |
| 75 | 27668 | 2827 | ·89782 | ·10218 | 26254 | 178372 | 6·45 | 75 |
| 6 | 24841 | 2720 | ·89051 | ·10949 | 23481 | 152118 | 6·12 | 6 |
| 7 | 22121 | 2590 | ·88290 | ·11710 | 20826 | 128637 | 5·82 | 7 |
| 8 | 19531 | 2438 | ·87519 | ·12481 | 18312 | 107811 | 5·52 | 8 |
| 9 | 17093 | 2266 | ·86742 | ·13258 | 15960 | 89499 | 5·24 | 9 |
| 80 | 14827 | 2087 | ·85926 | ·14074 | 13784 | 73539 | 4·96 | 80 |
| 1 | 12740 | 1907 | ·85033 | ·14967 | 11786 | 59755 | 4·69 | 1 |
| 2 | 10833 | 1731 | ·84021 | ·15979 | 9968 | 47969 | 4·43 | 2 |
| 3 | 9102 | 1564 | ·82819 | ·17181 | 8320 | 38001 | 4·18 | 3 |
| 4 | 7538 | 1399 | ·81431 | ·18569 | 6838 | 29681 | 3·94 | 4 |
| 85 | 6139 | 1232 | ·79934 | ·20066 | 5523 | 22843 | 3·72 | 85 |
| 6 | 4907 | 1059 | ·78419 | ·21581 | 4378 | 17320 | 3·53 | 6 |
| 7 | 3848 | 885 | ·77000 | ·23000 | 3405 | 12942 | 3·36 | 7 |
| 8 | 2963 | 721 | ·75674 | ·24326 | 2603 | 9537 | 3·22 | 8 |
| 9 | 2242 | 574 | ·74379 | ·25621 | 1955 | 6934 | 3·09 | 9 |
| 90 | 1668 | 448 | ·73160 | ·26840 | 1444 | 4979 | 2·98 | 90 |
| 1 | 1220 | 341 | ·72065 | ·27935 | 1049 | 3535 | 2·90 | 1 |
| 2 | 879 | 253 | ·71147 | ·28853 | 753 | 2486 | 2·83 | 2 |
| 3 | 626 | 185 | ·70437 | ·29563 | 533 | 1733 | 2·77 | 3 |
| 4 | 441 | 133 | ·69933 | ·30067 | 375 | 1200 | 2·72 | 4 |
| 95 | 308 | 93 | ·69615 | ·30385 | 261 | 825 | 2·68 | 95 |
| 6 | 215 | 66 | ·69438 | ·30562 | 182 | 564 | 2·62 | 6 |
| 7 | 149 | 46 | ·69337 | ·30663 | 126 | 382 | 2·56 | 7 |
| 8 | 103 | 32 | ·69167 | ·30833 | 87 | 256 | 2·47 | 8 |
| 9 | 71 | 22 | ·68704 | ·31296 | 60 | 169 | 2·35 | 9 |
| 100 | 49 | 16 | ·67655 | ·32345 | 41 | 109 | 2·19 | 100 |
| 1 | 33 | 11 | ·65683 | ·34317 | 28 | 68 | 2·00 | 1 |
| 2 | 22 | 8 | ·62448 | ·37552 | 18 | 40 | 1·79 | 2 |
| 3 | 14 | 6 | ·57690 | ·42310 | 11 | 22 | 1·56 | 3 |
| 4 | 8 | 4 | ·51319 | ·48681 | 6 | 11 | 1·34 | 4 |
| 105 | 4 | 2 | ·43516 | ·56484 | 3 | 5 | 1·13 | 105 |
| 6 | 2 | 1 | ·34778 | ·65222 | 1 | 2 | ·96 | 6 |
| 7 | 1 | 1 | ·25871 | ·74129 | 1 | 1 | ·81 | 7 |

## Table XIII.—AGGREGATE OF URBAN DISTRICTS, 1911-12.—FEMALES.

| Age. $x$ | $l_x$ | $d_x$ | $p_x$ | $q_x$ | $L_x$ | $T_x$ | $\mathring{e}_x$ | Age. $x$ |
|---|---|---|---|---|---|---|---|---|
| 12 | 100000 | 189 | ·99812 | ·00188 | 99905 | 5442607 | 54·43 | 12 |
| 3 | 99811 | 206 | ·99792 | ·00208 | 99708 | 5342702 | 53·53 | 3 |
| 4 | 99605 | 225 | ·99774 | ·00226 | 99493 | 5242994 | 52·64 | 4 |
| 15 | 99380 | 240 | ·99759 | ·00241 | 99260 | 5143501 | 51·76 | 15 |
| 6 | 99140 | 251 | ·99746 | ·00254 | 99014 | 5044241 | 50·88 | 6 |
| 7 | 98889 | 261 | ·99735 | ·00265 | 98759 | 4945227 | 50·01 | 7 |
| 8 | 98628 | 270 | ·99726 | ·00274 | 98493 | 4846468 | 49·14 | 8 |
| 9 | 98358 | 276 | ·99719 | ·00281 | 98220 | 4747975 | 48·27 | 9 |
| 20 | 98082 | 282 | ·99713 | ·00287 | 97941 | 4649755 | 47·41 | 20 |
| 1 | 97800 | 285 | ·99707 | ·00293 | 97657 | 4551814 | 46·54 | 1 |
| 2 | 97515 | 292 | ·99700 | ·00300 | 97369 | 4454157 | 45·68 | 2 |
| 3 | 97223 | 299 | ·99691 | ·00309 | 97074 | 4356788 | 44·81 | 3 |
| 4 | 96924 | 308 | ·99682 | ·00318 | 96770 | 4259714 | 43·95 | 4 |
| 25 | 96616 | 317 | ·99672 | ·00328 | 96457 | 4162944 | 43·09 | 25 |
| 6 | 96299 | 326 | ·99662 | ·00338 | 96136 | 4066487 | 42·23 | 6 |
| 7 | 95973 | 335 | ·99650 | ·00350 | 95806 | 3970351 | 41·37 | 7 |
| 8 | 95638 | 345 | ·99638 | ·00362 | 95465 | 3874545 | 40·51 | 8 |
| 9 | 95293 | 357 | ·99625 | ·00375 | 95115 | 3779080 | 39·66 | 9 |
| 30 | 94936 | 369 | ·99612 | ·00388 | 94751 | 3683965 | 38·81 | 30 |
| 1 | 94567 | 382 | ·99596 | ·00404 | 94376 | 3589214 | 37·95 | 1 |
| 2 | 94185 | 396 | ·99579 | ·00421 | 93987 | 3494838 | 37·11 | 2 |
| 3 | 93789 | 414 | ·99559 | ·00441 | 93582 | 3400851 | 36·26 | 3 |
| 4 | 93375 | 433 | ·99537 | ·00463 | 93159 | 3307269 | 35·42 | 4 |
| 35 | 92942 | 453 | ·99513 | ·00487 | 92715 | 3214110 | 34·58 | 35 |
| 6 | 92489 | 472 | ·99489 | ·00511 | 92253 | 3121395 | 33·75 | 6 |
| 7 | 92017 | 492 | ·99464 | ·00536 | 91771 | 3029142 | 32·92 | 7 |
| 8 | 91525 | 513 | ·99440 | ·00560 | 91269 | 2937371 | 32·09 | 8 |
| 9 | 91012 | 530 | ·99417 | ·00583 | 90747 | 2846102 | 31·27 | 9 |
| 40 | 90482 | 549 | ·99393 | ·00607 | 90207 | 2755355 | 30·45 | 40 |
| 1 | 89933 | 572 | ·99365 | ·00635 | 89647 | 2665148 | 29·63 | 1 |
| 2 | 89361 | 598 | ·99331 | ·00669 | 89062 | 2575501 | 28·82 | 2 |
| 3 | 88763 | 630 | ·99290 | ·00710 | 88448 | 2486439 | 28·01 | 3 |
| 4 | 88133 | 667 | ·99243 | ·00757 | 87800 | 2397991 | 27·21 | 4 |
| 45 | 87466 | 708 | ·99191 | ·00809 | 87112 | 2310191 | 26·41 | 45 |
| 6 | 86758 | 748 | ·99137 | ·00863 | 86384 | 2223079 | 25·62 | 6 |
| 7 | 86010 | 790 | ·99081 | ·00919 | 85615 | 2136695 | 24·84 | 7 |
| 8 | 85220 | 830 | ·99026 | ·00974 | 84805 | 2051080 | 24·07 | 8 |
| 9 | 84390 | 868 | ·98972 | ·01028 | 83956 | 1966275 | 23·30 | 9 |
| 50 | 83522 | 909 | ·98913 | ·01087 | 83067 | 1882319 | 22·54 | 50 |
| 1 | 82613 | 953 | ·98846 | ·01154 | 82137 | 1799252 | 21·78 | 1 |
| 2 | 81660 | 1007 | ·98766 | ·01234 | 81156 | 1717115 | 21·03 | 2 |
| 3 | 80653 | 1070 | ·98674 | ·01326 | 80118 | 1635959 | 20·28 | 3 |
| 4 | 79583 | 1137 | ·98572 | ·01428 | 79015 | 1555841 | 19·55 | 4 |
| 55 | 78446 | 1208 | ·98459 | ·01541 | 77842 | 1476826 | 18·83 | 55 |
| 6 | 77238 | 1288 | ·98333 | ·01667 | 76594 | 1398984 | 18·11 | 6 |
| 7 | 75950 | 1372 | ·98193 | ·01807 | 75264 | 1322390 | 17·41 | 7 |
| 8 | 74578 | 1467 | ·98033 | ·01967 | 73844 | 1247126 | 16·72 | 8 |
| 9 | 73111 | 1569 | ·97854 | ·02146 | 72327 | 1173282 | 16·05 | 9 |
| 60 | 71542 | 1672 | ·97662 | ·02338 | 70706 | 1100955 | 15·39 | 60 |
| 1 | 69870 | 1773 | ·97464 | ·02536 | 68983 | 1030249 | 14·75 | 1 |
| 2 | 68097 | 1862 | ·97266 | ·02734 | 67166 | 961266 | 14·12 | 2 |
| 3 | 66235 | 1925 | ·97093 | ·02907 | 65273 | 894100 | 13·50 | 3 |
| 4 | 64310 | 1968 | ·96939 | ·03061 | 63326 | 828827 | 12·89 | 4 |
| 65 | 62342 | 2012 | ·96771 | ·03229 | 61336 | 765501 | 12·28 | 65 |
| 6 | 60330 | 2082 | ·96550 | ·03450 | 59289 | 704165 | 11·67 | 6 |
| 7 | 58248 | 2191 | ·96238 | ·03762 | 57152 | 644876 | 11·07 | 7 |
| 8 | 56057 | 2356 | ·95796 | ·04204 | 54879 | 587724 | 10·49 | 8 |
| 9 | 53701 | 2558 | ·95239 | ·04761 | 52422 | 532845 | 9·92 | 9 |



## Table XIII.—Aggregate of Urban Districts, 1911-12.—Females—*cont.*

| Age. $x$ | $l_x$ | $d_x$ | $p_x$ | $q_x$ | $L_x$ | $T_x$ | $\mathring{e}_x$ | Age. $x$ |
|---|---|---|---|---|---|---|---|---|
| 70 | 51143 | 2758 | ·94606 | ·05394 | 49764 | 480423 | 9·39 | 70 |
| 1 | 48385 | 2931 | ·93943 | ·06057 | 46920 | 430659 | 8·90 | 1 |
| 2 | 45454 | 3044 | ·93303 | ·06697 | 43932 | 383739 | 8·44 | 2 |
| 3 | 42410 | 3093 | ·92707 | ·07293 | 40863 | 339807 | 8·01 | 3 |
| 4 | 39317 | 3097 | ·92124 | ·07876 | 37769 | 298944 | 7·60 | 4 |
| 75 | 36220 | 3069 | ·91528 | ·08472 | 34685 | 261175 | 7·21 | 75 |
| 6 | 33151 | 3019 | ·90893 | ·09107 | 31642 | 226490 | 6·83 | 6 |
| 7 | 30132 | 2957 | ·90187 | ·09813 | 28653 | 194848 | 6·47 | 7 |
| 8 | 27175 | 2883 | ·89390 | ·10610 | 25734 | 166195 | 6·12 | 8 |
| 9 | 24292 | 2790 | ·88514 | ·11486 | 22897 | 140461 | 5·78 | 9 |
| 80 | 21502 | 2672 | ·87574 | ·12426 | 20166 | 117564 | 5·47 | 80 |
| 1 | 18830 | 2525 | ·86590 | ·13410 | 17567 | 97398 | 5·17 | 1 |
| 2 | 16305 | 2350 | ·85585 | ·14415 | 15130 | 79831 | 4·90 | 2 |
| 3 | 13955 | 2156 | ·84553 | ·15447 | 12877 | 64701 | 4·64 | 3 |
| 4 | 11799 | 1949 | ·83478 | ·16522 | 10825 | 51824 | 4·39 | 4 |
| 85 | 9850 | 1737 | ·82366 | ·17634 | 8981 | 40999 | 4·16 | 85 |
| 6 | 8113 | 1523 | ·81225 | ·18775 | 7352 | 32018 | 3·95 | 6 |
| 7 | 6590 | 1314 | ·80064 | ·19936 | 5933 | 24666 | 3·74 | 7 |
| 8 | 5276 | 1111 | ·78939 | ·21061 | 4720 | 18733 | 3·55 | 8 |
| 9 | 4165 | 923 | ·77849 | ·22151 | 3704 | 14013 | 3·36 | 9 |
| 90 | 3242 | 755 | ·76717 | ·23283 | 2864 | 10309 | 3·18 | 90 |
| 1 | 2487 | 610 | ·75454 | ·24546 | 2182 | 7445 | 2·99 | 1 |
| 2 | 1877 | 489 | ·73956 | ·26044 | 1633 | 5263 | 2·80 | 2 |
| 3 | 1388 | 386 | ·72169 | ·27831 | 1195 | 3630 | 2·62 | 3 |
| 4 | 1002 | 300 | ·70087 | ·29913 | 852 | 2435 | 2·43 | 4 |
| 95 | 702 | 226 | ·67750 | ·32250 | 589 | 1583 | 2·26 | 95 |
| 6 | 476 | 166 | ·65232 | ·34768 | 393 | 994 | 2·09 | 6 |
| 7 | 310 | 116 | ·62637 | ·37363 | 252 | 601 | 1·94 | 7 |
| 8 | 194 | 77 | ·59987 | ·40013 | 155 | 349 | 1·80 | 8 |
| 9 | 117 | 50 | ·57239 | ·42761 | 92 | 194 | 1·67 | 9 |
| 100 | 67 | 31 | ·54295 | ·45705 | 52 | 102 | 1·54 | 100 |
| 1 | 36 | 18 | ·51028 | ·48972 | 27 | 50 | 1·41 | 1 |
| 2 | 18 | 9 | ·47302 | ·52698 | 13 | 23 | 1·29 | 2 |
| 3 | 9 | 5 | ·43004 | ·56996 | 7 | 10 | 1·16 | 3 |
| 4 | 4 | 3 | ·38084 | ·61916 | 2 | 3 | 1·05 | 4 |
| 105 | 1 | 1 | ·32592 | ·67408 | 1 | 1 | ·93 | 105 |

## Table XIV.—AGGREGATE OF RURAL DISTRICTS, 1911-12.—MALES.

| AGE. $x$ | $l_x$ | $d_x$ | $p_x$ | $q_x$ | $L_x$ | $T_x$ | $\mathring{e}_x$ | AGE. $x$ |
|---|---|---|---|---|---|---|---|---|
| 12 | 100000 | 161 | ·99840 | ·00160 | 99919 | 5416589 | 54·16 | 12 |
| 3 | 99839 | 177 | ·99822 | ·00178 | 99751 | 5316670 | 53·25 | 3 |
| 4 | 99662 | 197 | ·99803 | ·00197 | 99563 | 5216919 | 52·35 | 4 |
| 15 | 99465 | 215 | ·99784 | ·00216 | 99358 | 5117356 | 51·45 | 15 |
| 6 | 99250 | 235 | ·99764 | ·00236 | 99132 | 5017998 | 50·56 | 6 |
| 7 | 99015 | 253 | ·99744 | ·00256 | 98889 | 4918866 | 49·68 | 7 |
| 8 | 98762 | 272 | ·99725 | ·00275 | 98626 | 4819977 | 48·81 | 8 |
| 9 | 98490 | 288 | ·99707 | ·00293 | 98346 | 4721351 | 47·94 | 9 |
| 20 | 98202 | 305 | ·99689 | ·00311 | 98049 | 4623005 | 47·08 | 20 |
| 1 | 97897 | 322 | ·99672 | ·00328 | 97736 | 4524956 | 46·23 | 1 |
| 2 | 97575 | 334 | ·99657 | ·00343 | 97408 | 4427220 | 45·37 | 2 |
| 3 | 97241 | 344 | ·99645 | ·00355 | 97069 | 4329812 | 44·52 | 3 |
| 4 | 96897 | 352 | ·99636 | ·00364 | 96721 | 4232743 | 43·68 | 4 |
| 25 | 96545 | 359 | ·99628 | ·00372 | 96366 | 4136022 | 42·84 | 25 |
| 6 | 96186 | 365 | ·99620 | ·00380 | 96003 | 4039656 | 42·00 | 6 |
| 7 | 95821 | 374 | ·99610 | ·00390 | 95634 | 3943653 | 41·15 | 7 |
| 8 | 95447 | 384 | ·99598 | ·00402 | 95255 | 3848019 | 40·32 | 8 |
| 9 | 95063 | 396 | ·99585 | ·00415 | 94865 | 3752764 | 39·48 | 9 |
| 30 | 94667 | 404 | ·99572 | ·00428 | 94465 | 3657899 | 38·64 | 30 |
| 1 | 94263 | 416 | ·99558 | ·00442 | 94055 | 3563434 | 37·80 | 1 |
| 2 | 93847 | 427 | ·99544 | ·00456 | 93634 | 3469379 | 36·97 | 2 |
| 3 | 93420 | 440 | ·99530 | ·00470 | 93200 | 3375745 | 36·13 | 3 |
| 4 | 92980 | 448 | ·99517 | ·00483 | 92756 | 3282545 | 35·30 | 4 |
| 35 | 92532 | 459 | ·99503 | ·00497 | 92302 | 3189789 | 34·47 | 35 |
| 6 | 92073 | 474 | ·99486 | ·00514 | 91836 | 3097487 | 33·64 | 6 |
| 7 | 91599 | 490 | ·99466 | ·00534 | 91354 | 3005651 | 32·82 | 7 |
| 8 | 91109 | 509 | ·99441 | ·00559 | 90855 | 2914297 | 31·99 | 8 |
| 9 | 90600 | 532 | ·99413 | ·00587 | 90334 | 2823442 | 31·16 | 9 |
| 40 | 90068 | 556 | ·99382 | ·00618 | 89790 | 2733108 | 30·35 | 40 |
| 1 | 89512 | 584 | ·99349 | ·00651 | 89220 | 2643318 | 29·53 | 1 |
| 2 | 88928 | 610 | ·99315 | ·00685 | 88623 | 2554098 | 28·72 | 2 |
| 3 | 88318 | 634 | ·99282 | ·00718 | 88001 | 2465475 | 27·92 | 3 |
| 4 | 87684 | 658 | ·99249 | ·00751 | 87355 | 2377474 | 27·11 | 4 |
| 45 | 87026 | 684 | ·99213 | ·00787 | 86684 | 2290119 | 26·31 | 45 |
| 6 | 86342 | 715 | ·99173 | ·00827 | 85984 | 2203435 | 25·52 | 6 |
| 7 | 85627 | 748 | ·99126 | ·00874 | 85253 | 2117451 | 24·73 | 7 |
| 8 | 84879 | 786 | ·99073 | ·00927 | 84486 | 2032198 | 23·94 | 8 |
| 9 | 84093 | 827 | ·99016 | ·00984 | 83680 | 1947712 | 23·16 | 9 |
| 50 | 83266 | 873 | ·98952 | ·01048 | 82829 | 1864032 | 22·39 | 50 |
| 1 | 82393 | 923 | ·98881 | ·01119 | 81932 | 1781203 | 21·62 | 1 |
| 2 | 81470 | 978 | ·98799 | ·01201 | 80981 | 1699271 | 20·86 | 2 |
| 3 | 80492 | 1041 | ·98708 | ·01292 | 79971 | 1618290 | 20·10 | 3 |
| 4 | 79451 | 1104 | ·98609 | ·01391 | 78899 | 1538319 | 19·36 | 4 |
| 55 | 78347 | 1175 | ·98500 | ·01500 | 77760 | 1459420 | 18·63 | 55 |
| 6 | 77172 | 1251 | ·98378 | ·01622 | 76546 | 1381660 | 17·91 | 6 |
| 7 | 75921 | 1336 | ·98241 | ·01759 | 75253 | 1305114 | 17·19 | 7 |
| 8 | 74585 | 1426 | ·98089 | ·01911 | 73872 | 1229861 | 16·49 | 8 |
| 9 | 73159 | 1520 | ·97922 | ·02078 | 72399 | 1155989 | 15·80 | 9 |
| 60 | 71639 | 1618 | ·97741 | ·02259 | 70830 | 1083590 | 15·13 | 60 |
| 1 | 70021 | 1720 | ·97543 | ·02457 | 69161 | 1012760 | 14·46 | 1 |
| 2 | 68301 | 1824 | ·97329 | ·02671 | 67389 | 943599 | 13·82 | 2 |
| 3 | 66477 | 1923 | ·97107 | ·02893 | 65516 | 876210 | 13·18 | 3 |
| 4 | 64554 | 2018 | ·96875 | ·03125 | 63545 | 810694 | 12·56 | 4 |
| 65 | 62536 | 2113 | ·96621 | ·03379 | 61479 | 747149 | 11·95 | 65 |
| 6 | 60423 | 2219 | ·96328 | ·03672 | 59314 | 685670 | 11·35 | 6 |
| 7 | 58204 | 2339 | ·95982 | ·04018 | 57034 | 626356 | 10·76 | 7 |
| 8 | 55865 | 2475 | ·95569 | ·04431 | 54628 | 569322 | 10·19 | 8 |
| 9 | 53390 | 2620 | ·95094 | ·04906 | 52080 | 514694 | 9·64 | 9 |



## Table XIV.—Aggregate of Rural Districts, 1911-12.—Males—*cont.*

| AGE. $x$ | $l_x$ | $d_x$ | $p_x$ | $q_x$ | $L_x$ | $T_x$ | $\mathring{e}_x$ | AGE. $x$ |
|---|---|---|---|---|---|---|---|---|
| 70 | 50770 | 2758 | ·94566 | ·05434 | 49391 | 462614 | 9·11 | 70 |
| 1 | 48012 | 2884 | ·93993 | ·06007 | 46570 | 413223 | 8·61 | 1 |
| 2 | 45128 | 2985 | ·93385 | ·06615 | 43635 | 366653 | 8·13 | 2 |
| 3 | 42143 | 3060 | ·92739 | ·07261 | 40613 | 323018 | 7·67 | 3 |
| 4 | 39083 | 3110 | ·92043 | ·07957 | 37528 | 282405 | 7·23 | 4 |
| 75 | 35973 | 3132 | ·91293 | ·08707 | 34407 | 244877 | 6·81 | 75 |
| 6 | 32841 | 3124 | ·90488 | ·09512 | 31279 | 210470 | 6·41 | 6 |
| 7 | 29717 | 3083 | ·89624 | ·10376 | 28176 | 179191 | 6·03 | 7 |
| 8 | 26634 | 3013 | ·88686 | ·11314 | 25127 | 151015 | 5·67 | 8 |
| 9 | 23621 | 2913 | ·87667 | ·12333 | 22165 | 125888 | 5·33 | 9 |
| 80 | 20708 | 2780 | ·86576 | ·13424 | 19318 | 103723 | 5·01 | 80 |
| 1 | 17928 | 2613 | ·85427 | ·14573 | 16621 | 84405 | 4·71 | 1 |
| 2 | 15315 | 2414 | ·84235 | ·15765 | 14108 | 67784 | 4·43 | 2 |
| 3 | 12901 | 2192 | ·83012 | ·16988 | 11805 | 53676 | 4·16 | 3 |
| 4 | 10709 | 1955 | ·81745 | ·18255 | 9732 | 41871 | 3·91 | 4 |
| 85 | 8754 | 1714 | ·80412 | ·19588 | 7897 | 32139 | 3·67 | 85 |
| 6 | 7040 | 1479 | ·78992 | ·21008 | 6300 | 24242 | 3·44 | 6 |
| 7 | 5561 | 1254 | ·77454 | ·22546 | 4934 | 17942 | 3·23 | 7 |
| 8 | 4307 | 1046 | ·75705 | ·24295 | 3784 | 13008 | 3·02 | 8 |
| 9 | 3261 | 857 | ·73736 | ·26264 | 2833 | 9224 | 2·83 | 9 |
| 90 | 2404 | 681 | ·71661 | ·28339 | 2063 | 6391 | 2·66 | 90 |
| 1 | 1723 | 523 | ·69622 | ·30378 | 1462 | 4328 | 2·51 | 1 |
| 2 | 1200 | 387 | ·67795 | ·32205 | 1006 | 2866 | 2·39 | 2 |
| 3 | 813 | 274 | ·66257 | ·33743 | 676 | 1860 | 2·29 | 3 |
| 4 | 539 | 189 | ·65000 | ·35000 | 445 | 1184 | 2·20 | 4 |
| 95 | 350 | 126 | ·63946 | ·36054 | 287 | 739 | 2·11 | 95 |
| 6 | 224 | 83 | ·62949 | ·37051 | 182 | 452 | 2·03 | 6 |
| 7 | 141 | 54 | ·61797 | ·38203 | 114 | 270 | 1·92 | 7 |
| 8 | 87 | 35 | ·60230 | ·39770 | 70 | 156 | 1·80 | 8 |
| 9 | 52 | 22 | ·57948 | ·42052 | 41 | 86 | 1·66 | 9 |
| 100 | 30 | 13 | ·54664 | ·45336 | 23 | 45 | 1·50 | 100 |
| 1 | 17 | 9 | ·50157 | ·49843 | 13 | 22 | 1·34 | 1 |
| 2 | 8 | 4 | ·44358 | ·55642 | 6 | 9 | 1·17 | 2 |
| 3 | 4 | 3 | ·37425 | ·62575 | 2 | 3 | 1·01 | 3 |
| 4 | 1 | 1 | ·29781 | ·70219 | 1 | 1 | ·87 | 4 |

## Table XV.—AGGREGATE OF RURAL DISTRICTS, 1911-12.—FEMALES.

| Age. $x$ | $l_x$ | $d_x$ | $p_x$ | $q_x$ | $L_x$ | $T_x$ | $\mathring{e}_x$ | Age. $x$ |
|---|---|---|---|---|---|---|---|---|
| 12 | 100000 | 173 | ·99827 | ·00173 | 99913 | 5576300 | 55·76 | 12 |
| 3 | 99827 | 192 | ·99807 | ·00193 | 99731 | 5476387 | 54·86 | 3 |
| 4 | 99635 | 214 | ·99787 | ·00213 | 99528 | 5376656 | 53·97 | 4 |
| 15 | 99421 | 231 | ·99767 | ·00233 | 99306 | 5277128 | 53·08 | 15 |
| 6 | 99190 | 250 | ·99748 | ·00252 | 99065 | 5177822 | 52·20 | 6 |
| 7 | 98940 | 267 | ·99731 | ·00269 | 98806 | 5078757 | 51·33 | 7 |
| 8 | 98673 | 281 | ·99716 | ·00284 | 98533 | 4979951 | 50·47 | 8 |
| 9 | 98392 | 292 | ·99704 | ·00296 | 98246 | 4881418 | 49·61 | 9 |
| 20 | 98100 | 302 | ·99692 | ·00308 | 97949 | 4783172 | 48·76 | 20 |
| 1 | 97798 | 313 | ·99681 | ·00319 | 97641 | 4685223 | 47·91 | 1 |
| 2 | 97485 | 320 | ·99671 | ·00329 | 97325 | 4587582 | 47·06 | 2 |
| 3 | 97165 | 328 | ·99661 | ·00339 | 97001 | 4490257 | 46·21 | 3 |
| 4 | 96837 | 336 | ·99653 | ·00347 | 96669 | 4393256 | 45·37 | 4 |
| 25 | 96501 | 342 | ·99645 | ·00355 | 96330 | 4296587 | 44·52 | 25 |
| 6 | 96159 | 349 | ·99636 | ·00364 | 95985 | 4200257 | 43·68 | 6 |
| 7 | 95810 | 359 | ·99626 | ·00374 | 95630 | 4104272 | 42·84 | 7 |
| 8 | 95451 | 369 | ·99613 | ·00387 | 95267 | 4008642 | 42·00 | 8 |
| 9 | 95082 | 380 | ·99599 | ·00401 | 94892 | 3913375 | 41·16 | 9 |
| 30 | 94702 | 394 | ·99584 | ·00416 | 94505 | 3818483 | 40·32 | 30 |
| 1 | 94308 | 407 | ·99569 | ·00431 | 94104 | 3723978 | 39·49 | 1 |
| 2 | 93901 | 419 | ·99555 | ·00445 | 93692 | 3629874 | 38·66 | 2 |
| 3 | 93482 | 427 | ·99542 | ·00458 | 93268 | 3536182 | 37·83 | 3 |
| 4 | 93055 | 438 | ·99529 | ·00471 | 92836 | 3442914 | 37·00 | 4 |
| 35 | 92617 | 449 | ·99516 | ·00484 | 92393 | 3350078 | 36·17 | 35 |
| 6 | 92168 | 457 | ·99503 | ·00497 | 91939 | 3257685 | 35·35 | 6 |
| 7 | 91711 | 468 | ·99489 | ·00511 | 91477 | 3165746 | 34·52 | 7 |
| 8 | 91243 | 478 | ·99476 | ·00524 | 91004 | 3074269 | 33·69 | 8 |
| 9 | 90765 | 487 | ·99463 | ·00537 | 90522 | 2983265 | 32·87 | 9 |
| 40 | 90278 | 498 | ·99449 | ·00551 | 90029 | 2892743 | 32·04 | 40 |
| 1 | 89780 | 509 | ·99433 | ·00567 | 89525 | 2802714 | 31·22 | 1 |
| 2 | 89271 | 525 | ·99413 | ·00587 | 89009 | 2713189 | 30·39 | 2 |
| 3 | 88746 | 540 | ·99391 | ·00609 | 88476 | 2624180 | 29·57 | 3 |
| 4 | 88206 | 556 | ·99368 | ·00632 | 87928 | 2535704 | 28·75 | 4 |
| 45 | 87650 | 578 | ·99341 | ·00659 | 87361 | 2447776 | 27·93 | 45 |
| 6 | 87072 | 601 | ·99309 | ·00691 | 86771 | 2360415 | 27·11 | 6 |
| 7 | 86471 | 633 | ·99269 | ·00731 | 86155 | 2273644 | 26·29 | 7 |
| 8 | 85838 | 669 | ·99221 | ·00779 | 85503 | 2187489 | 25·48 | 8 |
| 9 | 85169 | 709 | ·99167 | ·00833 | 84815 | 2101986 | 24·68 | 9 |
| 50 | 84460 | 755 | ·99106 | ·00894 | 84082 | 2017171 | 23·88 | 50 |
| 1 | 83705 | 806 | ·99038 | ·00962 | 83302 | 1933089 | 23·09 | 1 |
| 2 | 82899 | 860 | ·98963 | ·01037 | 82469 | 1849787 | 22·31 | 2 |
| 3 | 82039 | 920 | ·98879 | ·01121 | 81579 | 1767318 | 21·54 | 3 |
| 4 | 81119 | 984 | ·98787 | ·01213 | 80627 | 1685739 | 20·78 | 4 |
| 55 | 80135 | 1053 | ·98687 | ·01313 | 79609 | 1605112 | 20·03 | 55 |
| 6 | 79082 | 1122 | ·98580 | ·01420 | 78521 | 1525503 | 19·29 | 6 |
| 7 | 77960 | 1196 | ·98467 | ·01533 | 77362 | 1446982 | 18·56 | 7 |
| 8 | 76764 | 1265 | ·98352 | ·01648 | 76131 | 1369620 | 17·84 | 8 |
| 9 | 75499 | 1334 | ·98233 | ·01767 | 74832 | 1293489 | 17·13 | 9 |
| 60 | 74165 | 1404 | ·98106 | ·01894 | 73463 | 1218657 | 16·43 | 60 |
| 1 | 72761 | 1482 | ·97963 | ·02037 | 72020 | 1145194 | 15·74 | 1 |
| 2 | 71279 | 1570 | ·97799 | ·02201 | 70494 | 1073174 | 15·06 | 2 |
| 3 | 69709 | 1660 | ·97619 | ·02381 | 68879 | 1002680 | 14·38 | 3 |
| 4 | 68049 | 1751 | ·97428 | ·02572 | 67174 | 933801 | 13·72 | 4 |
| 65 | 66298 | 1847 | ·97214 | ·02786 | 65374 | 866627 | 13·07 | 65 |
| 6 | 64451 | 1958 | ·96962 | ·03038 | 63472 | 801253 | 12·43 | 6 |
| 7 | 62493 | 2087 | ·96660 | ·03340 | 61450 | 737781 | 11·81 | 7 |
| 8 | 60406 | 2239 | ·96295 | ·03705 | 59286 | 676331 | 11·20 | 8 |
| 9 | 58167 | 2402 | ·95870 | ·04130 | 56966 | 617045 | 10·61 | 9 |



## Table XV.—Aggregate of Rural Districts, 1911-12.—Females—*cont.*

| Age. $x$ | $l_x$ | $d_x$ | $p_x$ | $q_x$ | $L_x$ | $T_x$ | $\mathring{e}_x$ | Age. $x$ |
|---|---|---|---|---|---|---|---|---|
| 70 | 55765 | 2568 | ·95396 | ·04604 | 54481 | 560079 | 10·04 | 70 |
| 1 | 53197 | 2722 | ·94883 | ·05117 | 51836 | 505598 | 9·50 | 1 |
| 2 | 50475 | 2855 | ·94342 | ·05658 | 49048 | 453762 | 8·99 | 2 |
| 3 | 47620 | 2967 | ·93770 | ·06230 | 46136 | 404714 | 8·50 | 3 |
| 4 | 44653 | 3057 | ·93153 | ·06847 | 43125 | 358578 | 8·03 | 4 |
| 75 | 41596 | 3123 | ·92493 | ·07507 | 40034 | 315453 | 7·58 | 75 |
| 6 | 38473 | 3158 | ·91790 | ·08210 | 36894 | 275419 | 7·16 | 6 |
| 7 | 35315 | 3162 | ·91046 | ·08954 | 33734 | 238525 | 6·75 | 7 |
| 8 | 32153 | 3132 | ·90259 | ·09741 | 30587 | 204791 | 6·37 | 8 |
| 9 | 29021 | 3069 | ·89425 | ·10575 | 27487 | 174204 | 6·00 | 9 |
| 80 | 25952 | 2975 | ·88536 | ·11464 | 24464 | 146717 | 5·65 | 80 |
| 1 | 22977 | 2853 | ·87584 | ·12416 | 21551 | 122253 | 5·32 | 1 |
| 2 | 20124 | 2704 | ·86563 | ·13437 | 18772 | 100702 | 5·00 | 2 |
| 3 | 17420 | 2534 | ·85456 | ·14544 | 16153 | 81930 | 4·70 | 3 |
| 4 | 14886 | 2343 | ·84258 | ·15742 | 13714 | 65777 | 4·42 | 4 |
| 85 | 12543 | 2135 | ·82978 | ·17022 | 11476 | 52063 | 4·15 | 85 |
| 6 | 10408 | 1913 | ·81624 | ·18376 | 9451 | 40587 | 3·90 | 6 |
| 7 | 8495 | 1681 | ·80211 | ·19789 | 7655 | 31136 | 3·67 | 7 |
| 8 | 6814 | 1453 | ·78679 | ·21321 | 6087 | 23481 | 3·45 | 8 |
| 9 | 5361 | 1233 | ·77005 | ·22995 | 4745 | 17394 | 3·24 | 9 |
| 90 | 4128 | 1021 | ·75268 | ·24732 | 3617 | 12649 | 3·06 | 90 |
| 1 | 3107 | 821 | ·73566 | ·26434 | 2697 | 9032 | 2·91 | 1 |
| 2 | 2286 | 640 | ·72016 | ·27984 | 1966 | 6335 | 2·77 | 2 |
| 3 | 1646 | 483 | ·70671 | ·29329 | 1404 | 4369 | 2·65 | 3 |
| 4 | 1163 | 354 | ·69528 | ·30472 | 986 | 2965 | 2·55 | 4 |
| 95 | 809 | 255 | ·68538 | ·31462 | 682 | 1979 | 2·45 | 95 |
| 6 | 554 | 179 | ·67602 | ·32398 | 464 | 1297 | 2·34 | 6 |
| 7 | 375 | 125 | ·66579 | ·33421 | 313 | 833 | 2·22 | 7 |
| 8 | 250 | 87 | ·65262 | ·34738 | 206 | 520 | 2·08 | 8 |
| 9 | 163 | 60 | ·63388 | ·36612 | 133 | 314 | 1·93 | 9 |
| 100 | 103 | 40 | ·60671 | ·39329 | 83 | 181 | 1·75 | 100 |
| 1 | 63 | 27 | ·56841 | ·43159 | 50 | 98 | 1·56 | 1 |
| 2 | 36 | 18 | ·51718 | ·48282 | 27 | 48 | 1·37 | 2 |
| 3 | 18 | 10 | .45291 | ·54709 | 13 | 21 | 1·19 | 3 |
| 4 | 8 | 5 | ·37789 | ·62211 | 5 | 8 | 1·02 | 4 |
| 105 | 3 | 2 | ·29702 | ·70298 | 2 | 3 | ·87 | 105 |
| 6 | 1 | 1 | ·21720 | ·78280 | 1 | 1 | ·75 | 6 |