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SUPPLEMENT

TO THE

TWENTY-FIFTH ANNUAL REPORT

OF THE

REGISTRAR-GENERAL

OF

BIRTHS, DEATHS, AND MARRIAGES

IN ENGLAND.

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



LONDON:

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LETTER

TO

The REGISTRAR-GENERAL on the MORTALITY in the REGISTRATION DISTRICTS of ENGLAND during the 10 Years 1851-60, by WILLIAM FARR, ESQ., M.D., F.R.S.

*General Register Office,
Somerset House.*

SIR,

THIS volume has been compiled to show in detail from the consecutive records of ten years the Causes of Death and the comparative salubrity of every part of England and Wales.

Your Annual Reports contain abstracts of the marriages and births, of the deaths, of the ages at death, and of the causes of death in all the districts, counties, and divisions of England and Wales during every successive year since civil registration commenced.

Thus the Annual Report, the Quarterly Report, and the Weekly Tables show, soon after the events have occurred, all the principal movements of the population of which knowledge is required for immediate administrative purposes.

The determination of the law of mortality requires an extensive area of observation, both in space and time, to eliminate accidental perturbations. And the causes affecting the life of children, of adults, and of old people,—of males and females,—of persons in different occupations, are so various that we can only hope to unravel their influence by a general analysis of the phenomena in different places through a series of years.

As helps towards this analysis several series of Tables have appeared in the Appendices to your Reports.

The division of the country for registration purposes is based upon the Poor Law Unions which have towns in their centre, and our calculations have gone generally to show the mortality in the districts of England and Wales. The Ninth Report showed the rates of mortality of males and females at each of seventeen periods of life, and at all ages, in the eleven Divisions, in 40 counties of England; the three ridings of Yorkshire; in North and South Wales; and in 324 groups of districts. The calculations are founded upon the living at ages enumerated at the Census of 1841, and upon the deaths at the same ages in the seven years 1838-44.*

Again, the Sixteenth Report contains Tables of the density of the population, and of the annual mortality, during the ten years 1841-1851. The rates of mortality are deduced from the registered deaths in the ten years 1841-50, and from the populations enumerated at the Censuses of 1841 and 1851. The facts are printed in detail in the Thirteenth Report. The corresponding facts for the years 1851-60 will be found in the Twenty-third Report.

The present volume, in a Table (pp. xxxvii-lviii), shows the annual rate of mortality per 1000 in all the districts, counties, and divisions of England during each of the decenniads 1841-50 and 1851-60. It also exhibits in an elaborate series of Tables (pp. lix-cxv) the deaths and the rate of mortality among males and females of the ages under 5 years, 5-10, 10-15, 15-20, 20-25, 25-35, 35-45, 45-55, 55-65, 65-75, 75-85, 85 and upwards; as well as the causes of death at all ages.

It is shown in the Introduction to the English Life Table that the mean of the population at the beginning and end of a period is somewhat above the mean numbers living through the period, when

* See Ninth Annual Report of Registrar-General.

the population of a district increases in geometrical progression, and that consequently when the deaths of such a district are divided by the living thus determined the quotient is rather too small; * so the rate of mortality in the present series of Tables is slightly understated in the districts increasing in a geometrical ratio. The labour of obtaining the years of life by integration would have been beyond the compass of the force at our disposal; and such errors as have been mentioned are of little practical importance in dealing with the limited numbers of even large districts, subject to various local disturbances from migration and other causes, and only yielding results approximating more or less to settled averages. Some inaccuracies in the statement of the ages also interfere with the results, but to a less extent than might at first be supposed; † and they will not interfere essentially with the comparisons to be drawn between the rates of mortality in the various town and country districts of the kingdom.

In the large hospitals and lunatic asylums the mortality is so much higher than the mortality of the rest of the population that the mortality of the district deduced from the living and dying, including hospital patients, does not correctly express the mortality of the inhabitants of the place. We have not been able to eliminate this element of disturbance in the Tables of ages, but in the Table (pp. xl-lviii) this correction has been to some extent carried out. Local inquirers alone are in a condition to correct effectively local derangements.

I. THE RATE OF MORTALITY AND THE PROBABILITY OF DYING.

If on an average of years out of 1000 children born simultaneously, 149 die in the twelve months following the date of birth, the probability of dying is expressed by the fraction 0.149: that is the *death-chance* of a new-born infant under the given law of mortality. As 851 of them survive, 0.851 is the fraction to express the probability of living; it is the *life-chance*. Now $0.851 + 0.149 = 1 = \text{life-chance} + \text{death-chance}$.

This probability is often expressed thus: the chances are 851 to 149 that a new-born child will live a year. The value of £1 payable if the child should live a year is 17s. (£.851); the value of £1 payable on the death of the child is 3s. (£.149); the chances in favour of life being greater than the chances in favour of death.

The lives may be looked at with a view to determine the persistency of the life-force; which is such in the present case, that 851 live out of 1000 during one revolution of the earth; at the age of 20 it is such that 992 out of 1000 men live a year. The proportions vary under varying conditions, but these variations do not accurately denote the vital force, which is only correctly measured on the *scale of mortality*.

The mortality is determined by the ratio which the deaths bear to the years of life. † "The men living, and the time expressed in years, multiplied into each other, produce the years of life with which the deaths are compared. A year of life is the lifetime unit." It is represented by one person living through a year; or by two persons living through half a year. A regiment of an average strength of 1000 men during three years represents 3000 years of life; and if the deaths in the three years are 60, the rate of mortality is thus expressed:

$m = \frac{60}{3000} = .02$; or the mortality is said to be at the rate of 2 per cent. per annum. The 100 years of life are a fixed quantity; and as it is found that under various circumstances, and at different ages, the rate varies from 1 to 2, 3, 4, 5 up to 50, this scale serves to measure the life-force,

* See Introduction to English Life Table, pp. xiv to xx.

† See Introduction to English Life Table, page xxi, where the error and its natural correction are discussed.

‡ See Introduction to English Life Table, pp. xiv to xx.

or the complementary death-force, in the same way as the centigrade scale of the thermometer serves to measure heat.

A thermometer is not a convenient measure of heat unless at all temperatures it contains the same quantity of mercury, and unless each degree measures equal expansions of the mercury. If the mercury escapes, a correction is required to give the expansion of equal quantities of mercury at every degree of temperature. In observing with the barometer, the measure is adjusted at both ends, so as to give the exact height of the column above the mercury in its well.

So, to determine the rate of mortality on a strength of 1000 men joined by no recruits, it is necessary to take their mean strength during the whole period of observation; for if one man dies at the end of a week, 999 only remain afterwards exposed to risk, and if the numbers are reduced at variable intervals to 990, to 985, to 911, to 700, to 600, and so on, it is evident that the years of life in the same time will be less than the years of life in a regiment which obtains a recruit for every casualty. All that is required in such cases is to take the observations so as to give the true years of life; and the ratio which these years of life bear to the deaths is the exact measure of the mortality. It is evident, on the other hand, that such a measure is not supplied by a comparison of the deaths in a year, for example, to the living at the beginning of that year. The results by this method are only strictly comparable when the deaths are in the same proportion and occur in the same periods of the year.

By the English Life Table 1000 infants followed through their first year of age yield nearly 903 years of life; and the mortality is at the rate of $\frac{149}{903}$, or, more correctly, $\frac{149+93}{902.781} = .16559$. It is 16.559 per cent. per annum. The probability of dying is .149493; and upon the erroneous assumption that this is the rate of mortality it would be 14.949 per cent. per annum; less by 1.610 than the true rate, with which it should never be confounded.

At other ages than the first year the rate of mortality serves to give the probability of living a year, and thus supplies the fundamental elements of a Life Table. The difference between the rate of mortality (m), and the probability of dying (p), becomes less in proportion as the two fractions diminish; for upon the hypothesis that the deaths in a year occur at equal intervals in the year, the relation of p and m is thus expressed:

$$p = \frac{1 - \frac{1}{2}m}{1 + \frac{1}{2}m} = \frac{2 - m}{2 + m}.$$

II. MORTALITY AT DIFFERENT STAGES OF LIFE.

The Mortality of Infants.

As there are difficulties in determining the ages of the oldest people in the population, so there are great difficulties in determining the rate of mortality among infants, from the want of exactly observed facts. The infants in the first year of life are to some extent mixed up with infants in the second year of age; and their numbers fluctuate from year to year, owing to fluctuations in the births, and the mortality from zymotic and other diseases, so that the years of infant life cannot be accurately deduced from decennial enumerations of the infants living at the date of the Census. Again, the mortality diminishes so rapidly after the date of birth, and at such various rates under different conditions, that it is necessary to subdivide the first year into months, and even days, to get results exactly comparable. The still-born children in England are not registered; and a certain number of infants that breathe for a short time are, it is believed, to save the burial fees, interred as the still-born are buried, and so escape registration. Upon the other hand, the deaths

of premature children born alive are registered; and they amounted to 45,814 out of 626,340 deaths of infants under 1 year of age in the six years (1858-63) that they have been distinguished from infants dying of debility (see Table I.) The recognized proportion is 7.315 per cent., so that to obtain the rate of mortality among children born at the full term of nine months, the premature children, if we had the means, should be struck out of the account both of the living and dying. This is impossible in the present state of statistical observation. But it happens that these deaths of premature children serve as probably more than a sufficient set-off against the infants of full term dying soon and escaping registration.

The age of man is reckoned from the date of birth; but before that date the foetus has lived its intra-uterine life, and the instant in which the sperm-cell and germ-cell intermingle is the true time of the embryo's origin. Respecting the rate of embryonic mortality there is little definite information; but it is probable that as the mortality in the first year of breathing life rapidly increases as we proceed backwards from the twelfth to the third, second, and first month, the same law prevails during embryonic life, until we arrive at the destruction of an immense proportion of the spermatozoa and ova which are provided to secure the continuation of the species. This question well deserves the attention of the Obstetric Society, and is intimately connected with abortions, miscarriages, and still-births.*

The annexed Table (Table II.) from the English Life Table shows the estimated numbers of males and females surviving each month, and the annual rates of mortality in each month. It will be observed that the rate of mortality rapidly declines month by month; and that the mortality of boys in every month exceeds that of girls, so that at the end of the first year the number of boys does not greatly exceed the number of girls.

The mortality of infants in FRANCE was such in the first year as to reduce 1,000,000 to 820,065, according to the experience acquired by following the births in 1856-60 for the 12 months following. The deaths were 179,935, and the probability of dying 0.179935.

The French returns show the deaths in the first week of life; and by the returns of 1856 the mortality was at the rate of 154 per cent. per annum in the first seven days, 120 in the second seven days, and 54 in the sixteen days following. The mean births were 927,226; the deaths in the three periods were 27,002, 20,517, and 20,618, making 68,137 deaths

TABLE I.—Deaths of Children in the First Year of Age from All Causes and from Premature Birth in England and Wales in each of the Years 1858 to 1863.

YEARS.	BOTH SEXES.		BOYS.		GIRLS.	
	ALL CAUSES.	PREMATURE BIRTH.	ALL CAUSES.	PREMATURE BIRTH.	ALL CAUSES.	PREMATURE BIRTH.
	1858	103,837	7,306	57,816	4,141	46,021
1859	105,629	7,432	58,932	4,228	46,697	3,204
1860	100,984	7,642	56,892	4,328	44,002	3,514
1861	106,428	7,610	59,673	4,371	46,755	3,239
1862	101,373	7,704	56,960	4,290	44,413	3,414
1863	108,089	8,120	60,707	4,554	47,382	3,566

* Dr. Granville has the merit of having called attention to the importance of the subject. In his *Report of the Practice of Midwifery at the Westminster General Dispensary*, for 1818, he showed that of 400 pregnant married women who applied at the Dispensary 128 had miscarried within the previous ten years one time or more; in all 305 times. The 128 women had given birth during the same term of years to 556 live children, 305 dead embryos. 272 of the women had not miscarried at all; and Dr. Granville does not say to how many living children they had given birth. Of the 305 miscarriages, 185 occurred in the first 3 months of pregnancy, 65 in 3-6 months, and 55 in 6-8 months. (pp. 39-48.)

in the first month of life. So out of 1,000,000 births 29,121 die in the first week, 22,128 in the second week, and 22,236 in the sixteen days following.

In England and Wales the deaths of 2,374,379 infants in the first year of age were registered in the 26 years 1838-63; and of the number 1,329,287 were boys, 1,045,092 were girls.

996,630 deaths at the same age were registered in the ten years 1851-60; of boys 557,213, and of girls 439,417. Nearly 100,000 infants died annually; in the proportion of about 56 boys to 44 girls.

Causes of Death in Infancy: Age 0-1.

The causes of death are necessarily obscure. The small organs are not fully developed, and the functions are often not easily explored. Of the subjective symptoms no information is supplied by the little patient.

When the zymotic diseases are fully developed they are distinguishable in infants. The Table (pp. 2 and 3) shows the number of deaths from the various species. Whooping-cough was fatal in infancy; but the bowel complaints were nearly three times as fatal as whooping-cough. Thus in the ten years 5,027 boys and 4,114 girls died annually of diarrhoea, dysentery, or cholera. From all zymotic diseases, 11,442 boys and 9956 girls died annually. Of scrofula, phthisis, and hydrocephalus 3547 boys and 2723 girls died annually.

The convulsive diseases and other affections of the brain and spinal chord were fatal to 12,448 boys and 9171 girls of the first year of age annually. The diseases of the lungs were less fatal. 607 of the boys and 532 of the girls died by accidental or other violence yearly.

Nothing is known in our statistics about the still-born, as they are not at present registered, on the ground that it is difficult to distinguish them from abortions and miscarriages. But the difficulties are not insuperable; and in many ways the facilities of burying still-born children unregistered throw open the gate of temptation to crime.

TABLE II.—Life Table for each Month of the First Year of Age and Annual Rate of Mortality per Cent. of Children at each Month under 1 Year of Age in England and Wales.

AGE.	LIVING at 0 and at the end of each Month of Age.			DEATHS in each Month of Age.			ANNUAL RATE of MORTALITY per Cent. at each MONTH under 1 Year of Age.			AGE.
	l_x			d_x			m_x			
	$\frac{x}{12}$ (Months.)	BOTH SEXES.	BOYS.	GIRLS.	BOTH SEXES.	BOYS.	GIRLS.	BOTH SEXES.	BOYS.	
0	1,000,000	511,745	488,255	46,503	26,787	19,716	57.132	64.501	49.455	0-
1	953,497	484,958	468,539	17,195	9,640	7,555	21.837	24.093	19.507	1-
2	936,302	475,318	460,984	12,178	6,758	5,420	15.710	17.184	14.192	2-
3	924,124	468,560	455,564	10,100	5,598	4,502	13.187	14.423	11.918	3-
4	914,024	462,962	451,062	9,550	5,320	4,230	12.604	13.869	11.306	4-
5	904,474	457,642	446,832	9,033	5,044	3,989	12.050	13.299	10.761	5-
6	895,441	452,598	442,943	8,547	4,771	3,776	11.509	12.717	10.276	6-
7	886,894	447,827	439,067	8,087	4,498	3,589	10.992	12.114	9.849	7-
8	878,807	443,329	435,478	7,657	4,229	3,428	10.501	11.502	9.484	8-
9	871,150	439,100	432,050	7,253	3,959	3,294	10.033	10.868	9.184	9-
10	863,897	435,141	428,756	6,872	3,691	3,181	9.584	10.222	8.636	10-
11	857,025	431,450	425,575	6,518	3,424	3,094	9.161	9.561	8.176	11-12
12	850,507	428,026	422,481	—	—	—	—	—	—	—

NOTE.—This Table was calculated from the Corrected Births and from the Deaths registered in the 17 Years 1838-1854 under 3 months, at 3 and under 6 months, and at 6 months and under 1 year (see Note to Table VII., p. xxiii of English Life Table). Of 1,000,000 Persons born, 953,497 were living at the end of the first month of age, 46,503 having died in the interval, of whom 26,787 were Males and 19,716 were Females; 936,302 were living at the end of the second month, and the deaths in that month were 17,195, of whom 9,640 were Males and 7,555 were Females. The Annual Rate of Mortality per Cent. of Infants under 1 month was 57.132, viz., Males 64.501, Females 49.455, and so on for other Ages.

Children under Five Years of Age: 0-5.

NOTE.—The Rates in the text show the deaths to 100 living, unless another basis is indicated.

By the English Life Table, the mortality, it will be seen, decreases rapidly after the first year of life. The annual mortality of males per cent. in each of the first five years of age is 18.326, 6.680, 3.624, 2.416, and 1.799; of females 14.749, 6.436, 3.603, 2.450, and 1.785.

The mortality of males by the Life Table under five years of age is 7.014, of females 6.125. During the ten years, 1851-60, the mortality of males of ages (0-5) in somewhat different proportions was 7.243 per cent., of females 6.274 per cent. The proportions of the first and second year's children are higher in the increasing population than they are in the Life Table.

When the mortality by each cause is treated of, we may take, to avoid fractions, 1,000,000 males living a year for basis; then to that number the annual deaths of zymotic diseases were by small-pox 1047, typhus, typhia, and typhina inclusive, 1401, measles 2847, whooping cough 3246, scarlatina 4311, diphtheria 431, cholera, diarrhoea, and dysentery 5625; making, with others, 22,420 deaths out of 1,000,000 boys by all zymotic diseases, against 21,772 out of the same number of girls. Whooping cough was more fatal to girls than it was to boys in the proportion of 4003 girls to 3246 boys; so was typhus or typhia; all the other zymotics were more fatal to boys than to girls.

Cancer was fatal to few children; and the deaths were probably from soft cancer (fungus hæmatodes). There were many deaths from scrofula and phthisis. Hydrocephalus killed boys in the proportion of 2915 to 2162 girls; other diseases of the brain in the proportion of 12,169 boys to 9479 girls. These brain diseases constitute a sixth part of the mortality of the young boys, and between one sixth and one seventh of the mortality of girls.

TABLE III.—Average Annual Number of Deaths of Males by different Causes at certain Ages to 1,000,000 Males living of those Ages in England in the TEN YEARS 1851-60.

Diseases.	PROPORTIONAL NUMBERS TO 1,000,000 living.											
	AGES.—Males.											
	0-5	5-10	10-15	15-20	20-25	25-35	35-45	45-55	55-65	65-75	75-85	85 and upwds.
All Causes - - -	72,433	8,510	4,881	6,689	8,829	9,574	12,481	17,956	30,855	65,332	146,671	310,983
Small-pox - - - -	1,047	271	70	105	174	119	69	53	34	27	19	30
Measles - - - - -	2,847	262	32	11	8	5	3	2	1	1	1	—
Scarlatina - - - -	4,311	1,985	461	146	67	39	30	20	15	10	8	—
Diphtheria - - - -	431	228	85	39	21	11	12	9	11	14	20	30
Whooping cough - -	3,246	133	6	1	1	1	1	3	4	1	—	—
Typhus - - - - -	1,401	937	687	858	850	673	649	779	1,043	1,563	1,740	1,471
Cholera, Diarrhoea, and Dysentery	5,625	233	111	113	180	241	319	492	938	2,230	4,927	7,690
Other Zymotic Diseases - - -	3,512	463	179	204	207	324	518	714	1,084	1,941	3,320	4,603
Cancer - - - - -	21	10	8	16	27	63	175	422	931	1,504	1,734	1,360
Scrofula and Tabes Mesenterica -	2,066	312	250	228	212	160	115	126	143	185	122	91
Phthisis - - - - -	1,329	525	763	2,397	4,055	4,034	4,005	3,850	3,333	2,389	977	549
Hydrocephalus - - - -	2,915	396	105	31	12	7	7	7	8	8	12	—
Diseases of the Brain - - - -	12,169	607	361	397	440	638	1,180	1,990	4,097	9,331	17,088	19,785
Diseases of the Heart and Dropsy	426	240	241	322	347	514	1,002	1,898	4,130	8,714	12,409	10,617
Diseases of the Lungs - - - -	11,296	585	221	335	545	772	1,524	3,092	6,616	13,416	21,088	25,608
Diseases of the Stomach and Liver	1,470	258	219	268	326	464	390	1,664	3,032	4,837	5,246	4,375
Diseases of the Kidneys - - - -	66	47	47	77	105	174	292	471	937	2,453	4,265	4,298
Diseases of Organs of Generation	5	1	1	3	2	2	4	7	11	19	27	38
Diseases of the Joints - - - -	56	71	93	91	80	61	62	79	113	165	142	91
Diseases of the Skin - - - -	164	12	10	13	14	14	23	43	85	202	407	511
Violent Deaths - - - -	1,451	643	769	863	949	999	1,152	1,369	1,613	1,810	2,248	3,270
Other Causes * - - - -	16,579	291	162	174	207	259	450	889	2,680	14,012	70,871	225,166

The Table may be read thus:—Of 1,000,000 males living in England aged 25 and under 35, 9,574 died annually, on an average of the Ten Years 1851-60, viz., 119 by Small-pox, 673 by Typhus, 4,034 by Phthisis, 772 by Diseases of the Lungs, and so on for the other diseases.

* The diseases included under the head of "Other Causes" are Gout, Noma, Mortification, Premature Birth, Cyanosis, Spina Bifida, Other Malformations, Teething, Paramenia, Old Age, Atrophy and Debility, Sudden Deaths, and Causes not specified. The majority of deaths from these Causes are those of children and of persons of advanced ages. In the year 1860 the number of male children under 5 years of age referred to "Other Causes" amounted to 20,188, of males aged 65 and upwards 14,421, and of males of all other ages (5 and under 65) 2,998.

Convulsions in infancy is the capital head under which these affections accumulate. Like diarrhoea, convulsion is the result of teething, local irritations, poisons, zymotic action in the early stage, before the development of its characteristic symptoms. The nerve-force is thrown into motion by a great variety of causes; and the convulsion of the muscles is so striking a symptom that it overwhelms all others, some even more dangerous in their essence.

The heart and lungs—the great seats of the circulatory and respiratory systems—are intimately connected. Death ensues when the heart does not beat. The stoppage of the breath, or anything to prevent the access of oxygen and the expulsion of carbonic acid, is fatal. Thus from the affections of the respiratory system we have a mortality of 11,296 boys and 9499 girls per million. The lung and the brain diseases of girls are equally fatal.

The diseases of the digestive organs produced a mortality of 1470 boys and 1121 girls.

The maladies of the urinary organs, of the organs of generation, of the joints (excluding scrofula), and skin are rarely fatal in childhood.

The violent deaths are nearly as fatal as the idiopathic diseases of the digestive organs, for 1451 boys 1138 girls per million living died annually by violence.

Under other causes are included premature births, atrophy, and debility, malformations, teething, as well as cases in which the causes are unspecified. There are 16,579 annual deaths to a million boys, and 13,885 deaths to a million girls, from a group of causes, including malformations, premature birth, atrophy, debility, and other ill-defined developmental diseases.

Mortality of Children (0-5) in different districts.

Death in childhood is an unnatural event, inasmuch as the regular series of development of the human structure from the germ-cell to the perfect man in his prime, and in his last declining stage of existence, is

TABLE IV.—Average Annual Number of Deaths of Females by different Causes at certain Ages to 1,000,000 Females living of those Ages in England in the TEN YEARS 1851-60.

Diseases.	PROPORTIONAL NUMBERS TO 1,000,000 living.											
	AGES.—Females.											
	0-5	5-10	10-15	15-20	20-25	25-35	35-45	45-55	55-65	65-75	75-85	85 and upwds.
All Causes - - -	62,744	8,418	5,056	7,385	8,530	9,925	12,147	15,198	27,007	58,656	134,338	289,558
Small-pox - - - - -	1,021	243	76	81	91	68	37	23	14	10	9	20
Measles - - - - -	2,749	288	44	15	10	8	4	2	2	1	2	—
Scarlatina - - - - -	4,071	1,998	528	154	79	48	31	19	14	11	9	—
Diphtheria - - - - -	430	280	124	44	19	15	12	10	9	11	12	15
Whooping-cough - - - -	4,003	215	14	2	2	1	1	4	4	3	2	—
Typhus - - - - -	1,434	1,077	878	1,026	781	627	597	647	888	1,279	1,435	1,273
Cholera, Diarrhoea, and Dysentery	4,899	224	101	109	171	271	372	473	826	2,157	4,675	7,394
Other Zymotic Diseases - - -	3,165	453	179	170	172	204	278	381	683	1,549	2,663	3,685
Cancer - - - - -	23	9	9	18	30	141	592	1,278	1,853	2,351	2,353	2,259
Scrofula and Tabes Mesenterica -	1,773	253	214	189	132	120	106	108	136	146	114	69
Phthisis - - - - -	1,281	620	1,292	3,515	4,289	4,575	4,175	3,120	2,383	1,635	754	474
Hydrocephalus - - - - -	2,162	331	98	30	8	6	4	5	5	7	8	—
Diseases of the Brain - - - -	9,479	558	356	408	494	532	872	1,681	3,818	8,905	15,026	16,460
Diseases of the Heart and Dropsy	356	215	272	352	390	603	1,118	2,064	4,558	8,916	11,531	9,347
Diseases of the Lungs - - - -	9,499	607	240	342	413	582	1,049	2,062	5,027	11,016	17,648	21,796
Diseases of the Stomach and Liver	1,121	245	194	307	406	570	937	1,608	2,967	4,692	4,958	3,714
Diseases of the Kidneys, &c. - -	38	24	30	43	69	109	151	212	317	485	470	365
Ovarian Dropsy and Uterus - - -	7	3	2	15	46	98	208	290	310	315	256	158
Diseases of the Joints - - - -	53	53	62	61	39	44	56	62	92	121	101	84
Diseases of the Skin - - - -	157	9	8	8	8	12	22	31	75	191	319	404
Childbirth and Metria - - - -	—	—	—	—	—	—	—	—	—	—	—	—
Violent Deaths - - - - -	1,188	427	164	156	125	127	176	274	382	718	1,854	4,064
Other Causes - - - - -	13,885	289	171	196	206	278	446	777	2,548	14,140	70,139	217,977

interrupted. But life at all ages depends upon so many conditions, and is exposed to so many risks, that out of given numbers living some die at every age, and we can only take for a practical standard the lowest authenticated rates of mortality.

TABLE V.—Average Annual Number of Deaths of Males by different Causes at certain Ages to 1,000,000 Deaths of Males from All Causes in England in the TEN YEARS 1851-60.

Table with columns for Diseases, Proportional Numbers to 1,000,000 Deaths from All Causes, and Ages—Males (0-5, 5-10, 10-15, 15-20, 20-25, 25-35, 35-45, 45-55, 55-65, 65-75, 75-85, 85 and upwds.).

The Table may be read thus:—Of 1,000,000 deaths of males aged 25 and under 35 in England annually, on an average of the Ten Years 1851-60, 12,473 were by Small-pox, 70,266 by Typhus, 421,391 by Phthisis, 80,599 by Diseases of the Lungs, and so on for the other diseases.

TABLE VI.—Average Annual Number of Deaths of Females by different Causes at certain Ages to 1,000,000 Deaths of Females from All Causes in England in the TEN YEARS 1851-60.

Table with columns for Diseases, Proportional Numbers to 1,000,000 Deaths from All Causes, and Ages—Females (0-5, 5-10, 10-15, 15-20, 20-25, 25-35, 35-45, 45-55, 55-65, 65-75, 75-85, 85 and upwds.).

Thus in the 63 Healthy Districts of England the annual mortality of boys under five years of age was at the rate of 4.348, and of girls 3.720 per cent.; the mean being 4.034.

Twenty-eight districts have been selected, showing the low annual rate of mortality 3.348 for the mean of the rates of the two sexes: the boys dying at the rate 3.576, the girls at the rate 3.120.

TABLE VII.—Numbers living in 1861, and Deaths in 10 Years 1851-60 of Children under 5 Years of Age, in 28 DISTRICTS where the average annual Rate of MORTALITY of Boys of that Age in the 10 Years was below 4 per Cent.

Table with columns for No. of District, DISTRICTS, LIVING under 5 Years of Age in 1861 (Males, Females), and DEATHS of CHILDREN under 5 Years of Age in 10 Years 1851-60 (Males, Females).

TABLE VIII.—Average Annual Rate of Mortality per Cent. of CHILDREN under 5 Years of Age in the 10 Years 1851-1860 in 28 DISTRICTS where the MORTALITY of BOYS at that AGE was below 4 per Cent., arranged in the Order of the Mean Mortality.

Table with columns for No. of District, DISTRICTS, and CHILDREN UNDER 5 YEARS OF AGE (Mortality per Cent. for Both Sexes (Mean), Boys, Girls).

A strict investigation of all the circumstances of these children's lives might lead to important discoveries, and may suggest remedies for evils of which it is difficult to exaggerate the magnitude.

The weaker lives, it is said, are, under this state of things, cut off; but it must also be borne in mind that many of the strongest children are wounded and are left weakly for life.

TABLE X.—Average Annual Rate of Mortality per Cent. of Children under 5 Years of Age in the 10 Years 1851-60, in 151 Districts where the MORTALITY OF BOYS of that Age was 7 per Cent. and upwards, arranged in the Order of the Mean Mortality.

No. of District.	DISTRICTS.	CHILDREN UNDER 5 YEARS OF AGE.			No. of District.	DISTRICTS.	CHILDREN UNDER 5 YEARS OF AGE.		
		MORTALITY PER CENT.					MORTALITY PER CENT.		
		Both Sexes. (Mean)	Boys.	Girls.			Both Sexes. (Mean)	Boys.	Girls.
65	Canterbury	6.333	7.084	5.582	20	Shoreditch	7.733	8.276	7.189
547	Houghton-le-Spring	6.365	7.126	5.604	498	Halifax	7.771	8.256	7.286
437	Mansfield	6.417	7.124	5.709	34	Rotherhithe	7.772	8.268	7.276
510	Doncaster	6.458	7.017	5.898	478	Burnley	7.790	8.405	7.174
513	Selby	6.488	7.069	5.906	551	Gateshead	7.810	8.281	7.338
504a	Pontefract	6.489	7.018	5.959	24a	Stepney	7.843	8.368	7.317
384	Kidderminster	6.509	7.055	5.962	24b	Mile-end Old Town	7.851	8.290	7.412
517	Howden	6.510	7.153	5.887	462	West Derby	7.874	8.527	7.221
448	Chesterfield	6.520	7.249	5.790	469	Bury	7.895	8.676	7.113
456	Northwich	6.559	7.458	5.660	453	Macclesfield	7.938	8.604	7.272
69	Sheppoy	6.620	7.209	6.031	105	Southampton	7.971	8.582	7.359
10	Islington	6.688	7.145	6.230	19	London City	7.971	8.582	7.359
8	St. George Hanover Square	6.697	7.194	6.200	2	Chelsea	7.988	8.649	7.326
165	Towcester	6.711	7.148	6.273	505	Barnsley	8.000	8.606	7.393
360	Shrewsbury	6.723	7.292	6.153	476	Rochdale	8.108	8.670	7.546
503	Wakefield	6.730	7.155	6.304	476	Derby	8.113	8.784	7.441
1	Kensington	6.740	7.238	6.242	445	Stoke Damerel	8.169	8.795	7.542
171	Wellingborough	6.747	7.201	6.293	289	Leigh	8.273	9.165	7.380
387	Worcester	6.758	7.314	6.202	467	East Stonehouse	8.337	8.816	7.857
497	Huddersfield	6.760	7.306	6.213	288	Bermondsey	8.341	8.959	7.722
457	Congleton	6.764	7.236	6.291	28	Yarmouth	8.376	8.312	7.940
180	Biggleswade	6.819	7.417	6.220	228	Northampton	8.391	9.011	7.771
411	Blaby	6.833	7.803	5.863	168	Abergavenny	8.399	8.959	7.839
190	Ely	6.842	7.635	6.049	573	Norwich	8.421	9.229	7.612
571	Whitehaven	6.845	7.152	6.538	234	Foleshill	8.486	9.395	7.576
35	Greenwich	6.870	7.295	6.445	399	Sunderland	8.489	8.910	8.067
470	Barton-upon-Irwell	6.871	7.294	6.448	549	Dewsbury	8.526	9.402	7.650
310	Redruth	6.895	7.214	6.576	502	West Bromwich	8.529	9.117	7.940
246	King's Lynn	6.920	7.235	6.604	381	Marylebone	8.542	9.232	7.851
579	Pontypool	6.922	7.366	6.477	7	Hunslet	8.554	9.153	7.954
372	Leek	6.923	7.453	6.393	500	Hull	8.562	9.145	7.979
424	Holbeach	6.924	7.745	6.103	520	Crickhowell	8.596	8.996	8.196
63	Hoo	6.933	7.980	5.885	601	St. Martin-in-the-Fields	8.616	9.448	7.783
330	Clifton	6.937	7.415	6.459	5	St. James Westminster	8.638	9.017	8.259
580	Newport	6.944	7.422	6.466	6	Plymouth	8.797	9.470	8.124
546	Easington	6.948	7.385	6.510	287	Bristol	8.814	9.507	8.121
191	North Witheford	6.956	7.742	6.170	329	Chorlton	8.854	9.497	8.210
222	Ipswich	6.959	7.256	6.661	471	Strand	8.999	9.558	8.439
54	Medway	6.996	7.455	6.536	13				
184	Luton	7.034	7.568	6.499	465	Wigan	9.017	9.436	8.598
568	Carlisle	7.040	7.393	6.686	552	Newcastle-on-Tyne	9.111	9.444	8.777
96	Portsea Island	7.050	7.478	6.621	480	Blackburn	9.125	9.806	8.444
158	Oxford	7.051	7.531	6.571	4	Westminster	9.145	9.743	8.547
512	Goole	7.067	7.872	6.262	475	Oldham	9.153	9.985	8.321
398	Nuneaton	7.087	7.773	6.406	371	Stoke-on-Trent	9.201	9.913	8.489
282	Exeter	7.141	7.683	6.599	16	St. Luke	9.314	9.925	8.703
415	Loughborough	7.151	7.672	6.629	439	Radford	9.314	9.969	8.658
395	Aston	7.166	7.764	6.567	382	Dudley	9.349	9.841	8.857
496	Saddleshill	7.212	7.447	6.977	452	Stockport	9.382	9.996	8.768
463	Prescot	7.237	7.631	6.843	417	Leicester	9.387	10.050	8.723
369	Newcastle-under-Lyme	7.257	8.040	6.473	370	Wolstanton	9.389	9.921	8.857
192	Whittlesey	7.263	7.574	6.962	23	St. George-in-the-East	9.426	9.903	8.949
25	Poplar	7.283	7.757	6.809	380	Walsall	9.436	10.128	8.744
553	Tynemouth	7.321	7.697	6.944	394	Birmingham	9.448	10.029	8.866
507	Ecclesall Bierlow	7.328	7.811	6.844	468	Bolton	9.495	10.267	8.722
438	Basford	7.343	7.937	6.748	24	St. Saviour	9.618	10.151	9.085
541a	Stockton	7.357	7.806	6.908	27	St. Olave	9.653	10.099	9.206
541b	Hartlepool	7.357	7.806	6.908	14	Holborn	9.659	10.195	9.122
515	York	7.398	7.811	6.984	29	St. George Southwark	9.756	10.604	8.907
412	Hinckley	7.408	7.969	6.847	482	Preston	9.759	10.327	9.190
542	Auekland	7.412	7.748	7.075	472	Salford	9.798	10.635	8.960
9	Paneras	7.421	7.943	6.899	499	Bradford	9.842	10.538	9.146
30	Newington	7.441	7.916	6.966	474	West London	9.917	10.674	9.159
545	Durham	7.465	7.901	7.028	18	Merthyr Tydfil	9.985	10.750	9.220
477	Haslingden	7.476	8.116	6.835	582				
15	Clerkenwell	7.528	7.973	7.083					
85	Brighton	7.548	8.098	6.998	508	Sheffield	10.022	10.519	9.595
31	Lambeth	7.563	7.910	7.215	17	East London	10.149	10.878	9.419
550	South Shields	7.578	7.888	7.268	400	Coventry	10.203	11.194	9.212
466	Warrington	7.600	7.981	7.219	440	Nottingham	10.219	10.853	9.585
193	Wisbech	7.613	8.518	6.707	22	Whitechapel	10.246	10.659	9.822
519	Seulcoates	7.629	8.217	7.041	501	Leeds	10.277	10.892	9.662
494	Keighley	7.632	8.399	6.864	379	Wolverhampton	10.450	11.022	9.937
383	Stourbridge	7.634	8.387	6.880	12	St. Giles	10.852	11.691	10.013
581	Cardiff	7.636	7.998	7.273					
21	Bethnal Green	7.713	7.991	7.434	473	Manchester	11.725	12.380	11.070
451	Hayfield	7.725	8.578	6.871	461	Liverpool	13.198	13.741	12.654

Childhood: Age 5 and under 10 years: 5-10.

The child is at this age able to walk and to talk; his forces are greater, and his hold on life is firmer than it was. The rate of mortality declines with every year of age; and during the period of the ten years 1851-60 it was at the rate per cent. of .851 for males, .842 for females. The mean rate of mortality for the 25 years 1838-1862 was .883 and .876; so that in the years 1851-60 there is a reduction in the rate of mortality per cent. of boys .032 and of girls .034.

Zymotic diseases cause more than half (.451 boys and .478 girls per cent.) of the mortality at this stage of childhood; and of the zymotic diseases, scarlatina and fever (typhus, typhoid, and typhina, including typhoid and infantile intermittent fever,) were much the most fatal. The mortality from scarlatina is less by half than it was in the previous age, but it remains much more fatal than small-pox, measles, whooping-cough, diarrhoea, and other maladies of this class. Diphtheria, which has now taken its place among the fatal diseases of England, in this respect resembles scarlatina.

Scrofula, tabes, phthisis, hydrocephalus, and diseases of the brain contribute largely to the mortality of this age; so do diseases of the lungs.

In one hundred and sixty-three districts the rate of mortality in both males and females was less than .700; among boys it was .388 in the district of Shipston-on-Stour, and .398 in Bedale, .435 in Cranbrook, .492 in Sevenoaks, .414 in Petworth, .489 in South Stoneham, .441 in Andover, .411 in Ware, .498 in Royston, .470 in Henley, .474 in Brixworth, .499 in Shaftesbury, .458 in the Scilly Islands, .495 in Ludlow, .483 in Martley, .474 in Pershore, .414 in Billesdon, .476 in Leyburn, .453 in Askrigg, .446 in Reeth, .469 in Bellingham, .434 in Presteigne.

Among girls the lowest rates of mortality were recorded in the Scilly Islands .299, Billesdon .396, and Reeth .348.

Very different rates of mortality prevailed in thirty-one districts, where the mortality of males and females exceeded 1.000 per cent.: the mortality of boys was 1.256 in Bristol, 1.277 in Manchester, 1.311 in Merthyr Tydfil, 1.367 in St. James' Westminster, 1.391 in St. Giles (London), and 1.457 in Liverpool. The mortality of females in the same districts was 1.014, 1.220, 1.314, 1.065, 1.083, and 1.433. To boys and girls of this age the Liverpool district was the most fatal.

Boyhood: Age 10-15 years.

This is the age of puberty; and the mortality decreasing from birth is at its lowest rate about the middle of the period; among boys the mortality in the ten years was at the rate of .488, among girls at the rate of .506 per cent. Among 1000 boys less than 5 die every year. As boys actually ill are not sent to public schools, an average of 1 death in 200 boys there would imply an exceptionally high rate of mortality.

The deaths of boys arise chiefly from injuries under the class of violence .077, from consumption .076, from fever .069, and from scarlatina .046.

Girls die much less frequently of violence, including burns, than boys; their mortality from this class of causes is only .016. Upon the other hand they suffer much more than boys from consumption; which at this early age shows its predilection for their sex. How much organization, in-door life, and compression of the chest, interfering with the free action of the breathing organs, have to do with the excess of consumption in girls, it is difficult to say.

Of the salutary effects of free breathing in the open air there can be no doubt, and if they are studied, it is probable that among them will be found the reduction of the mortality by consumption from .129 to a figure nearer that of boys, .076, which is still much higher than it ought to be.

Fever, scarlatina, and diphtheria are more fatal to girls than boys.

The mortality of boys of the age 10-15 in all England is .488; but there are ninety-five districts in which the mortality is below .350; in the Stockbridge district their mortality was at the rate of .198; in Catherington .144; in Penrith .220; in Easingwold and in Bedale .215.

In Merthyr Tydfil the mortality of the boys was 1.089; at this age it is the highest rate in England. Sedbergh .936, Abergavenny .877, and Leek .861 stand next on the list. The mortality exceeds .700 in Macclesfield, Congleton, Wigan, Auckland, Easington, Houghton-le-Spring, Chester-le-Street, Neath, Llanelly, Aberayron, and Festiniog.

Occupation, at this age, plays a part in the mortality; and in the mining districts many of the boys are killed under ground.

Youth: Age 15-20 and 20-25.

Growth continues through the whole of these ages; and the body attains its full strength at 25, which is near the average age of first marriage in England.

Men are now exposed to the full influence of their occupations; but the effect is sometimes only developed later in life, as is the case in respect to Cornish miners.

The mortality after the age of 15 increases; thus proving that the vital tenacity of men is not proportional to their growth, size, vigor, or intelligence.

The mortality at the age 15-20 in all England is at the rate of .669 per cent. for men, and .738 for women; at the age of 20-25 the mortality is .883 for men, and .853 for women.

The zymotic diseases, which are exceedingly infectious, and occur only once in life, such as measles and whooping-cough, have generally been undergone before the age of 20. Scarlatina and diphtheria also subside as the persons remaining unaffected diminish. Small-pox is, however, more fatal at the age 20-25 than it was at 10-15, implying, perhaps, that vaccination was not so common 20 years as it was 15 years ago, rather than any diminution in the efficacy of vaccination as age advances. Fever is the most fatal zymotic disease at these ages; that it is more fatal than it is at the age 25-35, is due probably to the exposure of immigrants in the towns to the various forms of typhine, and to their subsequent comparative immunity from its effects. The mortality from fever of men of the two ages was .086 and .085; of women .103 and .078. Young girls are more exposed than young men to the sources of typhoid fever, which Dr. Murchison has aptly designated pythogenic fever. The mortality by violent deaths was .086 and .095 among men of these two ages; and only .016 and .013 among women. But one cause of death at these ages is peculiar to women; the mortality from childbirth, including metria or the fever of that name, is .014 and .061. These deaths thrown in do not compensate for the excess of deaths by violence among men; but phthisis is so much more prevalent among young women than it is among young men, that it more than compensates at 15-20 for the excessive deaths by violence among young men. The mortality by phthisis at the two ages was .240 and .406 for men, .352 and .429 for women. Half the deaths of young women at these ages are by consumption.

The mortality of males at the age 15-20 is lower than .400 per cent. from all causes in thirty districts of the country, and exceeds .800 in eighty-five districts. The mortality of districts is swollen at this age and the age following by deaths in hospitals, to which unmarried men often resort in great numbers. Several Welsh and other rural districts also figure here.

The mortality of males from all causes at the age 20-25 is below .500 per cent. in twelve districts; and above 1.200 in 42 districts.

Reproductive Age: 25-35.

At this age 67 in 100 of the men are husbands and 67 in 100 of the women of England are wives, or 2 in 3; and a considerable proportion of them are parents. By early death 2 of 100 men are left widowers and 3 of 100 women are widows.

The mortality of men at this age is .957 per cent., of women .992 per cent. Fever is the chief zymotic disease; .067 for men and .063 for women; but the mortality by diarrhoea, dysentery, and cholera is growing greater; it is .024 for men and .027 for women. Phthisis is the great preponderating malady; the mortality by it was .403 for men and .458 for women. By violence the rate was .100 for men, .013 for women; but at this age childbirth induces a mortality of .089; thus making the mortality under these two heads greater than the mortality of men by violence.

The diseases of the brain, of the heart, and of all the important organs begin to grow more fatal; but the organs give way much more frequently at later ages.

In thirty-three districts the mortality of men was at rates below .650 per cent.; in Kettering the mortality was .508, Thrapstone .597, Evesham .557, Pershore .597, Billesdon .573, Bourn .545, Gainsborough .579, Wetherby .588, Tadcaster .538, Pocklington .562, Reeth .569, Easington .581, Longtown .596.

The mortality exceeded the rate of 1.500 per cent. in eleven districts; it was 1.995 in Gravesend, 1.719 in the Scilly Islands, 1.547 in Aberayron, and 1.596 in Liverpool. The high mortality 2.010 in Barnet is due to a lunatic asylum; in Alverstoke, East Stonehouse, and the Medway, to hospitals.

Manhood: Age 35-45.

A large proportion of the men and women of this age are settled, are married, and have children. Their occupations for life are fixed, and the effects of workshops on health and disease are sometimes perceptible.

The mortality of men is at the rate of 1.248 per cent. The mortality by fever .065 is lower than it is at any other age, as the number of susceptible persons has diminished, and the diminution is not yet counteracted by the high rate of mortality from advancing age among those attacked. Cholera, diarrhoea, and dysentery .032 and other zymotic diseases (.052) are fatal to some extent; but by all zymotic diseases the mortality is .160. Consumption is still the great fatal disease .400; as to it a third of the deaths are referable. But the brain, heart, lungs, stomach, and kidneys show signs of wear; and the mortality from all the classes of monorganic diseases is double that of the previous period. Violent deaths kill at the rate of .115; as like accidents grow more fatal.

The mortality of females 1.215 is not quite at so high a rate as the mortality of males; either in the class of zymotics, or in the brain, lung, and kidney diseases. The mortality by violence is only .018 among females against .115 among males; but this is nearly counterbalanced by the deaths of women from childbirth .090, and ovarian dropsy .021. Cancer, a terrible disease developing with years, now makes an impression in the catalogue of women's diseases; its mortality is for men .018, for women .059 per cent.

While the mortality of men in England was at the rate of 1.248 per cent. there were seventy-one districts in which the rate of mortality was below .800. The rate was .507 in Holsworthy, .516 in Market Bosworth, and .539 in Longtown.

The mortality exceeded 1.800 per cent. in twenty-five districts; nearly all of them in large towns, and nearly all of them containing large hospitals or large lunatic asylums, where many patients die at these ages, and at the three ages following.

The mortality of men in London, for example, at this age is 1.629 per cent.; and .303 of that mortality, little less than a fifth of the whole, takes place in the great hospitals. The mortality of London women at the same age is only 1.281; and only .127 per cent. of them die in the hospitals.

Manhood: Age 45-55.

At this age the intellect is developed and athletic power declines: the reproductive age in women is nearly over.

The mortality of men was at the rate of 1.796 per cent.; to which zymotic diseases, chiefly fever and cholera, contributed .207; phthisis .383; the chief increase arising under the heads of monorganic diseases of brain, heart, lungs, stomach, and kidneys, covering .912 of the mortality. By violent deaths .137 died.

Women, except a few, have past the child-bearing age; and the mortality from this cause is inconsiderable. From all causes it is 1.520 per cent.; comprising from consumption .312, that of males being .383; of brain and nerve diseases .199 men and .168 women die; of heart diseases and dropsy .190 men and .206 women; of diseases of lungs

TABLE XI.—London 1861.

AGES.	TOTAL DEATHS (including Deaths in Hospitals).		DEATHS IN HOSPITALS.		DEATHS (excluding Deaths in Hospitals).		PROPORTION per Cent. of Deaths in Hospitals to Total Deaths.	
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
ALL AGES	33,105	32,146	2,450	1,378	30,655	30,768	7.401	4.287
0—	15,361	13,729	185	150	15,176	13,579	1.204	1.083
5—	1,236	1,223	97	75	1,139	1,153	7.848	6.107
10—	542	550	73	65	469	485	13.469	11.818
15—	709	702	137	125	552	577	22.144	17.806
20—	885	895	209	143	676	752	23.616	15.978
25—	2,075	2,083	484	216	1,591	1,867	23.325	10.370
35—	2,624	2,167	489	216	2,135	1,951	18.636	9.968
45—	2,608	2,273	386	171	2,222	2,102	14.801	7.523
55—	2,722	2,720	246	138	2,476	2,582	9.037	5.074
65—	2,487	2,332	106	55	2,381	2,277	4.262	1.376
75—	1,525	2,254	15	21	1,510	2,233	.984	.932
85 & upwards.	331	613	3	3	328	610	.906	.459

TABLE XII.—London 1851-60.

AGES.	MORTALITY to 100 of the POPULATION of LONDON (including Deaths in Hospitals).		ESTIMATED* MORTALITY to 100 of the POPULATION of LONDON (excluding the Deaths in Hospitals).		ESTIMATED MORTALITY in HOSPITALS to 100 of the POPULATION of LONDON.	
	Males.	Females.	Males.	Females.	Males.	Females.
ALL AGES	2.570	2.182	2.380	2.089	.190	.093
0—	8.311	7.295	8.211	7.215	.100	.080
5—	.970	.921	.894	.864	.076	.057
10—	.452	.415	.391	.366	.061	.049
15—	.625	.543	.487	.446	.138	.097
20—	.831	.648	.635	.544	.196	.104
25—	1.050	.875	.805	.735	.245	.090
35—	1.629	1.281	1.326	1.154	.303	.127
45—	2.468	1.806	2.103	1.670	.365	.136
55—	4.243	3.327	3.859	3.158	.384	.169
65—	8.522	6.959	8.159	6.829	.363	.130
75—	17.189	14.961	17.020	14.822	.169	.139
85 & upwards	31.441	28.892	31.156	28.750	.255	.142

* NOTE.—The estimated Mortality, excluding the Deaths in Hospitals, is obtained by diminishing the Mortality, including the Deaths of Hospitals, for the 10 years 1851-60 in the proportion which the total Deaths at each Age in London in 1861 bore to the Deaths, excluding the Deaths of Hospitals, in that year.

.309 men and .206 women. It is probable that the excessive mortality of men at this age—such as miners—is from the bad air and dust which they breathe at work. The diseases of the urinary organs are more fatal to men; those of the generative organs, including ovarian dropsy, to women. Of cancer, the mortality is .042 for men and .128 for women.

A considerable portion of the higher mortality of men is due to the excess in their deaths by violence; by which the mortality is .137 for men, and .027 for women.

While the mortality of men in England is 1.796, there are twenty-three of its districts in which the rate of mortality is below 1.000; in Ringwood it is .791, Holsworthy .783, Caxton .894, St. Faiths (Norwich) .821, Malmesbury .889, Winchcomb .890, Billesdon .828, Leyburn .886, and Rhayader .890.

Upon the other hand in twenty-six districts the annual mortality of men exceeded 2.600 per cent. Fifteen of the districts are in London; and the following five contain neither hospital nor lunatic asylum: St. James Westminster 2.631, St. Giles 3.031, London City 2.908, Whitechapel 3.082, and St. George-in-the-East 2.829.

The lunatic asylums at this age disturb the rate of mortality; thus the Colney Hatch County Asylum raises the mortality of men in Barnet, one of the healthiest districts of Middlesex, to 3.846 per cent.

The mortality of men in all London is at the rate of 2.468 per cent.; of which about .365 is in the hospitals.

Maturity: Age, 55-65.

The mortality of men of this age was at the rate of 3.086 per cent.; to which zymotic diseases, including fever and cholera, contributed .313; consumption .333; diseases of the brain .410, heart .413, lungs .662, stomach .303, kidneys .094.

The mortality of women was at the rate of 2.701 per cent. The zymotic diseases, consumption, brain affections, lung affections, stomach and kidney affections, were less fatal than in males. The rate of deaths by violence was .038 in women, .161 in men. Upon the other hand the rate by cancer was .093 for men, .185 for women; by diseases of the generative organs .001 for men, and .031 for women, including ovarian diseases.

In forty-nine districts the mortality of men was below 2.000, or less by 1.086 than the average; in Westhampnett 1.702, Kingsclere 1.757, Thingoe 1.460, Loddon 1.752, Depwade 1.653, Scilly Islands 1.505, Wheatenhurst 1.778, Longtown 1.741, Bootle 1.606.

To men of this age, Alston was the most fatal district in England; their mortality there was at the rate of 6.800 per cent.; then follow Reeth 5.060, the City of London 5.014, St. Giles, London, 5.243, Whitechapel, containing a Hospital, 5.483, Manchester 5.266, and Liverpool 5.350.

Maturity: Age 65-75.

The mortality of men at this period of life is more than double their mortality in the previous decenniad. In the ten years it was 6.533 per cent.; of which .579 was by zymotic diseases; .150 by cancer; .239 by phthisis; .983 by diseases of the brain, .871 by diseases of the heart, 1.342 by lung diseases; .484 by diseases of the digestive organs; .245 by diseases of the urinary organs; making the aggregate mortality by local or monorganic diseases 3.964. The mortality by violence of various kinds was at the rate of .181 per cent.

The mortality of women at this age was 5.866, or less by .667 than that of men. Fever was somewhat less fatal to them than to men; so also were phthisis, and all the pulmonary diseases. The mortality of women by kidney, &c. diseases was .049, of men .245; by violence, of women .072, of men .181. Upon the other hand, cancer killed women at the rate of .235. Uterine and ovarian diseases at the rate of .032.

In thirteen districts of England the mortality of men of the age 65-75 was below 4.000 per cent.; it was 3.548 in the Scilly Islands, Flegg 3.667, Rothbury 3.831, Easthampstead 4.427, Henstead 4.258, Thetford 4.444, Cricklade 4.467, Tetbury 4.369, Sedbergh 4.479, Easingwold 4.253, Brampton 4.142, Bridgend 4.487, Knighton 4.455.

In Alston the mortality at this age was 11.731 per cent.; in Reeth 9.524; and it exceeded 9.000 in twenty-one districts, including Alston and Reeth; namely, in thirteen London districts, in Birmingham, Liverpool, Manchester, Leeds, Sheffield, and Newcastle-upon-Tyne.

Ripeness: Age 75-85.

The mortality of men at this advanced age is at the rate of 14.667 per cent., of which nearly the half is by causes undistinguished; for the functional symptoms become obscure as age advances. Only 1.004 of the deaths were by recognized zymotic diseases, .173 by cancer, .098 by consumption. The chief mortality was by diseases of the brain 1.709, heart 1.241, lungs 2.109, stomach .525, kidneys .427. By violence .225 died.

The mortality of women was at rate of 13.434 per cent.; cancer being more, phthisis less, fatal to women than it was in men; of the total mortality 5.031 was by monorganic diseases; while in men the mortality by these diseases was 6.067 per cent.

In descending to other districts the mortality was below 12.000 per cent. from all causes in fifty districts, and above 17.000 per cent. in seventy districts, including twenty-four London districts, and the districts of the chief large towns.

Old Age: Age 85 and upwards.

I have called this the monumental age; the cup of life is full of years; and the mortality of men is at the rate of 31.008, of women at the rate of 28.956 per cent. The forms of disease are imperfectly developed; the symptoms are obscure; and in three fourths of the cases the deaths are simply referred to age, and natural decay, or some of the maladies which have not been inserted in the synoptic Tables. Cholera

TABLE XIII.—Average Annual Rate of Mortality per Cent. of Women aged 25-35, and of Children under 5 Years of Age, in the Ten Years 1851-60; also the proportional Number of Wives to 100 Women at the Ages 25-30 and 30-35, as enumerated at the Census of 1861, in each of the REGISTRATION DIVISIONS of ENGLAND and WALES. (Arranged in the Order of Mortality of Women aged 25-35).

		REGISTRATION DIVISIONS.										
		LONDON.	SOUTH WESTERN.	WEST MIDLAND.	SOUTH EASTERN.	SOUTH MIDLAND.	EASTERN.	NORTHERN.	NORTH MIDLAND.	YORKSHIRE.	MONMOUTH-SHIRE AND WALES.	NORTH WESTERN.
AVERAGE ANNUAL MORTALITY per Cent. of WOMEN aged 25-35, in the 10 Years 1851-60		.875	.890	.950	.965	.973	.999	1.037	1.050	1.067	1.071	1.114
		Mean - .931					Mean - 1.068					
AVERAGE ANNUAL MORTALITY per Cent. of CHILDREN aged 0-5, in the Ten Years 1851-60	Boys	8.311	5.634	7.556	5.487	6.229	6.084	6.938	6.835	7.965	6.194	9.366
	Girls	7.295	4.867	6.547	4.669	5.246	5.137	6.156	5.779	6.837	5.417	8.203
		Mean { M. - 6.643					Mean { M. - 7.460					
		Mean { F. - 5.725					Mean { F. - 6.478					
		Mean - M. & F. 6.184					Mean - M. & F. 6.969					
WIVES to 100 WOMEN, as enumerated at the Census of 1861, aged -	25-30	57.58	57.16	64.86	58.97	61.52	63.23	65.61	62.91	64.52	61.25	61.18
	30-35	69.17	70.58	76.04	70.82	73.45	74.80	75.90	75.03	75.59	74.24	2.20

did not disdain to destroy a certain number of these lingering lives; some of the men were killed by violence; some of the women were burnt by their clothes taking fire; and many died of recognized monorganic diseases of the brain and chest.

III. MORTALITY OF WOMEN OF THE CHILDBEARING AGE.

The age of 25-35 represents the period of life in which English women bear the greatest number of children, and it will be observed that the mortality of women at that age, from all causes, is nearly one per cent. (.992). Arranging the Eleven Divisions in reference to this point, they fall in the order shown in Table XIII.

TABLE XIV.—Districts where the Average Annual Rate of Mortality from all Causes in the 10 YEARS 1851-60 of Females aged 25-35 was 1.200 per Cent. and upwards.

Number of District.	DISTRICTS.	SEX.	AGES.				Number of District.	DISTRICTS.	SEX.	AGES.			
			15-	20-	25-	35-45				15-	20-	25-	35-45
34	Rotherhithe - - -	M. .938	1.015	1.189	1.609	438	Basford - - -	M. .665	.938	.673	.891		
		F. .589	1.022	1.229	1.301			F. .965	1.203	1.252	1.205		
53	Hoo - - -	M. .476	.763	1.390	1.327	439	Radford L - - -	M. .721	.896	.785	.967		
		F. .714	1.636	1.221	1.772			F. .980	1.120	1.242	1.193		
62	West Ashford - - -	M. .583	.982	.861	.937	444	Shardlow - - -	M. .632	.823	.881	.840		
		F. .754	1.447	1.250	1.094			F. .886	1.151	1.243	1.188		
89	Thakeham - - -	M. .509	1.115	.762	1.014	445	Derby H - - -	M. .846	1.045	1.093	1.298		
		F. 1.447	1.434	1.621	1.013			F. .984	1.030	1.251	1.285		
103	Fordingbridge - - -	M. .615	1.157	.814	1.157	447	Ashborne - - -	M. .621	.955	.841	1.099		
		F. .796	.980	1.213	.941			F. .735	.987	1.243	1.178		
117	Whitechurch - - -	M. .536	.868	1.131	1.101	453	Macclesfield - - -	M. .945	1.009	.987	1.094		
		F. .884	1.632	1.260	1.315			F. 1.347	1.228	1.303	1.483		
122	Faringdon - - -	M. .708	.893	.873	1.111	456	Northwich - - -	M. .708	.857	.869	1.189		
		F. .872	1.039	1.258	1.353			F. .717	1.026	1.289	1.132		
125	Wallingford - - -	M. .499	.892	.940	1.077	457	Congleton - - -	M. .885	1.054	.811	1.020		
		F. .861	.906	1.229	1.196			F. 1.120	1.228	1.214	1.471		
152	Winslow - - -	M. .586	.806	.714	.872	461	Liverpool HH - - -	M. .825	1.187	1.593	2.294		
		F. 1.049	1.108	1.331	1.202			F. .716	.948	1.373	1.877		
154	Buckingham - - -	M. .608	.888	.855	1.120	467	Leigh - - -	M. .981	1.008	.943	1.149		
		F. 1.145	1.055	1.287	1.325			F. .862	1.037	1.281	1.376		
171	Wellingborough - - -	M. .612	.714	.738	.705	473	Manchester HL - - -	M. .843	1.014	1.293	2.035		
		F. .963	.995	1.216	1.460			F. .735	.949	1.229	1.737		
189	Newmarket - - -	M. .536	.818	.918	1.046	474	Ashton-under-Lyne - - -	M. .973	1.006	.987	1.281		
		F. .911	1.108	1.282	1.164			F. 1.005	1.040	1.223	1.510		
203	Tendring - - -	M. .799	.872	.694	.886	478	Burnley - - -	M. .743	.803	.807	1.083		
		F. .937	1.061	1.204	1.365			F. .906	1.102	1.251	1.317		
207	Halstead - - -	M. .804	1.318	.868	.963	479	Clitheroe - - -	M. .771	.859	.745	.959		
		F. 1.294	1.229	1.221	1.328			F. .953	1.065	1.233	1.450		
211	Risbridge - - -	M. .481	.849	.804	.844	482	Preston - - -	M. .817	1.019	1.074	1.472		
		F. 1.108	1.107	1.325	1.042			F. 1.032	.943	1.208	1.539		
214	Thingoe - - -	M. .535	.907	.905	.904	489	Skipton - - -	M. .774	1.023	.803	.928		
		F. 1.016	.888	1.326	1.192			F. .948	1.225	1.279	1.127		
221	Samford - - -	M. .758	1.043	.772	.819	490	Pateley Bridge - - -	M. .793	1.095	.696	.769		
		F. 1.077	1.526	1.234	1.353			F. 1.129	1.510	1.250	1.209		
251	Cricklade - - -	M. .546	.722	.653	1.033	493	Otley - - -	M. .859	1.074	.897	1.093		
		F. 1.029	.974	1.208	1.194			F. 1.056	1.239	1.260	1.353		
255	Marlborough - - -	M. .277	.623	1.151	.857	494	Keighley - - -	M. 1.018	1.046	.761	.997		
		F. .752	.968	1.232	1.329			F. 1.201	1.282	1.238	1.316		
258	Bradford - - -	M. .637	1.111	1.025	1.218	496	Saddleworth - - -	M. .812	.768	.918	1.155		
		F. .929	.913	1.299	.983			F. 1.112	1.233	1.405	1.331		
259	Westbury - - -	M. .671	1.025	.863	1.053	503	Wakefield L - - -	M. .884	1.019	1.163	1.668		
		F. .766	1.101	1.223	1.090			F. .861	1.006	1.418	1.579		
312	Scilly Islands - - -	M. .862	1.333	1.719	.889	544	Weardale - - -	M. .624	.952	.811	1.239		
		F. .538	1.053	1.200	1.361			F. .870	1.336	1.317	1.481		
342	Stow-on-the-Wold - - -	M. .849	.705	.711	.929	551	Gateshead L - - -	M. .725	.832	1.072	1.518		
		F. .602	.785	1.202	1.070			F. .735	.925	1.227	1.537		
355	Clebury Mortimer - - -	M. .725	.578	.775	.785	564	Alston - - -	M. .636	1.145	.856	1.497		
		F. 1.161	.904	1.331	.887			F. .909	.941	1.225	1.381		
360	Shrewsbury HL - - -	M. .781	1.167	1.455	2.140	572	Booth - - -	M. .525	.682	1.073	1.035		
		F. .824	.832	1.346	1.421			F. .679	.840	1.307	1.111		
367	Stafford HLL - - -	M. .678	.829	1.365	1.792	579	Pontypool - - -	M. .900	1.126	1.093	1.297		
		F. 1.094	.988	1.348	1.508			F. .763	1.061	1.217	1.304		
372	Leek - - -	M. .777	.764	1.023	1.053	582	Merthyr Tydfil - - -	M. 1.137	1.463	1.319	1.413		
		F. 1.310	1.211	1.232	1.258			F. .847	1.075	1.342	1.513		
415	Loughborough - - -	M. .588	.766	.881	.842	601	Crickhowell - - -	M. .931	.898	.913	1.094		
		F. .976	1.039	1.219	1.337			F. .914	.968	1.500	1.257		
416	Barrow-upon-Soar - - -	M. .538	.799	.864	.856	607	Newtown - - -	M. .797	1.047	1.058	1.052		
		F. .868	1.097	1.201	1.213			F. .986	1.300	1.290	1.426		

The women of London (age 25-35) stand lowest on the scale of mortality; those of Lancashire Division highest. In general the mortality is lowest in the Southern and highest in the Northern and Welsh Divisions. For the sake of comparison the mortality of children under five years of age is added, as mothers and children are exposed in common to many causes of mortality. There is a frequent but not a constant relation between their rates of mortality. In the five divisions where the mean mortality of women was .931, the mortality of children was 6.184; in the five divisions where the mortality of mothers was 1.068, the mortality of children was 6.969.

Absolutely the rate of mortality by childbirth is slightly higher (.090) among women of 35-45, than it is (.089) among women of 25-35, although at the younger age the greater proportional number of women bear children.

Exclusive of certain districts in which large lunatic asylums and hospitals disturb the results, there are 58 districts in which the mortality of women of 25-35 from all causes exceeds 1.200 per cent. The Table XIV. displays these cases, and gives in juxtaposition the rates of mortality among males and females at the various ages from 15 to 45.

The mortality among women of the age 25-35 was 1.500 in Crickhowell; and this was due to a considerable extent to an excessive number of deaths in childbirth.

These most painful deaths of mothers are sometimes due to mismanagement, the result of ignorance in the women in attendance, or to contagious communication from one woman to another, through nurses or other channels.

In Crickhowell 56 women died of childbirth in ten years; when the number of births was 8808.

Our Tables do not show the total number of pregnant women who die; for a certain number of them are consumptive, or succumb under other fatal diseases. Examples will be found in the annexed list of the deaths in the three years 1854, 1855, and 1860.

LIST OF DEATHS AMONG MOTHERS IN CRICKHOWELL.

_____, aged 35, wife of a miner, died of childbirth peritonitis, 3 days, (certified) on 22d February 1854 at Beaufort Hill. Informant, _____; signed with a mark.

_____, aged 26, wife of a labourer, died from premature labour, (certified) on 25th February 1854 at Ty Catty. Informant, _____; signed with a mark.

_____, aged 25, wife of an Independent minister, died of childbirth consumption, 6 months, (certified) on 24th February 1854 at Brynmawr. Informant, _____.

_____, aged 30, wife of a gentleman, died of puerperal peritonitis, 6 days, (certified) on 18th February 1854 at Llanelly. Informant, _____.

* _____, aged 25, wife of a quarryman, died from premature confinement, peritonitis, phthisis, (certified) on 17th April 1854 at Llangunider. Informant, _____; signed with a mark.

_____, aged 35, wife of a mason, died of flooding after childbirth, no medical attendant, on 20th June 1854 at Twyn. Informant, _____; signed with a mark.

_____, aged 25, wife of a miner, died of disease of the heart. Died 2½ hours after confinement, (certified) on 2d July 1854 at Llangunider. Informant, _____.

_____, aged 33, daughter of a labourer, died of metritis, 6 days post parturition; (certified) on 7th August 1854 at Brynmawr. Informant, _____.

_____, aged 36, wife of a blocklayer, died of childbirth, 24 days puerperal fever, (certified) on 19th August 1854 at Llanelly. Informant, _____.

_____, aged 27, wife of a miner, died from anæmia after confinement, 5 months, (certified) on 1st November 1854 at Beaufort Hill. Informant, _____; signed with a mark.

_____, aged 30, wife of a puddler, died of childbirth, (not certified) on 8th January 1855 at Brynmawr. Informant, _____.

* In these cases the women were delivered, but their deaths were caused by the disease named, to which heads they are referred in the general classification.

_____, aged 26, wife of a collier, died from partus followed by exhaustion, 8 hours, (certified) on 18th March 1855 at Brynmawr. Informant, _____; signed with a mark.

_____, aged 30, wife of a miner, died from prostration from twin delivery, (certified) on 20th May 1855 at Llangunider. Informant, _____; signed with a mark.

_____, aged 31, wife of a railman, died from hæmorrhage in childbirth, 6 hours, (certified) on 13th April 1855 at Brynmawr. Informant, _____.

* _____, aged 23, domestic servant, died of dropsy childbirth, (certified) on 6th June 1855 at Llangattock. Informant, _____, master of the workhouse, Llangattock.

_____, aged 26, domestic servant, died of puerperal convulsions, 48 hours, (certified) 5th September 1855 at Beaufort. Informant, _____.

_____, aged 32, wife of a blacksmith, died of uterine hæmorrhage, 4 weeks, convulsions during operation of turning, ¼ hour, (certified) on 20th August 1855 at Brynmawr. Informant, _____; signed with a mark.

_____, aged 30, wife of a labourer, died of puerperal mania, (certified) on 29th September 1855 at Llanelly. Informant, _____; signed with a mark.

_____, aged 40, wife of a labourer, died of childbirth, 16 days, peritonitis, 14 days, (certified) on 5th January 1860 at Brynmawr. Informant, _____; signed with a mark.

_____, aged 34, wife of a labourer, died of puerperal fever, (certified) on 11th February 1860 at Crickhowell. Informant, _____.

_____, aged 29, wife of an ironballer, died of puerperal peritonitis, 5 days, (certified) on 26th April 1860 at Brynmawr. Informant, _____; signed with a mark.

_____, aged 35, wife of a coachman, died of childbirth, (not certified) on 28th April 1860 at Llanelly. Informant, _____.

* _____, aged 32, wife of an engineer, died of childbirth, 18 days, scarlatina, 16 days, (certified) on 4th July 1860 at Brynmawr. Informant, _____; signed with a mark.

_____, aged 23, wife of a carpenter, died from debility after confinement, 3 weeks, (certified) on 1st July 1860 at Clydach Works. Informant, _____.

* _____, aged 21, wife of an ironfounder, died from miscarriage, 14 days, scarlatina maligna, 13 days, (certified) on 24th July 1860 at Brynmawr. Informant, _____; signed with a mark.

_____, aged 27, wife of a miner, died from extreme exhaustion after confinement, (certified) on 10th October 1860 at Beaufort. Informant, _____; signed with a mark.

_____, aged 25, wife of a miner, died of syncope after parturition, (certified) on 9th December 1860 at Brynmawr. Informant, _____.

IV. MORTALITY OF MEN IN LONDON.

London is the head quarters of the learned professions, the arts, and the sciences, and is full of some of the cleverest workmen in the world. It is the greatest existing commercial emporium. Railways, roads, sea routes, rivers, and canals start from and end in London, which abounds in large numbers of all the carrying classes of warehousemen, porters,

TABLE XV.—Mortality of Men in the TEN YEARS 1851-61.

	AGES.			
	25-35	35-45	45-55	55-65
HEALTHY DISTRICTS * - -	.818	.928	1.273	2.294
SOUTH WESTERN DIVISION -	.932	1.101	1.532	2.738
ENGLAND AND WALES - -	.957	1.248	1.796	3.085
LONDON - - - - -	1.050	1.629	2.468	4.243

* The mortality of the Healthy Districts relates to the Years 1849-53.

* In these cases the women were delivered, but their deaths were caused by the disease named, to which heads they are referred in the general classification.

messengers, and labourers. Of 726,805 men of the age of 20 and upwards living in London, only 17,810 were returned as of no stated profession or occupation.

It is to be deeply regretted that the mortality of this important and valuable class of men is high in London. It is not only much higher at every age than the mortality of women in London, and of men in the healthy districts, but higher than the mortality of men in the country generally, and higher than the mortality of men in any of the other ten divisions after the age of 25, when the full influence of life and labour in London is developed.

Thus at the age of 45-55 the mortality of London men is double that of men in the Healthy Districts.

Considerable numbers of men die in the workhouses of London.

Great numbers of men also die in the London Hospitals, as is shown in the Tables XI. and XII. of the deaths in and out of hospitals. A certain number of the persons dying in the London Hospitals come from other parts; and certain numbers contract diseases in the wards; but these cases probably do no more than compensate for the residents of London who leave it consumptive to die elsewhere. Two of the large Lunatic Asylums (Hanwell and Colney Hatch), in which many London lunatics die at the ages under 55, are beyond the precincts of the Metropolis.

To what then is the high mortality of London men in the working ages of life due? It is not want of work. Their hands and heads are sufficiently employed to insure exercise. The drainage of their dwellings, and their water supply, is in many districts scanty; habits of ablation are not cultivated; and their skin is often unclean. They live too frequently in crowded rooms, from which fresher air than they breathe is excluded. It is the same in the workshops, where the air is in many trades loaded with dust, which induces bronchitis. Workshops are sometimes ill constructed for the supply of air for breathing, and the men themselves throw obstacles in the way of ventilation. Spirits and other stimulants are by certain numbers—such as the publicans—taken to a fatal excess. These latter causes to some extent account for the excess in the mortality of men over the mortality of women.

The whole subject of the mortality of men in towns requires careful investigation. It is of national importance; for the workmen in all large towns suffer as much and often more than the workmen of London.

TABLE XVI.—Average Annual Rate of Mortality per Cent. in London and in certain LARGE TOWN DISTRICTS, at different AGES, in the 10 Years 1851-60.

TOWN DISTRICTS, &c.	SEX.	AGES.						
		25-	35-	45-	55-	65-	75-	85 and upwards.
LONDON	M.	1·050	1·629	2·468	4·243	8·522	17·189	31·441
	F.	·875	1·281	1·806	3·327	6·959	14·961	28·892
BRISTOL	M.	1·417	1·961	2·960	4·404	8·184	17·306	33·243
	F.	·968	1·424	1·908	3·062	6·255	14·540	24·421
BIRMINGHAM	M.	1·012	1·624	2·587	4·581	9·535	19·792	38·889
	F.	·985	1·372	1·908	3·523	7·844	17·445	34·545
LIVERPOOL	M.	1·596	2·294	3·311	5·350	10·635	19·847	28·333
	F.	1·373	1·877	2·686	4·647	8·609	15·686	29·286
MANCHESTER	M.	1·293	2·035	3·170	5·266	10·066	19·528	44·255
	F.	1·229	1·737	2·716	4·476	8·420	16·607	30·734
LEEDS	M.	1·116	1·686	2·459	4·718	9·287	21·331	38·421
	F.	1·164	1·386	1·956	3·722	7·759	15·849	31·224
SHEFFIELD	M.	1·031	1·445	2·543	4·694	9·680	20·595	34·000
	F.	1·081	1·405	1·947	3·682	8·216	16·361	38,500
NEWCASTLE-UPON-TYNE.	M.	1·239	1·719	2·731	4·923	9·056	17·680	37·813
	F.	1·185	1·562	1·968	3·408	7·430	15·585	35·152

V. ANNUAL RATE OF MORTALITY AT ALL AGES WITHOUT DISTINCTION.

The mortality of the various populations of the world is generally stated as one in so many, or as so many per cent. per annum. The latter result is the ratio of the deaths at all ages to the living at all ages.

Now it is evident from the preceding Tables that the proportion of deaths to a given number living varies to a great extent with the ages of the living; in the first five years of age the mortality is at the rate of 7·243 per cent. for boys, at the age 10-15 it is 4·88, at 55-65 it is 3·085, at 75-85 it is 14·667 per cent. The mortality of the two sexes also varies, so that, independently of other causes of variation, the mortality of different populations will differ according as they consist of numbers in various proportions at the ages at which the mortality is high or low.

When the population is sustained by an uniform annual number of births, the number living at each age is regulated solely by the law of mortality, reducing the numbers year by year, until each annual generation is extinguished.

The laws of mortality may vary infinitely, it is conceivable, so as to yield the same mean lifetime, and the same rate of mortality. Thus by the English Life Table 1,000,000 children born alive die off so as to leave survivors in every year of age up to the 100th, when the last of the generation dies off; the mean lifetime is 40·858, and 1 in 40·858, or 2·447 per cent. of the population so constituted die annually. If every one of the 1,000,000 children lived 40·858 years, and died at the end of the term, the mean lifetime would be 40·858 years, and it will be evident that the mortality would be at the rate of 1 in 40·858, or 2·447 per cent. per annum. Yet how different are all the circumstances? How different are the conditions of existence? How different is the law of mortality?

The rate of mortality in England was not 2·447, but 2·245 per cent. per annum, during the period when the facts were collected upon which the Table is based. Thus 1 in 44·54 died; while the mean lifetime was 40·858.

Assuming the prevalence of the same law of mortality, the rate calculated on the mean population, and the deaths at all ages, is lower in a rapidly increasing population than it is in a stationary population, because the mortality at all ages from about 4 to 54 is lower than the mean mortality of the whole normal population; and while a regular increase of population has the effect of increasing the proportion of children under 4 years of age, who die off quickly, it has also the effect of still further increasing the proportion of the living at the ages 4 to 54, and of diminishing the proportions of the old people, whose rate of mortality is high.

In the healthy districts of England the normal mortality is 2·059 for males, and 2·022 for females by the Life Table; while it is 1·772 for males and 1·733 for females, as deduced from the ratio of deaths at all ages to the living at all ages. This is the rate of 17 deaths per 1000 of the population, which is so often and so fairly quoted, as a standard of comparison applicable to increasing populations.

There is another disturbance of the proportions living at ages more or less mortal, by immigration and by emigration. Thus the general effect of immigration into towns is to reduce their rates of mortality, by increasing the proportion of the living at ages of less than the mean mortality of the people of the place. The bulk of the emigrants to towns from the country are probably in good health, but a certain number of sick resort to the town hospitals; upon the other hand, of the emigrants, some are consumptive, seeking health in the country and abroad, or returning home to die; but the emigrants are less numerous in the aggregate than immigrants, and so far have less effect on the mortality.

VI. THE LOSS OF LIFE IN DENSE TOWN DISTRICTS.

The population was so distributed in the thirty town districts (see Tables XVII. and XVIII.) that at the rates of mortality prevailing in the healthy districts at eleven different ages the annual deaths would have been 38,459 in the ten years 1851-60, when the mean population was 2,541,630. The annual rate of mortality in the two sexes would have been 15.13 per 1000. With the same distribution of population in respect to age and sex as existed in the healthy districts, the mortality would have been at the rate of 17.53

TABLE XVII.—Mortality, &c. of Males and Females in 30 large Town Districts of England and Wales.*
MEAN POPULATION 1851 and 1861; DEATHS in the 10 Years 1851-60; AVERAGE ANNUAL RATE of MORTALITY per Cent.; and NUMBER of DEATHS that would have occurred in the 10 Years if the Mortality had been at the same rate as that which prevailed in the HEALTHY DISTRICTS, at the DIFFERENT AGES.

AGES.	MEAN POPULATION 1851 and 1861.		DEATHS in the 10 Years 1851-60.		DEATHS that would have occurred in the 10 Years at the different Ages, at HEALTHY DISTRICT RATES.		AVERAGE ANNUAL RATE of MORTALITY per Cent. in the 10 Years 1851-60.		AGES.
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	
ALL AGES	1,231,682	1,309,948	366,151	345,793	188,130	196,460	2.973	2.640	ALL AGES.
0-	167,980	167,829	179,837	159,153	73,030	62,440	10.706	9.483	0-
5-	139,987	140,471	15,963	15,356	9,430	9,860	1.141	1.093	5-
10-	127,500	127,656	7,456	6,784	4,890	6,130	.585	.531	10-
15-	243,043	271,357	21,815	21,992	16,800	20,750	.898	.810	15-
25-	201,530	220,109	23,791	24,834	16,480	19,670	1.181	1.128	25-
35-	153,042	161,533	25,917	24,154	14,200	16,120	1.693	1.495	35-
45-	104,807	111,928	27,110	22,528	13,340	13,340	2.587	2.013	45-
55-	59,253	62,089	25,811	23,952	13,590	13,430	4.356	3.858	55-
65-	26,385	34,135	22,673	24,772	14,470	17,040	8.593	7.257	65-
75-	7,434	11,235	13,058	17,525	9,530	13,390	17.565	15.529	75-
85&upwds.	821	1,556	2,720	4,743	2,370	4,290	33.130	30.482	85 & upwds.

* Comprising the districts of St. Giles, Holborn, East London, St. George-in-the-East, St. Saviour Southwark, St. Olave Southwark, and St. George Southwark in the metropolis; and the districts of Southampton, Yarmouth, Norwich, Salisbury, Exeter, Bristol, Wolverhampton, Birmingham, Leicester, Nottingham, Derby, Liverpool, Wigan, Bolton, Salford, Manchester, Ashton-under-Lyne, Preston, Leeds, Sheffield, Hull, Newcastle-upon-Tyne, and Merthyr Tydfil.

The Table may be read thus:—The mean male population enumerated in 1851 and 1861 of the age 25-35 in 30 large town districts of England and Wales was 201,530, the number of male deaths registered (25-35) in the 10 years was 23,791, and the average annual mortality per cent. was 1.181. If the mortality in these Town districts had been at the same rate, at the age 25-35, as that prevailing in the Healthy Districts, the male deaths at that age in the 10 years would have been 16,480 or 1,648 annually, instead of 23,791 in the 10 years or 2,379 annually, and so on for other ages.

TABLE XVIII.—Deaths in 30 Large Town Districts in the 10 Years 1851-60; and also the DEATHS which would have occurred in the 10 Years if the MORTALITY had been at the same Rate as prevailed in the 63 HEALTHY DISTRICTS (1849-53).

AGES.	DEATHS in 10 Years 1851-60.	DEATHS which would have occurred in the 10 Years at HEALTHY DISTRICT RATES.	EXCESS of ACTUAL DEATHS in 10 Years over DEATHS at HEALTHY DISTRICT RATES.
ALL AGES	711,944	384,590	327,354
0-	338,990	135,470	203,520
5-	31,319	19,290	12,029
10-	14,240	11,020	3,220
15-	43,807	37,550	6,257
25-	48,625	36,150	12,475
35-	50,071	30,320	19,751
45-	49,638	26,680	22,958
55-	49,763	27,020	22,743
65-	47,445	31,510	15,935
75-	30,583	22,920	7,663
85 & upwards	7,463	6,660	803

per 1000; while the rate of a normally constituted population under the same law of mortality would have been 20.41 per 1000.

The actual mortality deduced from the deaths and the population of the thirty districts was at the rate of 28.01 in 1000; and the corrected mortality would exceed this number.

In comparing the mortality of town and country districts together, without distinction of age, it must be borne in mind that the method is comparatively favourable to the towns, as the proportion of the masked mortality is in them greater than it is in the country districts.

The loss of life in the ten years under the sanitary arrangements existing is illustrated in the Table XVIII. Thus, at the rates prevailing at the several ages in the healthy districts, the annual deaths would have amounted in the thirty town districts to 38,459; but the actual average number of deaths was 71,194; there was consequently an annual excess of 32,735 deaths, which may be justly ascribed to the unfavourable sanitary conditions in which the people live and die.

VII. HOW FAR THE GENERAL RATE OF MORTALITY IS AFFECTED BY THE DEATHS AT DIFFERENT AGES.

If we take the general mortality of the population from the English Life Table, it is at the rate of 24.47 per 1000 of the living at all ages; and the mortality is made up of deaths occurring at the ages shown in the annexed Table XIX.; that is 6.44 at the age 0-5, 2.52 at the age 5-25, and 6.62 at the age 65-85.

As the births increase every year in England, the population and the deaths in the earlier ages are in undue proportion; thus the general mortality, instead of 24.47 per 1000, becomes 22.45 for years 1838-54; but for ten years 1851-60 it was 22.17, and of the 22.17 deaths not less than 8.98 are children under 5 years of age, while only 3.70 are of the ages 65-85.

The general mortality, without distinction of age, is to a considerable extent made up of children's deaths, and its variation in different districts depends largely upon this element.

In the healthy districts, where the general mortality was at the rate of 17.53 deaths in 1000 living, 5.29 of the said deaths were of children under five years of age.

In thirty large town districts the general mortality was at the rate of 28.01 deaths to 1000 living; and 13.34 of the deaths were those of children under 5 years of age.

TABLE XIX.—Proportion of Deaths at different Ages to 1,000 Living at all Ages.

AGES.	ENGLISH LIFE TABLE (1838-54).	ENGLAND (1851-60).	30 LARGE TOWN DISTRICTS (1851-60).	63 HEALTHY DISTRICTS (1849-53).
ALL AGES	24.47	22.17	28.01	17.53
0-	6.44	8.98	13.34	5.29
5-	2.52	3.00	3.52	2.65
25-	3.20	2.90	3.88	2.22
45-	4.75	3.07	3.91	2.46
65-	6.62	3.70	3.07	4.14
85 and upwards	.94	.52	.29	.77

Ages.

	ALL AGES.	0-5	5-25	25-45	45-65	65-85	85 & upwds.	
English Life Table	1,000,000	= 263,182	+ 102,773	+ 131,130	+ 198,886	+ 270,464	+ 38,565	= Deaths.
	40,858,184	= 40,858,184	+ 40,858,184	+ 40,858,184	+ 40,858,184	+ 40,858,184	+ 40,858,184	= Living.
	.02447	= .00644	+ .00252	+ .00320	+ .00475	+ .00662	+ .00094	= Rate of Mortality.

The total difference in the rates of mortality is 10.48; of which 8.05 is accounted for by the deaths under 5 years of age. (See Table XIX.) Of all England, and the healthy districts, the difference in the mortality is $22.17 - 17.53 = 4.64$; of which the children's deaths account for $3.69 = 8.98 - 5.29$.

This principle must be borne in mind, as well as the disturbances which are produced by the increase of births, and by migration, by hospitals and by lunatic asylums, in studying the series of Tables (pp. xxxviii to lviii), exhibiting for each district the density of the population, and the rates of mortality per 1000 during each of the ten years 1841-50 and 1851-60; or the mean rate in the twenty years 1841-60.

The two long periods, each of ten years, and the size of the districts, justify us in instituting a comparison between their rates of mortality.

In the whole kingdom the mortality was near the same rate in each of the decennials.

VIII. MORTALITY IN THE TWO DECENNIADS 1841-50 and 1851-60.

NOTE.—The rates show the annual deaths to 1000 living; and, unless it is otherwise stated, those cited are for the last decenniad (1851-60).

In London the mortality fell from the annual rate of 25 in the first to 24 per 1000 in the second decenniad; in the South Midland Counties the rate also fell from 21 to 20; namely, from 20 to 19 in Hertford, 22 to 21 in Northampton, 22 to 20 in Huntingdon, 22 to 21 in Bedford, 23 to 21 in Cambridge. There was an evident reduction in the general mortality of the fen district.

The mortality of Cheshire and Lancashire declined sensibly from 27 in the first to 26 in 1000 in the second period.

The mortality in the Eastern Counties and in Wales was higher in the second than it was in the first decenniad. The particular districts which contributed to these results will be seen on examining the Table (pp. xxxviii to lviii).

In six divisions the mortality showed no sensible variation in the two decennials.

I. *London*.—The mortality increased in Islington from 19 to 21, where the population has nearly doubled its density; from 26 to 28 in St. Giles, where the population is dense and stationary. In Stepney also the mortality increased from 25 to about 27; in Poplar from 22 to 24; in St. James Westminster from 22 to 23.

In the majority of London districts the mortality decreased; from 20 to 19 in Kensington, 27 to 26 in Chelsea, 27 to 26 in Westminster, 24 to 23 in St. Martin-in-the-Fields, 18 to 17 in Hampstead, 23 to 22 in Pancras, 24 to 23 in Clerkenwell, 29 to 25 in West London, 27 to 24 in Shoreditch, 25 to 23 in Bethnal Green, and 29 to 28 in Whitechapel. The decrease was considerable in nearly all the districts on the south side

TABLE XX.—Proportion of Deaths at different Ages to 100 Deaths at all Ages.

AGES.	ENGLAND (1851-60).	30 LARGE TOWN DISTRICTS (1851-60).	63 HEALTHY DISTRICTS (1849-53).
ALL AGES	100.00	100.00	100.00
0—	40.53	47.62	30.18
5—	13.51	12.55	15.10
25—	13.06	13.86	12.68
45—	13.84	13.96	14.03
65—	16.70	10.96	23.60
85 & upwards	2.36	1.05	4.41

of the Thames, except in Wandsworth and Lewisham, where the population became much more dense in the second than it was in the first decenniad.

The cholera epidemic of 1854 was less fatal in London than that of 1849; and the water supply became of greatly improved quality. Health officers were appointed; and some sanitary improvements have been carried out.

The mortality of the several districts of London is greatly disturbed by the deaths in large hospitals and lunatic asylums; for which the corrections are difficult.

II. *South Eastern Division*.—There are many healthy districts in this division. The extra-metropolitan districts of Surrey have a mortality below 19, except Guildford (rate 19) and Richmond (20). In Kent, again, Bromley (16), Dartford (18), Sevenoaks (18), Cranbrook (17), East Ashford (18), Bridge (18), Blean (18), and Elham including Folkestone (18), experienced a low rate in the last ten years. The following are the unhealthiest districts; Hoo 25 (worse than it was), Maidstone 23, Canterbury 23. Sheppy is a remarkable instance of decrease; the mortality fell from 24 to 19.

In thirteen districts of Sussex the mortality did not in the last decenniad exceed 18; in Rye it was 20, Chichester 21, Brighton 22. The mortality of Brighton in the two decennials was 21 and 22; it is denser and in a worse condition than it was. In eleven districts of Hampshire the rates were 17 or 18. It is gratifying to observe an improvement in Portsea Island and Alverstoke (including Portsmouth and Gosport), one of the chief naval stations of the country. The sanitary state of Southampton does not keep pace with its prosperity; the mortality rose from 23 to 24. There is an evident improvement in the health of Romsey; the mortality fell from 21 to 19. Easthampstead, 16, is the healthiest district in Berkshire; Cookham 18 and Wokingham 18 stand next in order of salubrity. Reading and Abingdon have the highest rates in the county; but the Reading rate has fallen from 24 to 22.

III. *South Midland Division*.—In Middlesex, the rate in Hendon is 18, Barnet 18 (excluding Colney Hatch Lunatic Asylum), and Edmonton 18; they were healthy; Uxbridge 22, and Brentford 22, suffered from nearly London rates. In Hertfordshire, Ware 18, Bishop Stortford 18, Hertford 17, and Hatfield 18, experienced low rates: Hertford was 20, and fell to 17. Eton, 18, stands alone in Bucks; where, however, the highest rates are in Amersham 22, Aylesbury 22, Winslow 22, and Buckingham 22. No district in Oxfordshire has a rate lower than 19 nor higher than 22. In Oxford district it is 22; but a part of the city, the Oxford Workhouse and the Radcliffe Infirmary, are in the Headington district, where the mortality was 22. The Cambridge rate was worse (23), and is now 20 actually better than the Oxford rate. The mortality fell in all the Cambridgeshire districts except one; in Ely from 23 to 21, North Witchford 27 to 21, Whittlesey 25 to 23, Wisbech 25 to 22. The mortality rate in no district of Northamptonshire is so low as 18; it is 19 in Oundle and 24 in Northampton. Traces of improvement are visible; so are they also in Huntingdonshire, where the county rate of mortality fell from 22 to 20. In the Bedford District the mortality was reduced from 23 to 20; in Woburn raised from 20 to 22.

IV. *Eastern Division*.—Epping (18) and Ongar (18) have the lowest rates, Orsett (21) and Colchester (22) the highest rate in Essex, where 20 is the ruling mortality. The mortality of Orsett and of Colchester was 24 in the previous decenniad. The mortality was not lower than 19 (Stow and Bosmere), nor higher than 22 (Bury St. Edmunds and Ipswich) in Suffolk. Norfolk took a wider range; the mortality was 18 in St. Faiths, 18 in Freebridge Lynn, 25 in Norwich, and 25 in Yarmouth, where the population is dense. The mortality increased in Yarmouth from 23 to 25; in Norwich from 24 to 25.

V. *South Western Division*.—The mortality in Wilts was 21; and in no district was it so low as 18. Salisbury presents a striking example of the reduction of a high to a lower rate of mortality. The mortality rate was 28 in the first, and 24 in the last ten years; the population remaining equally dense (.05 acre to a person). The full effect of the sanitary improvements do not appear in these tables. The mortality, Mr. Middleton shows in a pamphlet full of interest, was at the rate of 27 per 1000 before drainage (1841-9), and has been 20 since drainage (1856-64) was in operation.* The mortality was low in Dorsetshire: in Blandford 17, Wimborne 18, and Weymouth 18; Dorchester 21 and Bridport 21. In Devon the mortality was 20; in Exeter the mortality was 25 and 24; in Plymouth 25 and 24; in East Stonehouse and Devonport higher; but the naval hospital interferes with the determination. The mortality of the North Devon districts ranges generally from 17 to 19, but is somewhat higher in the latter than in the former period: so it was in the south in respect of Kingsbridge (17 to 18), and Plympton St. Mary (18 to 19); upon the other hand the rate fell in Newton Abbot, including Torquay and Dawlish, from 19 to 18. The mortality of Cornwall is at the rate of 20; in St. Columb the rate was 18, in the Scilly Islands 18, in Redruth 21, Penzance 21, St. Germans 21. The mortality of the miners is high at advanced ages, when it has been shown that the effects of deaths on the general mortality are obscurely marked.

In Somersetshire the rate was 20; in Dulverton 16, Williton 18, Wellington 18, Bedminster including a part of the city of Bristol 20.

VI. *West Midland Division*.—In the Bristol district it was 28 against the previous rate, 29; in Clifton 20 against 23, here evincing evident improvement. In Clifton proper the mortality probably does not exceed 18 in 1000; but the district includes a great number of parishes in unfavourable sanitary conditions.

Of the other districts of Gloucestershire, Thornbury (17), Westbury-on-Severn (18), Tetbury (18), Stow-on-the-Wold and Winchcombe (18), show the lowest rates, Stroud (22) and Gloucester (21) the highest rates of mortality. Of Herefordshire the rate is 20; Ledbury figuring at 18; Leominster and Hereford at 21. In Shropshire the general rate is 20; the districts ranging from Clun 18, Church Stretton 18, Cleobury Mortimer 18, Shiffnal 18, Atcham 18, to Madeley in the coal and iron districts 21, and Shrewsbury 24. The rate for Shiffnal was 21, Clun 20, and the other districts, except Atcham, exceeded 18 in the previous ten years.

In Staffordshire the mortality was 25; against 24 in the first ten years. Staffordshire became denser and less healthy. The mortality of no district fell below 20; Wolstanton rate was 26, Stoke-upon-Trent 26, Leek 24, Wolverhampton 28, Walsall 26, West Bromwich 24, and Dudley 26. Newcastle-under-Lyme exhibits the result of great improvements; the mortality there fell from 26 to 23. No trace of improvement was visible in more districts than two, Stone and Stoke-upon-Trent. Worcestershire is healthy, and the mortality rate was for Tenbury 17, Martley 18, Pershore 17, Droitwich 18, King's Norton 17; the rate was 23 in Stourbridge, and 23 in Worcester, where it was before 24. The fair county of Warwick had two districts in which the mortality was 18; Meriden and Solihull. The rate was 23 in Nuneaton (it had been 27), 25 in Foleshill, 25 in Coventry (it had been 27), and 27 in the Birmingham district; in Aston, including a part of the borough, it was 21, and in King's Norton 17. Birmingham is on one of the healthiest sites in the kingdom, and is rendered insalubrious by bad local arrangements.

VII. *North Midland Division*.—The rate of Rutland is 18, Lincolnshire 19, Leicestershire 22, Nottinghamshire 22, Derbyshire 22. In Lincolnshire and Rutlandshire the mortality declined by one; in Nottinghamshire

* The benefits of sanitary reform as shown at Salisbury by A. B. Middleton. (Pap. read in Stat. Sect. of British Association at Bath, 1864.)

and Derbyshire rose by one, for there the population had grown denser. The mortality rate of Billesdon in the two decennials was 18 and 16. It is an open district adjoining Leicester, where the mortality in the same periods was 27 and 25; the density originally great, at the same time increasing. The mortality of Lincoln was 21 and 20; in eight other districts of the county it was 19, in six districts 20, and in one, Holbeach, 21. The population of the Nottingham district is exceedingly dense, and the mortality is at the rate of 27 in 1000; that of Radford, including part of the town suburbs, is 25; while in Basford the rate is 23. The remarkable circumstance is, that in nearly all the districts of Nottinghamshire the mortality increased, and in only three of them the mortality rate was even so low as 19.

Derby was a dense district in the first, and grew denser in the second period; the mortality remained at the rate of 24 in 1000.

VIII. *North Western Division*.—This is the great seat of the cotton manufactures. The population, collected in small and large towns, was dense in the first period, and grew denser in the second period. The mortality is still high, but there are evidences of improvement; the rates were 27 and 26; namely, 23 and 22 for Cheshire, 28 and 26 for Lancashire. The mortality of Stockport, a tolerably dense district, was 25 and 26; of Macclesfield 26 and 25; of Congleton 22 and 23; in Great Boughton, including the city of Chester, 23 and 22 in the two decennials. In Wirral, including Birkenhead and New Brighton, the mortality was 20 and 19; thus presenting a favourable contrast to the Liverpool district, where the mortality declined from 36 to 33 in the two decennials; and from 26 to 23 in West Derby, including the best part of the Liverpool Borough.

The Manchester district rates were 33 and 31; those of Chorlton, including part of the City of Manchester, were 25 and 24; while the Salford rates were 28 and 26. In Wigan the rates were 28 and 27; Bolton 27 and 27; Ashton 26 and 27; Preston 25 and 27. Of Garstang the mortality rate was as low as 16, and it is now 18; at Ulverston the rate rose from 18 to 20; the mortality of the Lancaster district remained 23 through the two periods.

IX. *Yorkshire*.—The rate was 23; the rate fell from 24 to 22 in the East Riding, rose from 23 to 24 in the West Riding. Sheffield is the southern dark centre of a fatal division of the West Riding, the rate of mortality there ranging from 27 to 28. Leeds is another dense centre of a region of high mortality; the mortality there was 28, Hunslet 24, Dewsbury 25, Bradford 26, Halifax 24. Of York the rate was 23; of Hull 25. Hull exhibits a great fall from 31 to 25 in the two decennials; it is one of the districts where cholera was most fatal in the epidemic of 1849. Three districts of the North Riding experienced the rate of 18; one the rate of 17 per 1000; in others the rates ranged from 19 to 20; in Scarborough only it was so high as 21.

X. *Northern Division*.—The mortality was at the rate of 22 for the whole population; but the districts present the extreme range from 14 in Bellingham, 15 in Glendale and Rothbury, to 23 in Durham District, 23 in Tynemouth, 24 in South Shields, 25 in Sunderland, 26 in Gateshead, and 27 in Newcastle-upon-Tyne. The mortality is generally high in the county of Durham; while Northumberland, Cumberland, and Westmorland have some of the healthiest districts of England: Haltwhistle, Bellingham, Belford, Glendale and Rothbury, Brampton and Longtown, and Bootle experienced rates as low as 14, 15, 16, and 17.

XI. *Wales (including Monmouthshire)*.—The mortality rate of Wales was 21, to which it rose from 20 in the first decennial. The fatal coal and iron districts here, as in the north, stand out amidst the many healthier districts of the principality where the mortality rate ranged from 16 in Knighton to 18 in Llandovery, 18 in Newcastle-in-Emlyn, 18 in Lampeter, 18 in Tregaron, 18 in Builth, 18 in Rhayader, 18 in Corwen, 18 in Bala, 18 in Dolgelly, 18 in Pwllheli, and 18 in Conway. The mortality rate of the

last decenniad was, upon the other hand, 23 in Pontypool, 22 in Newport, 23 in Cardiff, 25 in Abergavenny, 25 in Crickhowell, and 29 in Merthyr Tydfil. In Crickhowell the mortality declined from 27 to 25; in ominous Merthyr it rose from the rate of 28 deaths to 29 deaths per 1000 of the people.

By means of the Table, of which I have given a rapid summary, a general conception can be formed of the rates of mortality to which the people of different districts are subject; and the Tables showing the mortality of males and females at different ages should also be consulted by the local authorities.

Note.—The rate of mortality from each form of disease at each age is easily calculated for males and females from the facts which are given in the Tables for each district. Thus, if the males of the age x be represented by l_x , and the annual deaths in the ten years 1851–60 by d_x , then the annual rate of mortality is thus determined by the simple rule of proportion—

$$l_x : d_x :: 1 : m_x = \frac{d_x}{l_x}$$

The mean number of men living at the age 35 and under 45 in Birmingham at the censuses 1851 and 1861 was 11,322 = l_x , and the average annual number of deaths from phthisis was 62.4 = d_x †; consequently the mean annual rate of mortality by that disease is expressed thus:

$$11322 : 62.4 :: 1 : m_x = \frac{62.4}{11322} = .00551;$$

and multiplying by 100 we have the rate of mortality .551 per cent.; or, multiplying by 1,000,000, it is 5510 per million. The whole Table may be dealt with by the same method, and thus a Table for Birmingham be obtained corresponding with that which is given at pp. viii and ix for all England.

TABLE XXI.—Showing the Area, Mean Population, Density and Proximity of Population of the Districts of England grouped in the Order of their Mortality, 1851–60.

NUMBER of DISTRICTS.	ACRES.	MEAN POPULATION, 1851–60.	DENSITY and PROXIMITY of POPULATION, 1851–60.				MORTALITY.*
			HECTARS to a PERSON.	Persons to a SQUARE KILOMETER.	Persons to a SQUARE MILE.	PROXIMITY or nearness of Person to Person in METERS.	
1	235,861	6,817	14.001	7	18	402	14
2	301,473	21,069	5.790	17	45	259	15
12	627,588	129,055	1.968	51	132	151	16
26	1,507,484	421,140	1.449	69	179	129	17
81	5,258,236	1,300,829	1.636	61	158	137	18
121	9,540,681	2,668,756	1.447	69	179	129	19
129	8,444,479	2,649,736	1.290	78	201	122	20
84	5,599,983	2,110,379	1.074	93	241	111	21
51	2,638,106	1,878,056	.568	176	456	81	22
40	1,514,137	1,845,790	.332	301	780	62	23
26	590,955	1,762,962	.136	737	1909	40	24
20	442,540	880,953	.203	492	1274	48	25
14	217,029	1,065,319	.082	1213	3142	31	26
13	212,694	1,085,675	.079	1261	3267	30	27
11	195,637	1,170,740	.068	1479	3830	28	28 up to 33
631	37,324,883	18,997,076	.795	126	326	96	22

NOTE.—In this Table the Districts of England are thrown into groups according to their respective rates of mortality. Thus, there was one District in which the average annual rate of mortality in the 10 years 1851–60 was 14 in 1000 living, and 129 Districts in which the mortality was 29 in 1000. This latter group comprises an area of 8,444,479 acres and a population of 2,649,736, being 1.290 Hectars to a person, 78 persons to a Square Kilometer, or 201 persons to a Square Mile; if the population was spread equally over this area their proximity to each other would be 122 Meters. The Meter is longer than the English yard. One Meter = 1.093633 yards or 39 inches and a fraction. A square of 100 meters to the side is a hectare (land measure), while a square of 1000 meters to the side is a square kilometer.

* The Mortality is uncorrected for Institutions.

† See pp. 230–231, District 394.

IX. MORTALITY OF CITIES; RELATION BETWEEN DENSITY AND DEATH-RATE.

It is well established that the mortality of the populations of cities is generally higher than the mortality of people in the country. And it has been shown in the annual Reports* that there is a constant relation between the density of the population and the mortality. This has been further tested by arranging all the districts in the order of their mortality during the ten years, and then determining the density of their population. The Table XXI. presents a summary view of the results.

The general mortality of the 631 districts ranged from a rate of 14 to 33 deaths in 1000 living. If the facts are arranged in five great groups, the following result is obtained.

TABLE XXII.—Number of Males aged 15 Years and upwards in the under-mentioned Occupations living at the Census of 1861, and the Number in the same Occupations who died in the Two Years 1860–61, at different Periods of Age.

OCCUPATIONS.	MALES.—AGES.									
	15 Years of Age and upwards.	15–25	25–35	35–45	45–55	55–65	65–75	75–85	85 and upwards.	
All Males aged 15 Years and upwards in England	Living in 1861 - - - - - Deaths in 1860 and 1861 -	6,188,503 224,794	1,818,140 26,204	1,395,977 25,492	1,141,338 28,021	845,506 29,880	564,536 35,115	303,966 40,276	106,036 31,561	13,004 8,245
Tailors - - - - -	Living in 1861 - - - - - Deaths in 1860 and 1861 -	105,467 4,212	23,475 425	23,662 550	23,935 617	18,278 681	9,523 627	4,892 678	1,534 505	163 129
Shoemakers - - - - -	Living in 1861 - - - - - Deaths in 1860 and 1861 -	201,781 7,488	50,736 734	44,940 839	39,948 889	31,482 993	20,967 1,250	10,274 1,420	3,337 1,093	357 270
Farmers and Graziers - - - - -	Living in 1861 - - - - - Deaths in 1860 and 1861 -	226,957 13,346	5,439 116	29,023 497	47,636 836	52,133 1,297	47,443 2,189	31,001 3,565	12,541 3,649	1,721 1,197
Carpenters and Joiners - - - - -	Living in 1861 - - - - - Deaths in 1860 and 1861 -	174,475 5,745	51,422 573	40,221 625	31,222 612	24,678 761	14,984 840	8,682 1,207	2,917 886	349 241
Butchers - - - - -	Living in 1861 - - - - - Deaths in 1860 and 1861 -	63,278 2,288	19,349 128	14,861 286	11,552 347	8,423 352	5,557 420	2,661 427	792 267	83 61
Persons engaged in the Wool, Cotton, Flax, and Silk Manufactures, including Weaver not otherwise described - - - - -	Living in 1861 - - - - - Deaths in 1860 and 1861 -	356,469 13,264	118,502 1,771	78,515 1,429	64,023 1,540	47,098 1,747	29,258 2,159	14,284 2,487	4,404 1,801	385 330
Bakers and Confectioners - - - - -	Living in 1861 - - - - - Deaths in 1860 and 1861 -	53,757 1,738	16,581 140	12,665 201	10,134 258	7,116 273	4,579 317	2,108 307	524 209	50 33
Inn and Hotel Keepers, Licensed Victuallers and Publicans, and Beersellers - - - - -	Living in 1861 - - - - - Deaths in 1860 and 1861 -	64,486 3,970	2,003 32	11,716 305	18,789 707	16,192 910	10,136 832	4,460 646	1,104 449	86 89
Inn and Hotel Keepers, Licensed Victuallers, and Publicans, and Beersellers, including Wine and Spirit Merchants - - - - -	Living in 1861 - - - - - Deaths in 1860 and 1861 -	71,873 4,352	3,493 62	13,517 357	20,428 781	17,421 973	10,950 899	4,788 713	1,182 471	94 96
Grocers - - - - -	Living in 1861 - - - - - Deaths in 1860 and 1861 -	71,323 1,837	20,717 220	15,235 256	13,599 251	10,196 261	7,063 290	3,484 302	958 222	71 35
Grocers and Shopkeepers (including Chandler's Shopkeeper and Branch undefined) - - - - -	Living in 1861 - - - - - Deaths in 1860 and 1861 -	75,879 2,096	21,075 226	15,941 276	14,547 270	11,117 301	7,937 334	4,044 365	1,135 280	83 44
Miners, viz., Coal, Iron, Copper, Tin, and Lead, and others connected with Mines - - - - -	Living in 1861 - - - - - Deaths in 1860 and 1861 -	290,438 9,165	107,550 1,773	77,286 1,539	51,156 1,310	31,008 1,257	16,035 1,381	5,949 1,198	1,358 587	96 120
Persons engaged in the Iron, Copper, Lead, and Tin Manufactures - - - - -	Living in 1861 - - - - - Deaths in 1860 and 1861 -	121,769 2,972	45,661 495	34,775 515	21,603 486	11,924 491	5,563 446	1,803 330	398 177	42 32
Labourers, &c., viz., Agricultural Labourers, Farm Servants, Farm Bailiffs, Shepherds, General Labourers, Railway Labourers, Navvies, Stone, Slate, and Limestone Quarriers, Brick-makers, and other Workers in Stone and Clay - - - - -	Living in 1861 - - - - - Deaths in 1860 and 1861 -	1,422,750 49,385	398,589 3,775	298,421 4,726	255,290 5,090	201,523 5,634	150,540 7,878	85,787 10,207	29,265 9,342	3,335 2,733
Labourers, &c. as above, including Bricklayers and Masons - - - - -	Living in 1861 - - - - - Deaths in 1860 and 1861 -	1,583,449 55,235	440,106 4,203	339,104 5,449	287,267 5,964	224,965 6,631	164,823 8,947	92,559 11,204	31,101 9,978	3,524 2,859
Blacksmiths - - - - -	Living in 1861 - - - - - Deaths in 1860 and 1861 -	103,887 3,245	35,169 371	23,852 399	18,478 402	12,944 451	7,949 499	4,060 565	1,301 461	134 97

* See 5th Annual Report, pp. 419–425, and 16th Annual Report, p. xvi, on effects of density.

1. Where the mortality was 14, 15, or 16, the population was in the proportion of 86 persons to 1 square mile.

2. Where the mortality was 17, 18, or 19, the population was 172 persons to a square mile.

3. Where the mortality was 20, 21, or 22, the population was of the density expressed by 255 to a square mile.

4. Where the mortality was at the rate of 23, 24, or 25, the population was of the density expressed by 1128 to a square mile.

5. And where the rate of mortality was 26 and upwards, the average density was expressed by 3399 persons to a square mile.

Thus in these five groups there is a constant increase of mortality running parallel with the increase of density.

Not only is that the case in great groups, but the same law reigns over the two series of ratios—the ratio of deaths to the living and the ratio of the living to the area of land on which they dwell—when the groups are multiplied and the facts are subdivided so as to give rise to some disturbance; which almost invariably admits of explanation. For it happens when there is a discrepancy that the population is lodged on a small portion of the area of a wide district, and in that case the density of the part in which the people dwell is not accurately expressed by the method here employed. When the groups are larger, the effects of these perturbations are less visible, as the disturbing causes neutralize each other to some extent.

The population of the denser districts differs in many respects from that of the thinly peopled districts of the country; but there can be no doubt that mere proximity of the dwellings of the people does not necessarily involve a high rate of mortality. When any zymotic matter, such as varioline, scarlatine, or typhine finds its way into a village or street, it is more likely to pass from house to house than it is where the people are brought less frequently into contact. The exhalations into

TABLE XXIII.—Annual Mortality per Cent. of Males aged 15 Years and upwards in the under-mentioned Occupations, in the Years 1860–61, at different Periods of Age, arranged in the Order of Mortality at Age 45.

MALES.—AGES.								
15—	25—	35—	OCCUPATIONS.	45—	55—	65—	75—	85 and upwards.
.721	.913	1.223	ALL ENGLAND - - -	1.767	3.110	6.625	14.882	31.702
1.062	.856	.877	Farmers - - - - -	1.244	2.307	5.750	14.548	34.776
.531	.840	.923	Grocers - - - - -	1.280	2.053	4.834	11.587	24.648
.536	.866	.923	Grocers and Shopkeepers (including Chandler's Shopkeeper & Branch undefined)	1.354	2.104	4.513	12.335	26.506
.474	.792	.997	Labourers - - - - -	1.398	2.617	5.949	15.961	40.975
.478	.803	1.038	Labourers, including Bricklayers and Masons - - -	1.474	2.714	6.052	16.041	40.565
.557	.777	.980	Carpenters - - - - -	1.542	2.803	6.951	15.187	34.527
.723	.933	1.113	Shoemakers - - - - -	1.577	3.024	6.911	16.279	37.815
.527	.836	1.088	Blacksmiths - - - -	1.742	3.139	6.958	17.717	36.194
.747	.910	1.203	Wool, Cotton, Flax, and Silk Manufacturers - - - -	1.855	3.690	8.706	20.447	42.857
.905	1.162	1.289	Tailors - - - - -	1.863	3.290	6.930	16.460	39.571
.422	.794	1.273	Bakers - - - - -	1.918	3.461	7.282	19.943	33.000
.824	.996	1.280	Miners - - - - -	2.027	4.306	10.069	21.613	62.500
.542	.740	1.125	Metal Manufacturers - -	2.059	4.009	9.151	22.236	38.095
.331	.962	1.502	Butchers - - - - -	2.090	3.779	8.023	16.856	36.747
.887	1.321	1.912	Innkeepers, including Wine and Spirit Merchant - -	2.793	4.105	7.446	19.924	51.064
.799	1.302	1.881	Innkeepers, excluding Wine and Spirit Merchant - -	2.810	4.104	7.242	20.335	51.744

the air are thicker. But if an adequate water supply, and sufficient arrangements for drainage and cleansing are secured, as they can be by combination in towns, the evils which now make dense districts so fatal may be mitigated. Indeed some of the dense districts of cities are in the present day comparatively salubrious.

X. MORTALITY OF PERSONS IN DIFFERENT OCCUPATIONS.

There is considerable difficulty in determining the mortality and the duration of life among men of all the professions, owing to the uncertainty in the naming of trades. But some occupations are well defined; and of those the mortality is shown in the annexed Tables (XXIII. and XXIV.)

As in the case of towns, so it may be said of men of unhealthy occupations; the mortality is susceptible of reduction by the investigation and removal of its causes.

Thus the miner may be protected from explosions; and to a large extent from underground injuries by greater care on his own part, and on the part of the managers and proprietors. He may be saved from the

TABLE XXIV.—Annual Mortality per Cent. of Males aged 15 Years and upwards in the under-mentioned Occupations, in the Years 1860–61, at different Periods of Age.

OCCUPATIONS.	MALES.—AGES.								
	15 Years of Age and upwards.	15—	25—	35—	45—	55—	65—	75—	85 and upwards.
		ANNUAL MORTALITY PER CENT.							
All Males aged 15 Years and upwards in England - - -	1.816	.721	.913	1.223	1.767	3.110	6.625	14.882	31.702
Tailors - - - - -	1.997	.905	1.162	1.289	1.863	3.290	6.930	16.460	39.571
Shoemakers - - - - -	1.855	.723	.933	1.113	1.577	3.024	6.911	16.279	37.815
Farmers and Graziers - - -	2.940	1.062	.856	.877	1.244	2.307	5.750	14.548	34.776
Carpenters and Joiners - - -	1.646	.557	.777	.980	1.542	2.803	6.951	15.187	34.527
Butchers - - - - -	1.808	.331	.962	1.502	2.090	3.779	8.023	16.856	36.747
Persons engaged in the Wool, Cotton, Flax, and Silk Manufactures, including Weaver, not otherwise described - - -	1.860	.747	.910	1.203	1.855	3.690	8.706	20.447	42.857
Bakers and Confectioners - - -	1.617	.422	.794	1.273	1.918	3.461	7.282	19.943	33.000
Inn and Hotel Keepers, Licensed Victuallers and Publicans, and Beersellers - - - - -	3.078	.799	1.302	1.881	2.810	4.104	7.242	20.335	51.744
Inn and Hotel Keepers, Licensed Victuallers and Publicans, and Beersellers, including Wine and Spirit Merchants - - - -	3.028	.887	1.321	1.912	2.793	4.105	7.446	19.924	51.064
Grocers - - - - -	1.288	.531	.840	.923	1.280	2.053	4.834	11.587	24.648
Grocers and Shopkeepers (including Chandler's Shopkeeper and Branch undefined) - - -	1.381	.536	.866	.928	1.354	2.104	4.513	12.335	26.506
Miners, viz., Coal, Iron, Copper, Tin, and Lead, and others connected with Mines - - - -	1.578	.824	.996	1.280	2.027	4.306	10.069	21.613	62.500
Persons engaged in the Iron, Copper, Tin, and Lead Manufactures - - - - -	1.220	.542	.740	1.125	2.059	4.009	9.151	22.236	38.095
Labourers, &c., viz., Agricultural Labourers, Farm Servants, Farm Bailiffs, Shepherds, General Labourers, Railway Labourers, Navvies, Stone, Slate, and Limestone Quarriers, Brick-makers, and other Workers in Stone and Clay - - - - -	1.736	.474	.792	.997	1.398	2.617	5.949	15.961	40.975
Labourers, &c. as above, including Bricklayers and Masons - - -	1.744	.477	.803	1.038	1.474	2.714	6.052	16.041	40.565
Blacksmiths - - - - -	1.562	.527	.836	1.088	1.742	3.139	6.958	17.717	36.194

excessive fatigue of ladder climbing ; and if the mines were well ventilated, he would not break down by so early and premature an old age.

The publican has only to abstain from excesses in spirits and other strong drinks to live as long as other people.

I have the honour to be,

Sir,

Your very obedient servant,

WILLIAM FARR.

To

The Registrar-General.

Table with multiple columns and rows, containing faint text and numbers, likely a ledger or record book. The content is illegible due to fading and bleed-through from the reverse side of the page.