The causes of death among the assured in the Scottish Widow's Fund and Life Assurance Society from 1874 to 1894 inclusive / [Claud Muirhead].

THE CAUSES OF DEATH

AMONG THE ASSURED IN THE

SCOTTISH WIDOWS' FUND

1874-1894

REPORTED BY

CLAUD MUIRHEAD, M.D.

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INTRODUCTION

IN presenting this Report on the Mortality Experience of the Scottish Widows' Fund and Life Assurance Society to the Directors, it is necessary to preface it by a few observations.

For some time it was the practice in this Society to draw up a Report on the mortality every seven years. The last of these Reports was submitted to the Directors in 1874, by the late Dr. J. Warburton Begbie, then Principal Medical Officer to the Society. It embraced the seven years from 1867 to 1873 inclusive, and dealt with 1928 deaths. Before another Septennium had been completed, the Society had the misfortune to lose his valued services by his much-lamented death. He was one of the most lovable of men, as well as an accomplished physician. He took great pleasure in the work connected with the Society, and was much respected for his wise and judicious counsel as its Principal Medical Adviser.

The Directors being thus called upon to fill the vacant post of Principal Medical Officer, selected Dr. William Robertson, a man of brilliant talent and an accomplished mathematician. But not many years thereafter the Society sustained another shock, when it was unexpectedly announced that he too had gone the way of all living, and from a cause similar to that which had carried off his friend and predecessor. These two sad deaths, combined with other circumstances, interrupted the preparation of the septennial reports on the mortality experience of the Society, though a "Mortality Table," exhibiting the data on which these reports were founded, was, every seventh year, appended to the Report of the Annual General Meeting of the Society.

An attempt is now made to supply this deficiency in the present Report, in which three distinct Septennia are dealt with embracing the periods 1874 to 1880, 1881 to 1887, and 1888 to 1894. These afford fair data for a commentary on the mortality of the twenty-one years 1874 to 1894; for contrasting the increase or decrease in the number of deaths from the various diseases; for showing any alteration in their incidence at the different age-periods; and for noting the greater care and exactness in the later returns made by the medical attendants as to the precise cause of death.

The total number of deaths during the twenty-one years amounted to the large number of 9163 males and 628 females, together 9791. This aggregate

number exceeds by 4158 the total number of deaths from the foundation of the Society in 1815 down to the end of 1873. This rapidly increasing mortality is no doubt due to the largely augmented membership, and to the advancing age of the Society. This latter fact will prepare one to find a change in the relative numbers ascribed to the various causes of death, as naturally those which are more fatal to persons of advanced years will bulk more largely than in former years.

It is very important to remember that in this Report the mortality among MALES is alone considered. That among females may be taken up at another time. Of the 9163 of our male members who died during the twenty-one years, 4689 were Englishmen; 2976 were Scotchmen; and 1498 were Irishmen. The very few foreigners are included among the English.

The figures in this Report differ from those given in the septennial "Mortality Table" already referred to, for the following reasons:—

(1) Female deaths, and female lives exposed to risk, are excluded.

(2) Every Proposal Sheet and Death Certificate has been most carefully scrutinised, with the result that many cases have been transferred from the cause under which death was originally registered, to what appeared to be the truer and more exact cause.

(3) Certain of the causes of death, which were originally registered as "Unascertained," have now been obtained and placed under their specific headings.

The method of classification and arrangement of the causes of death followed in this Report is that which was adopted in previous Reports. The diseases are divided into thirteen Classes, into one of which each disorder naturally falls. Each of these diseases is separately considered for each Septennium, and commented on; and in order to sustain the interest, and permit of contrast, the results are grouped in chronological order. In some cases the total mortality caused by a particular disease during the twenty-one years has been considered as a whole, and in this connection I would direct attention more particularly to the remarks upon Consumption and Cancer, into an examination of which two diseases I have gone pretty fully, as they are full of interest, and are responsible for the deaths of many of the members of the Society. Moreover, these two disorders have been much discussed by the public of late years, and offer a sharp antithesis to each other. Thus, Consumption carries off our younger members in largest number, the average age at death being 42, and during the twenty-one years under observation the mortality from it has happily been annually decreasing; while Cancer attacks, by preference, those of advanced years—the average age at death being 60—and the mortality due to it has been steadily on the increase.

Nine Tables, exhibiting the Mortality Experience for each Septennium and for the three conjoined, are printed as an Appendix, viz. :—

TABLES I^A, I^B, and I^C, showing, *inter alia*, the number of living exposed to risk for one year for quinquennial groups of ages at death and at all ages for each Septennium; the deaths from different causes at corresponding ages; the average ages at death; etc.

TABLE I^D, showing the same for the twenty-one years.

TABLES II^A, II^B, and II^C, showing the deaths for each Septennium at quinquennial groups of ages and at all ages from different causes, and from all causes, among 10,000 lives of corresponding ages exposed to risk for one year.

TABLE II^D, showing the same for the twenty-one years.

TABLE III, showing the "Risks Emerged" from different causes and all causes, according to Year of Assurance. As the object of this Table is to endeavour to show what disease or diseases were most fatal to our members within a few years of their having passed a medical examination, duplicate risks are included. For example, if a member at the date of his death held three Assurances which had been effected within one year, two years, and three years respectively, the death was entered under the First, Second, and Third Assurance Years. By this method no Year of Assurance has been unduly loaded as compared with the others, which would have resulted had similar cases to the above been entered only once under either the earliest or latest Assurance.

These Tables have been prepared by Mr. Turnbull and his assistants in the Actuarial Department of the Office, but more immediately under the superintendence of Mr. Philip C. M'Kean, F.F.A., to whom I am largely indebted for liberal assistance, and valuable advice, in the preparation and revision of this Report, for which I most cordially thank him.

Mr. M'Kean begs me to explain that:—

(1) The average ages at death were ascertained by calculating in each case the *exact* age at death, summing these numbers, and dividing by the number of deaths involved.

(2) The death-rates among the members of the Society, as shown throughout the Report, are obtained by dividing the number of deaths by the number exposed to risk for one year—the result being what is known to Actuaries as the "Rate of Mortality," *i.e.* the probability of dying in a year—and multiplying by 10,000. The method

employed to obtain the death-rates for England as shown in the Supplements to the Reports of the Registrar-General, from which they are transferred to this Report, is on the principle of dividing the number of deaths in one year by the population in the middle of that year, which gives the function known as the "Central Death-Rate."—The difference resulting from the employment of these two methods will not, however, materially affect the comparisons made throughout the Report.

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REPORT

CLASS I.

ZYMOTIC AND CONTAGIOUS DISEASES.

The term Zymotic was first introduced by the late Dr. Farr in 1842, and was employed by him to group epidemic, endemic, and contagious diseases, from a resemblance which he believed to exist in the action of the specific poison when received into the system to that of fermentation.

The following diseases are grouped together in this class:—Ague, Cholera, Diarrhœa, Diphtheria, Dysentery, Enteric Fever, Erysipelas, Glanders, Hooping Cough, Influenza, Measles, Phlebitis, Pyæmia, Remittent Fever, Rheumatic Fever, Scarlatina, Septicæmia, Small-Pox, Syphilis, Typhus Fever, Yellow Fever.

The number of deaths arising from these diseases—from which unfortunately the Medical Examiner is nearly powerless to protect the Society—during the twenty-one years under observation was 649, or 7·084 per cent of the total mortality. The average age at death was 49·801. The following is a comparative statement of the total deaths in each of the three Septennia:—

Septennium.	Number of Deaths.	Percentage of Deaths in Septennium.	Average Age at Death.
1874–1880	161	6·513	49·267
1881–1887	177	5·836	48·117
1888–1894	311	8·502	51·035

The great increase in the actual and relative numbers for 1888-94 was due to the Epidemic of Influenza, which ravaged the country during the latter part of that Septennium. *See* sub-heading Influenza.

Ague and Remittent Fever.

1874-80.—Three members died of these disorders. One of them, a banker, who was born in Bombay, died in Madras of Ague complicated with internal hæmorrhage. He was 34 years old at death, and was surcharged five years on account of family susceptibility to death by climatic disorders. Another member died of Ague at the age of 35. Both had been assured a little over three years, and fell short of their expectation of life, as measured by the Institute Tables, by 29 years. One member died of Pernicious

Remittent Fever, in Callao, at the age of 45. He had resided in Peru for twenty years, and had passed through Yellow Fever, before he became a member of the Society. He had been assured for nearly five years, and fell short of his expectation by 22 years.

1881-87.—Eleven members died of these diseases or their resulting debility. Three were cases of Ague, and their ages at death were 67, 65, and 65. Two of them exceeded their expectation, and the other fell short of it by only 18 months. To Remittent Fever eight members fell victims in the prosecution of their occupations abroad, at the average age of 36. Regarding one we have no particulars, further than that he was a civil engineer, and died after having been a member of the Society for over 9 years. Two died in Calcutta Hospital; one, an assistant commissary, in Natal; one, a civil engineer, in Demerara; one, a physician, in Travancore; one, a clerk of works, in Malta; and one, an officer in the army, in Honduras. They all fell far short of their expectation of life.

1888-94.—From these two fevers ten deaths occurred, at the average age of 41. They all died abroad, in Madagascar, South Africa, Texas, Trinidad, Calcutta, Assam, San Francisco, and British Guiana. Only one of them exceeded his expectation, and that by 6 years.

Cholera.

1874-80.—One only of the five members who fell victims to this disease died of true Cholera. Two years after his policy was granted he died, at the age of 42, in Burmah, where he had resided for three years before acceptance. The other four died of English Cholera.

1881-87.—Two deaths are recorded from this disease. One, a merchant, died in Gibraltar, aged 45, after having been a member of the Society for upwards of 20 years. The other, a shipmaster, died at the age of 56, in Valencia, after having been assured for nearly 19 years.

1888-94.—From this disease five members died, at the average age of 49. Three of these were Englishmen, and they died in Burmah, China, and India respectively. One Scotchman died in India, and one Irishman died in America.

Diarrhœa.

1874-80.—From this disorder the policies of twenty-one members became claims at the average age of 73, the duration of the disease being from five days to three months. Fifteen exceeded their expectation of life by from 3 to 18 years.

1881-87.—Thirteen deaths were due to this ailment, after an illness of from three days to two years. The average age at death was 64, and six exceeded their expectation of life by from 2 to 17 years.

1888-94.—Four members were reported to have died of this ailment,

at the average-age of 52. The duration of the illness of one member was said to have been thirty hours; that of the others was not stated. They all fell short of their expectation by from 9 to 15 years.

Diphtheria.

1874-80.—Two members died of this disease. One, an English colliery owner, died at the age of 53; the other, an Irishman, at age 67.

1881-87.—Two members succumbed to this disease. One, an English doctor, died of heart failure, the result of the diphtheritic poison, at the age of 34. The other was an Irish merchant, who died at the age of 67.

1888-94.—From this disease six members died, at the average age of 48. One of these was a surgeon, another was a medical student, and a third was a clergyman, all of whom most probably took infection in the discharge of their professional duties.

Dysentery.

1874-80.—Nine members were reported as having died of this tropical disease, at the average age of 53, although only three of them had ever lived in foreign lands. One of them, an Irish clergyman, had resided in the East Indies for twenty-two years, and had suffered from Yellow Fever and Cholera, before becoming a member. He died at the age of 67, after an illness of three months. Another, a Scotch mariner, died in Callao, Peru. The most of the others had complications.

1881-87.—This disorder accounted for the death of seven members of the Society, at the average age of 47. One of them was charged the equivalent of an addition of eight years to age at entry on account of Hæmoptysis, which occurred nine years prior to his acceptance. He died of Dysentery of one month's duration, fifteen years after being admitted to the Society. Another of them died in Shanghai, and another in Mauritius.

1888-94.—Five members died of this disease. One died in Sheffield at the age of 63; another, a Scotch clerk, died in Calcutta at the age of 41; an Irish Inland Revenue officer died at the age of 53 in Dublin; another Irishman, a grocer, died in New Jersey, aged 54; and another, an Irish chemist, died in Belfast at the age of 45.

Enteric Fever.

Of all the diseases included in this class, Enteric or Typhoid Fever is the one which carried off by far the largest number of members. It is the one form of fever which, in this country, respects no class of society, and is a disorder which, as has been said, seems to wait upon civilisation, and yet is its greatest reproach, for undoubtedly it is one of those diseases which are justly termed preventible. In towns, it is most commonly due to defective sanitation or contaminated water.

The number of deaths arising from this fever alone amounted to one hundred and seventy-five, or 1·910 per cent of the total mortality. The complications and immediate causes of death were many and various, such as Hæmorrhage, Perforation of Bowel, Peritonitis, Pneumonia, Broncho-Pneumonia, Asthenia, etc. It appears from our statistics that our rate of mortality from this fever maintained a pretty steady average; thus the percentage of deaths from this cause on the number at risk was in 1874-80 equal to ·0322, in 1881-87 to ·0283, in 1888-94 to ·0281; in 1874-94 to ·0292.

The average age at death was 42·265 years, which is higher than one would expect, for it is a disease of young manhood, and the most common age at death among the general public is between 30 and 40. Among our members one hundred and nine, or 62 per cent, died under the age of 45; fifty, or 29 per cent, between 45 and 60 years of age; and only sixteen, or 9 per cent, at 60 years of age and over.

As contrasted with the mortality of males in England according to the Registrar-General's Returns, the Society's death-rate for Enteric Fever stands high. Another notable feature was the large percentage of deaths which occurred in the early years of members' assurance, which fact of course greatly intensified the loss to the Society. The greater part of the following Table is taken from Table III. in the Appendix:—

MORTALITY from ENTERIC FEVER during the twenty-one years 1874-94.

Assurance Period.	Total Number of Emerged Risks in each Period.	Death from Enteric Fever.	
		Number of Emerged Risks.	Percentage of Total Number.
First Assurance Year	150	14	9·33
Second Assurance Year	211	17	8·05
Third Assurance Year	231	12	5·19
Fourth Assurance Year	222	7	3·16
Fifth Assurance Year	242	9	3·72
Sixth to Tenth Assurance Year . .	1450	51	3·52
Eleventh Assurance Year and over . .	8495	85	1·00

NOTE.—Duplicate Risks are included, unless effected in the same Assurance Year.

It would thus appear that 56 per cent of our risks which emerged by death from Enteric Fever, did so during the first ten years of members' assurance.

It is also interesting to note how Ireland maintained its unenviable notoriety as peculiarly the seat of fever, even among the well-to-do classes. Thus from this special fever England contributed ninety-three deaths, Scotland thirty-four, and Ireland forty-eight. From Typhus, another infectious and fatal fever, England lost four members, Scotland six, and Ireland eleven. Adding the deaths from these two fevers, and comparing the number per cent in each nationality according to their total mortality, we find that Ireland exhibits a mortality from these causes nearly double that of England, and nearly thrice that of Scotland, thus—

Deaths from Enteric and Typhus Fevers	Ireland	3·94 per cent of her total mortality.
	England	2·07 „ „ „
	Scotland	1·35 „ „ „

1874-80.—Enteric Fever was the cause of death to fifty members, equal to a percentage mortality of 2·023. Their average age at death was 42·449. Thirty-six of the fifty deaths took place under the age of 50. As to nationalities, among the English members there were twenty-two deaths from this cause, among the Scotch fourteen, and among the Irish there were also fourteen. The average ages at which they respectively died were 39 for the English, 51 for the Scotch, and 38 for the Irish.

1881-87.—The number of deaths from this cause during this Septennium was nearly the same as in the previous one. The actual number was fifty-seven, and the percentage to the total deaths in the Septennium was 1·878. The average age at death was 42·438. Forty-one deaths occurred below the age of 50, and sixteen at 50 and over. Of these deaths thirty-six were English, eight were Scotch, and thirteen were Irish; and their respective average ages at death were 40 for the Englishmen, 48 for the Scotchmen, and 44 for the Irishmen.

1888-94.—Sixty-eight members died of this disease, equivalent to 1·859 per cent of the septennial mortality, and their average age at death was 41·986 years. No less than fifty-four died before attaining age 50. As to the nationalities, thirty-five were Englishmen, twelve were Scotchmen, and twenty-one were Irishmen, their average ages being 41, 43, and 43.

Erysipelas.

This disorder is characterised by an inflammation of the skin, believed to be due to the introduction of a micro-organism through an abraded surface. Hence the frequency with which it occurs after wounds and injuries.

1874-80.—Sixteen persons died of this disease, at an average age of 53.

1881-87.—The number of deaths from this disease was twenty-eight, at an average age of 55.

1888-94.—At the average age of 47, fifteen members were carried off by this disorder. In four of them the head and face were the seat of the disease.

Glanders.

This is a virulent contagious disease, usually communicated to man from the horse, and is associated with a specific microbe.

1874-80.—One man, aged 57, died of this terrible disease.

Hooping Cough.

1874-80.—One man, a farmer, died of this complaint after thirty-seven days' illness, at the unusual age of 53.

Influenza.

This is an infectious disease, probably dependent upon a micro-organism, with which the public have unfortunately of recent years become very familiar, and which is of the nature of Epidemic Catarrhal Fever.

1874-80.—Five persons died of this disease. Their ages at death were 60, 73, 77, 83, and 90. Four of them exceeded their expectation of life by from 7 to 23 years, and the fifth fell short of it by nearly 9 years.

1881-87.—No deaths were reported during this Septennium as being due to Influenza.

1888-94.—Influenza was pandemic in the years 1889, 1890, and 1891, and continued epidemic in the British Islands for some years after. It proved fatal to one hundred and forty-two of our members during this period, who died at the average age of 59. The disease appeared to be equally severe in England and Scotland, as measured by the mortality; but Ireland lost fewer members from it than either of the other divisions of the country. Curiously enough, the average age at death of the English members was about 5 years younger than that of the Scotch, and that of the Scotch 3 years younger than that of the Irish.

The complications and immediate causes of death were numerous. By far the most common was Pneumonia, which proved fatal to no less than sixty-four members, or 45 per cent of the total deaths. The other complications, fatal in order of sequence, were Congestion of the Liver, Heart Failure, Broncho-Pneumonia, Bronchitis, Asthenia, Pleurisy, etc.

Measles.

1881-87.—One Scotch schoolmaster died of this infectious disorder, after an illness of eight days, at the age of 44.

1888-94.—One death is recorded as having resulted from this cause. The member was an English chemist, 38 years of age, and he might probably have pulled through the disorder, had not his constitution been weakened by Albuminuria, the result of Chronic Alcoholism.

Phlebitis.

This is an inflammation of the walls of a vein, and should more properly appear under Class V., Diseases of the Circulatory System.

1874-80.—One death arose from this cause.

1881-87.—Two deaths were due to this affection.

1888-94.—Two members died of this ailment. One was a Scotchman, aged 62, who fell short of his expectation of life by 4 years, and the other was an Irishman, who fell short of his expectation by 16 years.

Pyæmia and Septicæmia.

By these terms are meant poisoning of the blood by the introduction into it of pathogenic micro-organisms. The poisoning may be due to the products of putrefaction which occur in wounds, abscesses, etc., and should be regarded as a complication of other disorders rather than as a primary affection.

1874-80.—Six claims were due to one or other of these diseases. The primary cause of the blood-poisoning was an injury in the first case, a surgical operation in the second, an Abscess in the third, and a Boil in the fourth. Defective drainage was responsible for the fifth case, and of the sixth we have no information.

1881-87.—Twenty-one deaths were attributed to one or other of these diseases. Four of the cases were due to accidental wounds, three to Abscess, two followed operations, seven arose as a complication to various diseases, and of the others no information is given.

1888-94.—Twenty-six members died of one or other of these forms of blood-poisoning, at the average age of 50. In three cases the affection was due to absorption of toxines from wounds caused by accident, and in one case from wound caused by a surgical operation. The blood-poisoning was secondary to, or consequent on, Abscess in four cases; Inflammation in three; Necrosis of bones in the face, one; Disease of the Skull, one. Two gentlemen, an English doctor of medicine and a Scotch veterinary surgeon, died from blood-poisoning contracted in the execution of their professional duties. Of the others we have no information.

Remittent Fever.—*See* Ague.

Rheumatic Fever.

This disease occasioned the death of fifty-eight members, forty-four of whom were English, seven were Scotch, and seven Irish. Their average age at death was 41, and their average age at entry was, roughly speaking, 32. Their total expectation of life was about 1920 years, while they only aggregated about 560 years, or less than one-third of their anticipated after-life. Of the fifty-eight who died of this disease only one exceeded his expectation, and he expired at the respectable age of 74; but I think that his inclusion in this section of ailments was a mistake. He was a sufferer from Bronchitis, and it is stated that he had an attack thereof as a complication of Rheumatic Fever, of which latter he is reported to have died. But death from Acute Rheumatism is as rare an event at the age of 74 as death from Bronchitis is common, and I feel sure, therefore, that he ought to have been placed under "Bronchitis." Excluding him, it is apparent that the death of the remaining fifty-seven persons, within such a short time of their becoming members, was a source of great pecuniary loss to the Society; and the question forces itself upon one, Can any precautions be taken to obviate this in the future?

To answer this fairly we must bear in remembrance two or three characteristics of this disease, viz.:—(1) Proclivity to the disease is believed to be hereditary, an opinion firmly held by the laity, though less deeply rooted in the minds of the medical profession. (2) It occurs specially between the ages of 20 and 40 years. (3) It is extremely apt to recur in the same individual. (4) It is prone to invade the membranes of the heart, and to leave it permanently crippled. It is reckoned that every second sufferer sustains some cardiac damage before he gets rid of his fever; and the tendency to endocarditic complication increases directly with every successive attack of the disease.

Keeping these data before us, let us see how they bear upon our fifty-eight cases. (1) Heredity: Only 7 per cent of the deceased members gave any history of a family tendency to the disease. Of course, our numbers are very scanty from which to draw any strong deductions, but all the same heredity does not appear to have been a very powerful factor in the development of the disease, so far as our statistics go, though by writers on the subject inheritance as a predisposing cause is put as high as 25 to 30 per cent of the cases. (2) Age: The average age at death of our cases was 41, which is slightly older than that of the general population. (3) Recurrence: In 30 per cent of our cases the fatal attack had been preceded by one or more. (4) Complications: About 20 per cent of our deaths were complicated with Heart Disease, and 12 per cent with Meningitis.

It is much to be feared that but little can be done to save the Society from such loss as that above referred to. But this at least we can do—we can deal more stringently than in the past with those who in early youth have given evidence of a rheumatic constitution, or before admission to the Society have passed through an acute attack of the fever. Perhaps it might prove a wise rule, as it certainly would prove a safe one, to exact an extra premium from such, and to cause them to assure on the Endowment Assurance scale.

It might also prove of service were the Society's Medical Examiners to interrogate the candidate closely as to the nature and duration of any rheumatic attack which he may confess to having experienced, especially if he be under the age of 40. Many a man speaks carelessly of these attacks as merely "slight rheumatism," "occasional rheumatic pains," and so forth, the particulars of which he has forgotten, but which, on taxing his memory at the instigation of the Examiner, may be recalled as something of a more serious character, though it may not have appeared to be so to the candidate.

1874-80.—Twenty-two deaths are recorded as due to this disorder. Eighteen were Englishmen, and thirteen of them gave no history of the occurrence of Rheumatism in their families; one did acknowledge its existence among his predecessors; two confessed to attacks of the disease prior to assurance; and two admitted both personal and family history of Rheumatism. The complications were Heart troubles in two cases and Meningitis in one.

Two Scotch members fell victims to this ailment. Neither of them admitted the presence of the disease among their progenitors, but one had

himself previously suffered from Rheumatic Fever. One case was complicated with Meningitis, and the other with Heart affection.

Two Irishmen died of the disease. In neither case was there any family history of the disease, but one of them had previously suffered from it. Both cases were attended with Heart complication.

1881-87.—Twenty-one deaths were due to this cause. Of these, fifteen were Englishmen, three were Scotchmen, and three were Irishmen, and in none of the cases was there any family history of Rheumatism.

Of the Englishmen, four had suffered from Rheumatism before Assurance, and two of them were rated up five and seven years respectively on that account. Their ages at death were 48 and 49, and they fell short of their expectation by 15 and 19 years. One Scotchman and two Irishmen had suffered from the disease before they became members.

In six cases the attack of Rheumatic Fever which ended fatally was complicated with affection of the Heart, and in two with Meningitis. Gout, Pneumonia, Bronchitis, and Dropsy were the complications in other four cases.

1888-94.—Fifteen members died of this painful affection, eleven of whom were English, two Scotch, and two Irish. They all died within twenty-eight days of being attacked, most of them after a fortnight's illness, proving the acuteness of the disease. Their average age at death was 43, and, as might be anticipated, all of them fell short of their expectation.

Of the eleven Englishmen, five had suffered from the disease before they were admitted members of the Society. One of these five, who had passed through two slight attacks of Rheumatism and Epileptic seizure, the result of the disease, was surcharged five years when he joined the Society at the age of 26. At the age of 42 he had another Rheumatic attack, with Epilepsy, in which he died. Another of them was surcharged four years on entry at the age of 33, because he had passed through two attacks of the disease at 20 and 26; and at age 45 was accepted on a fresh proposal at ordinary rates. He died, aged 48, of Rheumatic Fever, complicated with Ulcerative Endocarditis and Embolism, after twenty-eight days' illness. Another, who had suffered from the disease at 14 years of age, and whose brother had died at age 29 of Heart Disease secondary to Rheumatic Fever, joined the Society at age 38, and died, 9 years afterwards, of this disease complicated with Meningitis, after nine days' illness. Another, who died at the age of 56 of this disease complicated with Meningitis, after sixteen days' suffering, was charged three years extra on account of family history of Lung troubles. There was no family or personal history of Rheumatism. Another, in whose family there was no history of Rheumatism, and whose personal history was equally free from any record of this disease, died, at the age of 38, of Hyperpyrexia and Failure of the Heart as complications of Rheumatic Fever, after his Policy had endured eight years.

None of the Scotch or Irish cases had any family history of Rheumatism, but one of the Irishmen had undergone six attacks, the last one occurring six years previous to his proposal. He was accepted with an addition of five years to his age, which was 35, and died five years afterwards of Rheumatic Fever, complicated with Gout and Hyperpyrexia.

Of the fifteen members who died of Rheumatic Fever, four suffered from cerebral complications (Meningitis and Epilepsy), two from the complication Hyperpyrexia, one from Ulcerative Endocarditis, one from Peritonitis, and the others from Asthenia.

Scarlatina.

1874-80.—Four deaths were due to this cause. Their ages ranged from 26 to 37, and their policies only endured from 1 to 8 years.

1881-87.—Four members fell victims to this disease. Of these, three were Englishmen, and one was an Irishman. One died at the unusually advanced age of 60; but he was a doctor, and presumably took the disease from some patient. Another was a commercial traveller, and he died at the age of 32. Five years were added to his age at entry on account of a history of Rheumatism, both personal and family. The Irishman was a clerk, and died at the age of 42, after three days' illness.

1888-94.—Two members died of this children's ailment. One was an English farmer, who evidently suffered from the severe form styled Scarlatina Anginosa, and on whom Laryngotomy was performed. He died at the age of 40, after an illness of six days. The other was a Scotch bank-teller, who died of the disease, complicated with Pneumonia, at the age of 36.

Septicæmia.—*See* Pyæmia.

Small-Pox.

1874-80.—One man died of this disease, at the age of 27. He was a Scotchman, an engine-keeper by trade. It does not appear from the papers whether or not he had been vaccinated.

1881-87.—Three policyholders succumbed to this disease—two Scotchmen and one Englishman. One of the Scotchmen, a merchant, died in Oporto at the advanced age of 79; he had exceeded his expectation by 13 years. The other was a physician, aged 34 years at death. The Englishman was a banker, and died at the age of 46, after six days' illness. The Scotch physician had been vaccinated; we have no information about the other two.

1888-94.—From this disease two members died. One, an English chemist, died at age 57 in the Hospital Ship at Dartford; and the other, a Scotch teacher, died in Shanghai, aged 28. The latter stated in his proposal papers that he had been vaccinated.

Syphilis.

1881-87.—One member was stated to have died of this disease, the duration of which was ten years. He died at the age of 48, his two policies having endured 30 and 23 years respectively.

Typhus Fever.

1874-80.—Thirteen deaths occurred from this deadly disease, at the average age of 40. Three of these were English, four were Scotch, and six Irish. One was a clergyman, one a medical student—who died at age 22, having been assured for only a few months—and three were physicians. Although not stated, it is probable that these gentlemen contracted the disease in the performance of their professional duties.

1881-87.—Four members died of this disorder, one of whom was an Englishman, and the other three were Irishmen. The average age at death was the same as last Septennium, and again we find a physician among the victims. He was 33 years old at death.

1888-94.—Four of our members died of this disease, at the average age of 52. Two were Scotchmen, one of whom, a builder, died at the age of 61. The other was a medical man, and it is expressly stated that he took the infection from a patient who was suffering from the disease. He was 39 years old, and had only been assured for two years.

The other two were Irishmen, one of whom was a clergyman, who died at the age of 35; the other was a judge, who died at the age of 74. He had exceeded his expectation of life by 5 years.

Yellow Fever.

1874-80.—One Englishman died of Yellow Fever, after an illness of four days, at Santos, Brazil, where he had been resident for three years before he became a member of the Society. His age at death was 27, and he had only been assured for a few months.

1888-94.—Four Englishmen died of this disease, at the average age of 39. They all died abroad: three in Brazil, and one in Puerto Rico.

CLASS II.

DISEASES OF UNCERTAIN SEAT.

Under this heading the following diseases are found :—Abscess, Addison's Disease, Atrophy, Cancer, Debility, Dropsy, Gout, Mortification, Pernicious Anæmia, Purpura, Tumour.

The number of deaths arising from these causes during the twenty-one years under observation, was 725, or 7·914 per cent of the total mortality. The average age at death was 60·520. The following is a comparative statement of the total deaths in each of the three Septennia :—

Septennium.	Number of Deaths.	Percentage of Deaths in Septennium.	Average Age at Death.
1874–1880	176	7·120	61·211
1881–1887	228	7·516	60·137
1888–1894	321	8·775	60·414

The steady increase in the actual and relative numbers is coincident with the increasing number of deaths from Cancer. *See* sub-heading Cancer.

Abscess.

1874-80.—Thirteen deaths were due to this disease. Of these, three were Lumbar in origin, three were Abdominal, one was in the Neck, one in the Ear, one in the Rectum, one in the Perineum, etc.

1881-87.—This was the cause of death to eleven members. One was an Iliac Abscess, two occurred in the Thigh, two in the Abdomen, two in the Perineum, etc.

1888-94.—The deaths of five members are recorded under this title. Two of these were Englishmen, one being a cabinetmaker, in whom the Abscess was Iliac, set up by a badly supported Hernia. He was 87 years old at death, and lived 15 years beyond his expectation. The other was a smith, who died at age 60 of Perineal Abscess, complicated with Pneumonia.

Two Scotchmen died of Abscess. One was Lumbar in character. He had been surcharged three years on account of Renal Calculus, and died sixteen years after acceptance. The other, a teacher, died of Cerebral Abscess and consequent Paralysis, after fourteen days' illness, within a year after admission as a member, at the age of 40.

The only Irishman who died of this complaint was a paymaster in the Royal Navy, and he died at age 54 of Urethral Abscess after Perineal Section.

Addison's Disease.

This disease, first described by Addison in 1855, is a constitutional malady due to tuberculous infiltration of the suprarenal bodies, characterised by intense weakness, progressive asthenia, and bronzing of the skin and mucous membranes, and usually ends in death.

1874-80.—Three members died of this rather uncommon disorder. The duration of their illness was respectively six months, nine months, and two years. Their average age was nearly 57.

1881-87.—Four cases were classed as due to this disease. The average age at death was 50.

1888-94.—Three members died of this disease, at the average age of 40. One case was complicated with Renal Hæmorrhage. Regarding the other two no particulars were given.

Atrophy.

1874-80.—Four members were said to have died of this disorder. One was probably a case of Pernicious Anæmia.

1881-87.—Under this heading six members' deaths were returned. Of these, three were probably cases of Pernicious Anæmia, and three were probably cases of Phthisis.

1888-94.—One death is recorded under this heading. He was an English builder, and died at the age of 63.

Cancer.

In view of the keen interest which has been awakened in the minds of the public in the apparent increase of this terrible disease as a cause of death, and the controversy which has arisen among medical men whether this increase is real, or merely the result of greater precision in the registration of the affection under its true name, I have thought it expedient to analyse in some detail the statistics of the mortality from this cause afforded by the experience of this Society during the twenty-one years under observation. In order that the reader may appreciate the enormous increase that has taken place in the number of deaths in the community certified as being due to Cancer, I insert here the following Table :—

ANNUAL MORTALITY from CANCER in England among 10,000 (Males) living at each Group of Ages and at All Ages.

PERIOD.	Between Ages 20 & 25.	Between Ages 25 & 35.	Between Ages 35 & 45.	Between Ages 45 & 55.	Between Ages 55 & 65.	Between Ages 65 & 75.	Ages 75 and over.	All Ages.
1861–70	·26	·60	2·04	5·36	12·01	18·62	22·58	2·42
1871–80	·27	·70	2·39	7·05	15·88	25·99	29·85	3·12
1881–90	·37	·79	2·97	9·98	22·99	37·42	39·14	4·30

It will be observed that the rate of mortality for all ages was nearly twice as great in 1881-90 as it was in 1861-70. If we take individual years, and look at the increase from another point of view, we find that whereas in 1861 deaths from Cancer represented 1 in 102 deaths from all causes, in 1890 they were equal to 1 in 41.

Before proceeding to examine our statistics I desire to draw attention to the following explanations:—

(1) It is important to note that here, as elsewhere throughout this Report, deaths of MALES only are considered.

(2) The term "Cancer" is employed as synonymous with "Malignant Disease," and includes all the various forms of Cancer.

(3) In many cases, although Cancer was suspected, the certificates of death were very indefinite, and rendered it difficult to assign the disease to its legitimate class. Some of these unsatisfactory certificates were returned to the grantors of them, with a request for further details, which request was usually courteously responded to. In other cases, where the date of the certificate was so remote that it was unlikely that further information could be obtained, the details available have been most carefully considered; and where the age of the individual at death, the site of the lesion, and the duration of the final illness, have seemed to offer reasonable ground for believing it to be one of malignant disease, it has been so treated, and transferred to this sub-heading.

(4) Use has been made of the figures contained in the Supplement to the 55th Annual Report of the Registrar-General for England.

The total number of deaths from Cancer among the male lives assured in the Scottish Widows' Fund during the twenty-one years 1874-94, was five hundred and thirty-nine, equivalent to 5·883 per cent of the total mortality. The average age at death was 60·385 years. The following is a comparative statement of the total deaths in each of the three Septennia:—

Septennium.	Number of Deaths.	Percentage of Deaths in Septennium.	Average Age at Death.
1874–1880	122	4·935	61·980
1881–1887	165	5·440	59·819
1888–1894	252	6·889	59·985

Two points of interest are at once apparent from this Table—

(1) That, as measured by the total deaths from all causes, there has been a very considerable increase in the mortality from Cancer among our members during the twenty-one years. It is worthy of note that the actual number of deaths during 1888-94 was more than double the number during 1874-80.

(2) That there was a very serious decrease in the average age at death from 1874-80 to 1881-87, and a very slight recovery in age from 1881-87 to 1888-94. This is contrary to our experience for death from all causes, the average age at death for the total mortality in each Septennium being 57·083, 58·105, and 59·192 years respectively.

Before considering the apparent increase of Cancer among our members, let us look at our rate of mortality from that disease as compared with that for England :—

ANNUAL MORTALITY from CANCER in England and the Scottish Widows' Fund among 10,000 (Males) living at each Group of Ages.

GROUPS OF AGES.	ENGLAND 1881-90.	SCOTTISH WIDOWS' 1874-94.
Between Ages 20 & 25 . . .	·37	...
,, ,, 25 & 35 . . .	·79	·82
,, ,, 35 & 45 . . .	2·97	2·56
,, ,, 45 & 55 . . .	9·98	7·48
,, ,, 55 & 65 . . .	22·99	23·99
,, ,, 65 & 75 . . .	37·42	41·91
Ages 75 and over	39·14	43·09

From this Table we see that for the twenty-one years, 1874-94, from Group 55-65 onwards, our death-rate was very considerably higher than that for England for 1881-90. This is a fact to which I shall refer later on.

I shall now proceed to consider the question of the apparent increase of Cancer, as a cause of death, among our members as compared with the increase among the community. For the purposes of this comparison I have taken the official figures for the two decennial periods 1871-80 and 1881-90 from the Supplementary Report referred to, because they are readily accessible and near enough in point of time to our own periods to afford comparative data :—

ANNUAL MORTALITY from CANCER in England and the Scottish Widows' Fund among 10,000 (Males) living at All Ages.

ENGLAND.			SCOTTISH WIDOWS' FUND LIFE ASSURANCE SOCIETY.					
Period.	Death-Rate.	Ratio.	Period.	Death-Rate.	Ratio.	Period.	Death-Rate.	Ratio.
1871–80	3·12	100	1874–80	7·86	100	1874–80	7·86	100
1881–90	4·30	138	1881–87	8·19	104	1888–94	10·42	133
Difference	1·18	38	Difference	·33	4	Difference	2·56	33

Inspection of this Table brings out the following facts:—

(1) That the death-rate from Cancer among the General Population (Males) of England increased 38 per cent in 1881-90 as compared with 1871-80.

(2) That the death-rate among the Members of the Scottish Widows' Fund—

(*a*) Increased 4 per cent from 1874-80 to 1881-87.

(*b*) ,, 33 ,, 1874-80 to 1888-94.

That the rate of mortality among our members should only have increased 4 per cent from 1874-80 to 1881-87 is surprising, and, combined with the fact that our rate of mortality at the older ages is considerably higher than that for the general population, appears to support the theory that the increase

in Cancer is only apparent. In the Supplement to the 45th Annual Report of the Registrar-General for England, issued in 1885, Dr. Ogle, commenting on the steady and progressive rise in the mortality from Cancer, remarked: "There can be very little doubt that a considerable part in this apparent "increase is simply due to improved diagnosis, and more careful statement "of cause on the part of medical men. . . . The increase of mortality from "Cancer has been much greater among males than among females. . . . Now, "were the rise not merely apparent but real, being due to general physical "deterioration of the people or other similar causes, there would seem no "reason why the male sex should have suffered more than the female; whereas "the difference is readily intelligible on the hypothesis that the rise has been, "at any rate in great measure, only apparent and due to better diagnosis. "For the cancerous affections of males are in much larger proportion internal, "or inaccessible, than are those of females, and consequently are more difficult "of recognition, so that any improvement in diagnosis would add more to "the male than to the female reckoning." This argument is repeated by Dr. Tatham in the Supplement to the 55th Report.

If this argument be sound, it is evident that such a large increase would not be expected among the constituents of a Society like ours—the majority of whom can command the services of skilled medical men—as among the general community, and, as stated above, the small increase in our death-rate from the first to the second Septennium seems to support this theory; but the figures relative to 1888-94 greatly diminish the force and cogency of the reasoning. Let me repeat that every death where there was a suspicion of Cancer has been carefully investigated, and if necessary included under Cancer, and under these circumstances I think it is evident that the theory that the large increase between the rate of mortality for 1881-87 and that for 1888-94—27 per cent—was wholly, or even largely, caused by a sudden increase of diagnostic skill among the class of medical men who usually certify causes of death to the Society, is untenable. I am more inclined to believe that, in addition to the increase due to more exact returns, there has been a very real progressive increase in Cancer as a cause of death, and that the small increase in our death-rate for 1881-87, and the large increase for 1888-94, are accounted for by the probability that an increase in a disease like Cancer would show itself, first among the general population, and last among selected lives.

There is another aspect of the case to be considered, and one where our statistics directly controvert the reasoning of those who think that the increase in Cancer is only apparent.

It has been sought to support this proposition by the statement that it is Cancer of the *internal* organs which is largely on the increase. These cases being obviously more difficult to recognise than corresponding affections of the *external* organs, the increase is ascribed to improved skill in diagnosis on the part of the Reporters.

Before proceeding to examine our statistics as to the truth or fallacy of this statement, it will be convenient to explain which lesions are regarded as External, and which as Internal. The arrangement is somewhat arbitrary,

but is based upon the accessibility or non-accessibility of the parts to touch and sight. Hence the accessible lesions are styled External, the deeper and non-accessible lesions, Internal. As an example of the External, Cancer of the Tongue may be cited, and of the Internal, Cancer of the Stomach.

We have in all five hundred and thirty-nine cases of Cancer to deal with, but for our present purpose twenty-seven of these must be deducted, as in them the site of the disease was not specified, thus leaving five hundred and twelve cases in which the site of the lesion was detailed. The following Table shows these five hundred and twelve deaths subdivided into Cancer of the Internal and Cancer of the External Organs for the three Septennia, separately and combined; and the percentages which these numbers bear to the total in each period of time. The differences between the Ratios show the variations per cent of these percentages, and indicate the increase or decrease per cent from the first Septennium.

MORTALITY from CANCER of the INTERNAL and EXTERNAL ORGANS.

Period.	Deaths from Cancer of the Internal Organs.			Deaths from Cancer of the External Organs.			Total Deaths from Cancer where site of Disease was specified.
	Number.	Percentage.	Ratio.	Number.	Percentage.	Ratio.	
1874–80	81	71·05	100·00	33	28·95	100·00	114
1881–87	107	70·86	99·73	44	29·14	100·66	151
1888–94	162	65·58	92·30	85	34·42	118·89	247
1874–94	350	68·36	...	162	31·64	...	512

From this it appears that the deaths from Cancer of the *Internal* Organs amounted to 71·05 per cent of the total specified cases in the first Septennium, and to 65·58 per cent in the third Septennium, equal to a *decrease* of 7·70 per cent of the percentage value of the first; while the deaths falling into the *External* class formed in the first Septennium 28·95 per cent of the specified cases, and 34·42 per cent in the third Septennium, equal to an *increase* of 18·89 per cent over the percentage value of the first.

The next Table shows that the increase in the death-rate fully supports the results obtained by comparing the percentages of actual deaths.

ANNUAL MORTALITY from CANCER of INTERNAL and EXTERNAL ORGANS, separately and combined, among 10,000 (Males) living at All Ages.

Period.	Internal Organs.		External Organs.		Total.	
	Death-Rate.	Ratio.	Death-Rate.	Ratio.	Death-Rate.	Ratio.
1874–80	5·22	100·00	2·12	100·00	7·34	100·00
1881–87	5·31	101·72	2·18	102·83	7·49	102·04
1888–94	6·70	128·35	3·52	166·04	10·22	139·24

The statement made by Dr. Ogle and repeated by Dr. Tatham (see page 16), that the chief increase in the mortality from Cancer among the community was due to the multiplication of male deaths, may be accepted without question; but our statistics do not support their contention that the additional deaths belonged to the Internal or Inaccessible Group, and in our Society our Reporters

cannot lay claim to any enlarged knowledge or greater skill by reason of an additional number of cases of Internal Cancer being diagnosed.

Going into detail, the two following Tables show the deaths from Cancer among our members during the three Septennia, separately and combined, subdivided among the organs affected; and the percentages these numbers bear to the total deaths from Cancer where the site of the disease was specified, in each period of time.

MORTALITY from CANCER of the INTERNAL ORGANS.

Organ Affected.	1874–80.		1881–87.		1888–94.		1874–94.	
	Number.	Percentage.	Number.	Percentage.	Number.	Percentage.	Number.	Percentage.
Stomach	28	24·56	33	21·85	50	20·24	111	21·68
Liver	23	20·18	28	18·55	42	17·00	93	18·17
Bowel	5	4·39	15	9·93	23	9·31	43	8·40
Abdomen	7	6·14	13	8·60	14	5·67	34	6·64
Bladder	5	4·39	3	1·99	8	3·24	16	3·13
Mediastinum and Thorax	1	0·88	8	5·30	4	1·62	13	2·54
Œsophagus	2	1·75	2	1·33	8	3·24	12	2·34
Prostate	3	2·63	2	1·33	3	1·21	8	1·56
Kidneys	2	1·75	1	0·66	4	1·62	7	1·37
Pancreas	3	2·63	...	...	3	1·21	6	1·17
Lung	2	1·75	1	0·66	2	0·81	5	0·98
Brain	...	...	...	...	1	0·41	1	0·19
Spinal Cord	...	...	1	0·66	...	...	1	0·19
Total	81	71·05	107	70·86	162	65·58	350	68·36

MORTALITY from CANCER of the EXTERNAL ORGANS.

Organ Affected.	1874–80.		1881–87.		1888–94.		1874–94.	
	Number.	Percentage.	Number.	Percentage.	Number.	Percentage.	Number.	Percentage.
Rectum	12	10·52	26	17·22	30	12·14	68	13·28
Tongue	8	7·02	2	1·33	13	5·26	23	4·49
Tissues	4	3·51	5	3·31	8	3·24	17	3·32
Throat	3	2·63	1	0·66	5	2·02	9	1·76
Larynx	1	0·88	1	0·66	6	2·43	8	1·56
Bones	...	...	1	0·66	6	2·43	7	1·37
Mouth	1	0·88	2	1·33	2	0·81	5	0·98
Parotid	3	2·63	1	0·66	1	0·41	5	0·98
Glands	...	...	1	0·66	4	1·62	5	0·98
Penis	1	0·88	2	1·33	1	0·41	4	0·78
Jaw	...	...	...	...	4	1·62	4	0·78
Testes	...	...	...	...	2	0·81	2	0·39
Eye	...	...	1	0·66	1	0·41	2	0·39
Lip	...	...	...	...	2	0·81	2	0·39
Skin	...	...	1	0·66	...	...	1	0·19
Total	33	28·95	44	29·14	85	34·42	162	31·64

Let us now consider the question of the age at death of those of our members who died of Cancer.

We have already seen that the average age at death was considerably younger in 1881-87 and 1888-94 than in 1874-80. The following Table shows, by means of percentages, at what groups of ages the changes occurred :—

TABLE showing the Percentages at Groups of Ages of the Total Number of Deaths from CANCER in each Septennium.

Septennium.	Ages under 25.	Between Ages 25 & 35.	Between Ages 35 & 45.	Between Ages 45 & 55.	Between Ages 55 & 65.	Between Ages 65 & 75.	Ages 75 and over.
1874–80	...	1·64	8·20	12·30	33·60	36·88	7·38
1881–87	...	1·21	9·09	19·39	37·58	23·64	9·09
1888–94	...	2·78	8·73	21·83	31·75	25·79	9·12
Variations in incidence of Mortality for 1874–80 and for 1888–94.	...	*+ 1·14*	*+ 0·53*	*+ 9·53*	*– 1·85*	*– 11·09*	*+ 1·74*

The next Table is a truer test of the incidence of the Cancer Mortality, for it takes into account not only the actual deaths, but also the number of living who were exposed to the risk of death for one year, and it practically reproduces in another form all the really important features of the preceding Table.

ANNUAL MORTALITY from CANCER among 10,000 (Males) living at each Group of Ages and at All Ages.[1]

PERIOD.	Ages under 25.	Between Ages 25 & 35.	Between Ages 35 & 45.	Between Ages 45 & 55.	Between Ages 55 & 65.	Between Ages 65 & 75.	Ages 75 and over.	All Ages.
1874–80	...	0·51	2·19	4·72	20·78	46·98	34·68	7·86
1881–87	...	0·42	2·37	7·34	25·89	33·67	42·22	8·19
1888–94	...	1·49	2·95	9·02	24·53	45·18	48·33	10·42

These Tables unmistakably show that the age at which Cancer must be looked upon as a serious cause of death among our members is becoming younger. This fact is more strongly brought out by grouping together a larger number of ages at death. From the Table showing the percentages at groups of ages we see that practically 90 per cent of all our deaths from Cancer took place between ages 35 and 75. If, therefore, we group the deaths between these ages, the results will be probably more satisfactory than if we include the extremities of the Table, because we shall then have eliminated what we may call "accidental" cases of death among our very old or very young members. A few cases of death at either end included in a Table like the following might have the effect of putting our view of the essential facts entirely out of focus.

[1] For quinquennial groups of ages see Tables II_A, II^B, and II^C, in Appendix.

MORTALITY from CANCER during the twenty-one years 1874-94.

PERIOD.	Percentage of Deaths in Groups of Ages to Total Cancer Deaths in each Septennium.				Annual Mortality among 10,000 (Males) living at each Group of Ages.			
	Between Ages 35 & 55.		Between Ages 55 & 75.		Between Ages 35 & 55.		Between Ages 55 & 75.	
	Percentage.	Ratio.	Percentage.	Ratio.	Death-Rate.	Ratio.	Death-Rate.	Ratio.
1874–80	20·50	100	70·48	100	3·23	100	29·35	100
1881–87	28·48	139	61·22	87	4·40	136	28·43	97
1888–94	30·56	149	57·54	82	5·68	176	30·85	105

Consideration of the first half of this Table shows us that the actual number of deaths from Cancer during 1874-94 was steadily and rapidly transferred from Group 55-75 to Group 35-55, while the figures in the second half of the Table show that the increase in our rate of mortality was almost entirely confined to members under 55 years of age, the increase in the death-rate among the members between 55 and 75 years of age, from 1874-80 to 1888-94, being only 5 per cent, while for the other group it was 76 per cent.

Reviewing the data which have been submitted, the following conclusions seem to be justified—

1. The registered increase in the number of deaths from Cancer is undoubted. This is proved by our own statistics, and corroborated by all other authorities.

2. After "allowing that this increase is not wholly real, but may be " accounted for, to some extent, on the assumption that the true nature of " obscure cases of malignant disease has been recognised with ever-increasing " certainty in recent years, and that, as a consequence, the statement of death " has been made with greater precision than had been formerly the case," there remains a large real increase to account for the large and progressive mortality from this disease.

3. The Age Period at which death from Cancer is most frequent is gradually declining according to the Scottish Widows' Fund Returns.

4. The average age at death from Cancer among our members declined by two years from 1874-80 to 1888-94, as contrasted with a rise in the average age at death from all causes of a little over two years.

5. The Office returns mark a *decrease* in deaths from *Internal* Cancer of 7·70 per cent, and an *increase* in deaths from *External* Cancer of 18·89 per cent of the percentages in the First Septennium as contrasted with the Third.

Highly interesting as are these statistics, they partake more of scientific than of practical value. They do not enlighten us as to how we may diminish our mortality from this ever-increasing cause of death. We learn from them, however, that during the twenty-one years under observation, Cancer as a cause of death among our members aged from 45 to 65 has made rapid and startling progress. If we compare 1874-80 with 1888-94, we find that practically one-third of all our deaths by Cancer occurred between ages 55 and 65 in each Septennium, but that a great change took place in Groups 45-55 and 65-75, the figures for the first group increasing from 12 per cent to 22 per cent, and in the last decreasing from 37 per cent to 26 per cent.

Again, the rate of mortality was nearly doubled for Group 45-55, and increased by 18 per cent for Group 55-65, while remaining practically constant for Group 65-75. These facts may help us when a proposal is made to the Society, in which the proposer states that one, or even two, of his predecessors died from Cancer. For although our Records show that only about 8 per cent of our Members who died of Cancer during the twenty-one years under observation stated in their Proposal Sheets that some near relative had died of Malignant Disease, the high age at which Cancer ends fatally would prevent their family history being anything like complete at the time they proposed for assurance; and the general consensus of opinion goes to show that heredity has a certain importance in Cancer, and cannot be wholly disregarded, although it cannot be denied that less weight is attached to it now than in former days. If, then, a proposer whose family history is tainted as indicated, desires a Policy on the Endowment Assurance Scale, maturing at age 45 or 50, I consider that this family history of Cancer may be entirely ignored. But if the Policy asked for be an Endowment Assurance maturing at an older age, or a Whole Life Assurance, it is a question whether such a proposal should be accepted at ordinary rates. The mortality from Cancer rapidly appreciates after age 50, and, after careful consideration, I am of opinion that probably the best way of treating such a proposal would be to accept it on the Endowment Assurance Scale at age 55 or death

1874-80.—To this terrible disease one hundred and twenty-two members fell victims — a number equivalent to 4·935 per cent of the septennial mortality. The average age at death was 61·980. Twelve of these members stated in their Proposal Sheets that either father or mother had died of Cancerous affections.

1881-87.—During this Septennium one hundred and sixty-five members died from Cancer, equivalent to 5·440 per cent of the septennial mortality. The average age at death was 59·819. Ten stated that either father or mother had died of Cancer.

1888-94.—The number of deaths due to this cause was two hundred and fifty-two, equivalent to 6·889 per cent of the septennial mortality. The average age at death was practically the same as in the previous Septennium, viz. 59·985 years. Twenty of the deceased admitted a family history of Cancer at date of Assurance.

Debility.

1874-80.—Three deaths were returned under this unsatisfactory title. One of these was probably a case of Pernicious Anæmia, and another was probably a case of Phthisis.

1881-87.—Under this term ten deaths are recorded. Careful analysis of the papers leads to the belief that one was due to Diarrhœa, one to Phthisis, and possibly three to Old Age, though their ages were only 76, 82, and 72 respectively.

1888-94.—It is gratifying to note that Debility, as a cause of death, did not appear in our records for this Septennium.

Dropsy.

This term as a cause of death is rapidly disappearing from our list, as is only right. It is a mere symptom of disease; and not of one disorder only, but of many.

1874-80.—Two Scotchmen were stated to have died of Dropsy, at the ages of 55 and 58 respectively. In one case three years were added to the age at entry on account of Bronchitis.

1881-87.—Two members are recorded as having died of this symptom of disease, at the ages of 56 and 76 respectively. In both cases Heart Disease was probably the cause of the Dropsy.

1888-94.—The one case returned under Dropsy for this Septennium was that of a Scotch merchant, who lived to the age of 50. He died abroad, in Genoa.

Gout.

While the deaths recorded below are the returns made under this heading, they are by no means to be regarded as the sum total of the mischief this disease has worked upon our members. It is absolutely certain that Gout indirectly caused the death of many others who are registered under the headings Apoplexy, Disease of Kidneys, Disease of Heart, etc.

1874-80.—Only twelve members were said to have died from Gout during this Septennium. Their average age at death was 63, and exactly half of them exceeded their expectation by from 3 to 11 years. Of the various organs said to have been affected, the Heart and Stomach were the most frequently mentioned.

One member, who died at the age of 71 of Gout in the Heart, having exceeded his expectation by over 4 years, was rated up 5 years at entry for personal history of Gout. Another, who was rated up 7 years for the same reason, died at age 64 of Gout in the Throat. He fell short of his expectation by 8 months.

1881-87.—Only thirteen cases were entered as having died of Gout. The average age to which they attained was 72, and nine exceeded their expectation of life by from 1 to 19 years.

None of them had any personal history of Gout, but one admitted that his Grandfather had died from it, and another that his father had done so. The ages of these two at death were 71 and 72, and they exceeded their expectation by 5 and 7 years.

1888-94.—To this ailment the death of only seven members was ascribed.

Of these, six were Englishmen, and their average age at death was 58. Only one of these six exceeded his expectation, and that by 5 years. He

suffered from Chronic Gout, of the dyspeptic character, for three years. A second died, after seven days' illness, at the age of 60, of Gouty Congestion of the Brain and Kidneys, with Hæmaturia. In neither case was there any family or personal history of Gout disclosed in the proposal papers. A third died of Gouty Heart, aged 69. A fourth died at age 37 of Rheumatic Gout and Asthenia, and in his case it is noted that his mother died of Gout, aged 52. A fifth died of Gout and Pleurisy, aged 61. Regarding the sixth no particulars were given.

The seventh member was an Irish solicitor, who died of Gout and Gangrene of the leg, with Embolism, at the age of 71, having exceeded his expectation of life by 5 years.

Mortification.

1874-80.—Thirteen cases are recorded as having died of this affection, at the average age of 71. They were chiefly cases of Senile Gangrene of the extremities.

1881-87.—Eight persons died of this affection. They were all but one well advanced in life, their average age at death being about 70 years; and they all, with the one exception, lived considerably beyond their expectation.

1888-94.—The death of twenty-two members was attributed to Mortification. The most of them were well advanced in life, their average age at death being 70 years, and sixteen of them exceeded their expectation of life by from 1 to 21 years. The cause of death was in almost every case Senile Gangrene of the foot. In one case the Gangrene followed an injury to the leg; and in another the Gangrene of the leg and foot was brought on by long-continued Anasarca. In another case the bowel was the seat of the mortification, from Strangulated Hernia.

Pernicious Anæmia.

This form of Anæmia is probably due to a dissolution of the blood-corpuscles, and, in the majority of cases, tends uninterruptedly to death.

1874-80.—Only two cases were returned under this heading. One was surcharged four years, on account of want of robustness. He fell short of his expectation by 8 years. The other died at age 31, and fell short of his expectation by 30 years.

1881-87.—Out of the six members dying of this intractable disease, three exceeded their expectation of life.

1888-94.—This hopeless disease was fatal to twenty-one members. Their average age at death was 60; the youngest being 48 at death. Five of them exceeded their expectation of life.

Purpura.

This is a disorder of the blood or blood-vessels, in which hæmorrhages take place into the skin, attended occasionally by bleedings from mucous membranes.

1874-80.—To this somewhat rare disorder two members succumbed. Both cases were of the hæmorrhagic variety, and their ages at death were 41 and 79.

1881-87.—One member died of the hæmorrhagic variety of this disease, with Epistaxis, at the age of 34. He fell short of his expectation by about 30 years.

1888-94.—Four members died of this affection, at the average age of 59. One was a clergyman, who at the same time suffered from Leucocythæmia, which disease is characterised by an excessive quantity of white corpuscles in the blood; the next was a surgeon, who also suffered from Leucocythæmia; another was a surveyor; and the fourth was a lithographer. None of these fulfilled their expectation of life.

Tumour.

1874-80.—Six members were reported to have died of Tumour, but all of these were believed to have been of cancerous nature, and are included under the sub-heading Cancer.

1881-87.—Twelve members were registered as having died of Tumour. Minute investigation of these gave evidence that ten of them were malignant in character, and they are regarded as such in this investigation, and included under the sub-heading Cancer, while two were probably aneurismal.

1888-94.—Tumour was certified as the cause of death to twelve of our members, but in seven of the cases the growth was undoubtedly malignant, and they have been included under the sub-heading Cancer. Of the remainder, four of the deceased suffered from Lymphadenoma, or a general overgrowth of the lymphatic tissue throughout the body, and the fifth from a cerebral tumour.

CLASS III.

DISEASES OF THE NERVOUS SYSTEM.

In this class the following diseases are grouped:—Alcoholism, Apoplexy, Cephalitis, Delirium Tremens, Disease of Brain, Disease of Spinal Cord, Epilepsy, Hemiplegia, Insanity, Meningitis, Neuritis, Paralysis, Paralysis (General) of the Insane, Tetanus.

The number of deaths arising from these causes during the twenty-one years under observation was 1767, or 19·280 per cent of the total mortality. The average age at death was 59·151. The following is a comparative statement of the total deaths in each of the three Septennia:—

Septennium.	Number of Deaths.	Percentage of Deaths in Septennium.	Average Age at Death.
1874–1880	492	19·904	57·389
1881–1887	630	20·772	59·764
1888–1894	645	17·632	59·895

It is perhaps worthy of notice, that while the slight increase in age from the second Septennium to the third was due to the higher average age at death of those members who died of Apoplexy, the very considerable decrease in the percentage of total deaths was common to "Apoplexy" and "Other Nervous Diseases." (*See* Tables I^A, I^B, and I^C, in Appendix.)

One remarkable feature in this class of diseases is the greater care which medical men now take to individualise the particular disorder from which the member died. This is most noticeable in the last Septennium, and is greatly to be commended. The result is that several names which have hitherto figured largely in our nosological list are fast disappearing, as they justly should. Take for example the term "Paralysis," by which is meant loss of power over some part of the body. This may be due to many causes, and is a mere symptom of any one of the disorders which give rise to it, such as Tumour of the Brain, Apoplexy, Disease of Spinal Cord, Peripheral Neuritis, etc. Formerly the practitioner was content to record the death under this elastic name, but now the cause of the paralysis is sought out, and the death registered under its proper title. Hence the term is disappearing. Take as another example the term "Paraplegia," which signifies a loss of power and sensation in the lower half of the body. It is dependent upon an affection of the spinal cord, which disease is nowadays much more easily recognised than in former times. Hence such cases are now classed as Spinal Cord Disease, of which there are many special forms, and are no longer simply termed "Paraplegia."

It was long ago pointed out that the relative number of deaths in Scotland from brain disorders was greater than in other parts of the United Kingdom.

In order to ascertain if our statistics give any support to this statement, I have divided the deaths according to their nationalities, with the following results :—

MORTALITY during the twenty-one years 1874-94.

Nationality.	All Causes.		Nervous Diseases.		Apoplexy.	
	Number.	Percentage.	Number.	Percentage.	Number.	Percentage.
English . . .	4689	51·17	883	49·97	419	52·44
Scotch . . .	2976	32·48	607	34·35	276	34·54
Irish . . .	1498	16·35	277	15·68	104	13·02
Total . .	9163	100·00	1767	100·00	799	100·00

It would thus appear that while Scotland was represented by 32·48 per cent of the total deaths from all causes, the number of Scotchmen who died from Diseases of the Nervous System was equal to 34·35 per cent of the total deaths from that class of disease, the corresponding figures for Apoplexy being 34·54 per cent.

These statistics, so far as they go, seem to indicate that our Scotch members did succumb to Diseases of the Nervous System in greater number than either of the other two nationalities.

An attempt was at one time made to explain this fact of pre-eminence to death by brain disease among Scotchmen, by putting forward the theory that it was due to a greater amount of intemperance among them; but the late Dr. James Begbie and the late Sir Robert Christison both completely refuted this theory, and it is no longer maintained by any one with a knowledge of the facts.

Alcoholism.

1874-80.—Under this heading the deaths of twelve members were reported, at the average age of 41 years. Two of these were Englishmen, five were Scotchmen, and five were Irishmen. Four died of the Epileptic variety, and the others died of the more chronic types, *e.g.* Gastritis, Nephritis, Hepatitis, etc.

The father of one of the Scotchmen, whose age at death was 44, was said to have died of "Intemperate Habits," aged 45. In the case of one of the Irishmen, whose age at death was 43, the causes of his parents' deaths, who were both dead at the time he proposed to the Society, their ages being 47 and 45, were not ascertained.

1881-87.—The death was reported under this heading of one Englishman, one Scotchman, and one Irishman. Their ages at death were 32, 45, and 36. The Englishman died of Asthenia and the Irishman of Gastritis, both being due to Chronic Alcoholism; the Scotchman died in Capetown, and the fact is merely stated. His mother died of Alcoholism at the age of 46, and the Irishman's father died of Delirium Tremens, aged 38.

1888-94.—Four Englishmen, one Scotchman, and two Irishmen died from

this disease as the result of over-indulgence in the use of stimulants, at the average age of 49. There was no family history of intemperance disclosed in any of the proposal papers.

Apoplexy.[1]

By far the greatest mortality of any one of the diseases included in this class was due to Apoplexy, which was responsible for seven hundred and ninety-nine deaths, or 8·720 per cent of the total mortality. Two hundred and ninety-seven of these members exceeded what was their expectation of life at the time they were admitted to the benefits of the Society, eighty-nine of whom did so by from 10 to 24 years. The average age at death of the Apoplectics for the three Septennia was 59·172, 60·969, and 63·419 years respectively; for the twenty-one years 1874-94, it was 61·426, which is 3·163 years higher than that of the total mortality.

By the term Apoplexy is usually understood that morbid condition of the brain which manifests itself by a more or less sudden loss of consciousness, sensation, and voluntary motion, most commonly due to rupture of a blood-vessel in the brain, by which the patient is usually rendered paralytic, and which is often followed by death after the lapse of a varying interval of time, or by partial recovery. Among the causes which predispose to degeneration of the vessels of the brain are Old Age, the poison of Syphilis, of Gout, of Alcohol, etc. The importance of age as a factor in causing Apoplexy among our members is indicated by the number who exceeded their expectation of life by upwards of 10 years; there was a history of Gout in a fair proportion of our cases; in several there was either a personal or family history of a tendency to alcoholic excess; in one case a medical man contracted Syphilis in the execution of his professional duties; while Bright's Disease is certified to have accompanied or preceded the fatal illness in not a few. The majority of the patients died within a week after the hæmorrhage, many the same day, and a few were struck down at once.

As indicated by the average age at death, Apoplexy is a disease of advanced life. One member is recorded as having died of it under 25 years of age, but examination of the papers reveals the fact that it was Sunstroke or Thermic Fever of which he died, and not Cerebral Hæmorrhage. These two diseases were long confounded together, but the symptoms are different, the essential one in Thermic Fever being the enormous increase of temperature, often running to 108° or 110° F., the result of exposure to great heat. This young man died in Bengal.

From the following table, which shows the number of deaths at groups of ages, and the percentages which these numbers bear to the total number at all ages in each period of time, it will be observed that, roughly speaking, about 30 per cent of our cases occurred below 55 years of age, and 70 per cent at or above that age; also that very few cases are recorded below the age of 35, and that after that age they became frequent.

[1] I have included under this title the few cases which were returned under the indefinite and unsatisfactory heading "Congestion of the Brain," which resembles Apoplexy in some of its forms, and in which instead of hæmorrhage there may be effusion of serum.

MORTALITY from APOPLEXY during the three Septennia, separately and combined.

PERIOD.	Ages under 25.		Between Ages 25 & 35.		Between Ages 35 & 45.		Between Ages 45 & 55.		Between Ages 55 & 65.		Between Ages 65 & 75.		Ages 75 and over.		All Ages.
	Number.	Percentage.	Number.	Percentage.	Number.	Percentage.	Number.	Percentage.	Number.	Percentage.	Number.	Percentage.	Number.	Percentage.	Number.
1874-80	1	·49	7	3·47	26	12·87	36	17·82	57	28·22	52	25·74	23	11·39	202
1881-87	...	...	6	2·00	40	13·33	47	15·67	79	26·33	81	27·00	47	15·67	300
1888-94	...	...	1	0·34	20	6·73	54	18·18	86	28·96	86	28·96	50	16·83	297
1874-94	1	·12	14	1·75	86	10·76	137	17·15	222	27·79	219	27·41	120	15·02	799

It will be seen from the numbers of deaths at all ages, that the second Septennium presents a heavier mortality than the third—and for this there is no very obvious explanation to offer. This becomes more apparent if we contrast the mortality per ten thousand living, as in the following Table, from which it appears that, although in actual numbers the mortality of the second Septennium exceeded that of the third by only three deaths, the mortality in proportion to the lives at risk was very considerably higher at all the groups of ages. Further, it will be observed that it was after age 55 that the rate of mortality became specially heavy in all the Septennia. The Table shows that the death-rate for Group 55-65 was practically three times as high as that for Group 45-55, and that it as nearly as possible doubled for each following Group of Ages.

ANNUAL MORTALITY from APOPLEXY among 10,000 (Males) living at each Group of Ages and at All Ages.[1]

PERIOD.	Ages under 25.	Between Ages 25 & 35.	Between Ages 35 & 45.	Between Ages 45 & 55.	Between Ages 55 & 65.	Between Ages 65 & 75.	Ages 75 and over.	All Ages.
1874-80	1·53	1·77	5·69	11·32	28·89	54·28	88·63	13·01
1881-87	...	1·27	6·32	10·77	32·99	69·93	132·31	14·89
1888-94	...	·21	2·68	8·85	26·37	59·80	105·04	12·29
1874-94	·45	1·05	4·68	10·04	29·10	61·60	110·02	13·35

All ranks of life contributed their quota to the general mortality from this disease. Government officials, shopkeepers, wine-merchants, mechanics, and those who belonged to what may be styled the hazardous and unhealthy occupations, showed a larger percentage of the total deaths than clergymen, medical men, farmers, men of no profession, and clerks.

1874-80.—Two hundred and two deaths were registered under Apoplexy, equivalent to 8·173 per cent of the septennial mortality. Of these, one hundred and fifty-one exceeded 50 years of age at death, and sixty-five out-

[1] For quinquennial groups of ages, see Tables II^{A}, II^{B}, II^{C}, and II^{D}, in Appendix.

lived their expectation of life by periods ranging from a few months to 20 years; fifteen of them by upwards of 10 years. The oldest was a clergyman, who died at age 83.

The case of Thermic Fever mentioned above occurred in this Septennium.

1881-87.—The large number of three hundred members succumbed to this fatal malady, or 9·892 per cent of the septennial mortality was due to Apoplexy. Sixty-five died under age 50, and two hundred and thirty-five at and above that age, the average age at death being 60·969 years. One hundred and eleven of these members exceeded their expectation by from 1 to 24 years, no less than thirty-two of them by upwards of 10 years. Those who attained the greatest ages were professional men, four of whom exceeded their expectation by 23, 19, 18, and 17 years respectively, and whose ages at death were 90, 85, 84, and 87.

The real cause of death in two of the cases recorded here was probably Thermic Fever. One of these died, aged 33, in a railway carriage on his way to Calcutta, and the other, aged 36, in Natal.

1888-94.—As usual, Apoplexy was by far the most fatal of all the nervous ailments. It carried off 297 members, equivalent to 8·119 per cent of the septennial mortality, at the average age of 63·419.

Of the two hundred and ninety-seven cases, two hundred and fifty-eight attained age 50, and of these one hundred and twenty-one exceeded their expectation by from 6 months to 22 years, forty-two of them by upwards of 10 years. The oldest in this Septennium was a clergyman, who attained the great age of 91 years and 8 months.

Cephalitis.

1874-80.—From this inflammatory affection of the brain twelve members were reported to have died.

1881-87.—Five deaths were said to be due to this cause.

1888-94.—Four members were reported as having died of this ailment.

Delirium Tremens.

As might be expected, not one of the twenty-three members whose deaths are recorded under this heading attained his expectation of life. There was some doubt about the habits of one at the time he assured; the mother of another committed suicide while insane; and the brother of another died of Epilepsy; while it transpired that another of the victims had been a secret drinker from a few months after effecting his assurance until death. There was no trace of Intemperance or Nervous Disease in the personal or family history of the others disclosed in their proposal papers.

1874-80.—This form of Alcoholism carried off nine members. Three of them died of Alcoholic Epilepsy developed in the course of the disease, and

one committed suicide while under the influence of the delirium. Their average age at death was 36.

1881-87.—Six deaths were due to this cause. Their average age at death was 42.

1888-94.—Eight members died of this form of Alcoholism, viz. four Englishmen, two Scotchmen, and two Irishmen. One of the Englishmen developed Alcoholic Epilepsy, and one unfortunate Irishman committed suicide, by cutting his throat, when under the delirium. Their average age at death was 42.

Disease of Brain.

Softening of the Brain accounted for a large proportion of the cases included under this general heading. Of the great majority of the remainder no particulars are given in the medical certificates, but where the necessary information has been supplied the causes of death so particularised are printed below.

1874-80.—One hundred and thirty-seven deaths, equal to 5·5 per cent of the septennial mortality, were returned under this heading. The average age at death was 59·460. The following are the cases in which more specific information as to the cause of death was given :—

Softening of Brain . .	63	Disease of the Brain *plus* Epileptic Convulsions .	3
Abscess	2	Disease of the Brain *plus*	
Tumour	2	Meningitis . . .	1

1881-87.—The number for this Septennium was one hundred and forty, representing 4·6 per cent of the septennial mortality, and the average age at death was 62·182.

The more complete returns were :—

Softening of Brain . .	63	Disease of the Brain *plus*	
Abscess	3	Disease of Spine . .	2
Tumour	2	Disease of the Brain *plus*	
Atheroma . . .	1	Meningitis . . .	2

1888-94.—The number of deaths for this Septennium was relatively almost the same as the previous one,—viz. one hundred and fifty-seven, or 4·3 per cent of the septennial mortality, while the average age at death, 63·158, was nearly one year older.

The following is a list of the cases where the cause of death was particularised :—

Softening of Brain . .	83	Disease of the Brain *plus*	
Tumour	11	Epileptic Convulsions .	3
Atheroma . . .	7		
Sclerosis	4	Disease of the Brain *plus*	
Abscess	3	Embolism . . .	1

It will be noticed that the returns for this Septennium were more satisfactory as to cause of death than those for the fourteen years 1874-87.

Disease of the Spinal Cord.

Paraplegia accompanied the Disease of Spinal Cord in many of the one hundred and one cases recorded below.

1874-80.—Twenty deaths in all were attributed to this cause. Of these, twelve were simply described as due to Spinal Cord Disease; three to Sclerosis or Induration of the Cord; two to Myelitis or Inflammation of the Cord; one to Spinal Meningitis or Inflammation of the coverings of the Cord; and two to Locomotor Ataxy.

1881-87.—Thirty-six of our members died of this affection. Of these, eighteen were set down simply as Disease of the Spinal Cord; four were due to Spinal Sclerosis; three to Myelitis; one to Spinal Meningitis; and ten to Locomotor Ataxy.

1888-94.—Of this disease there were forty-five examples. The special disorders mentioned were:—

Disseminated Sclerosis .	8	Progressive Muscular Atrophy	1
Locomotor Ataxy . .	6	Spinal Softening . .	1
Chronic Myelitis . .	3	Cerebro-Spinal Meningitis .	1
Spinal Meningitis . .	1	Chronic Poliomyelitis .	1

With regard to the others, no attempt was made to indicate the nature of the lesion.

Epilepsy.

Of the forty cases of death occasioned by Epilepsy, eight of the deceased members were stated to have suffered from the disease for periods ranging from one to seven years, and one for no less a period than thirty years. In the last case the disease appears to have developed about six years after the member's admission into the Society, and he fell short of his expectation by 3 years. In the other eight cases mentioned, the duration of the Policies ranged from 12 to 37 years, and two of the deceased exceeded their expectation of life, in each case by 3 years.

In only three cases out of the forty was there any history of Nervous Disease disclosed in the proposal papers. In the first, the member himself, who assured at age 25 and died, after an illness of two days, at age 36, was stated by the Medical Examiner to have "a peculiar nervous excitability of circulation"; in the second the proposer's mother had died in an asylum; and in the third the mother was said to suffer from some nervous affection. The average age at entry of our Epileptic members was 32, and in none of the cases, with these exceptions, was there, at that time, any reason to even suspect the presence of Epilepsy. Now, Epilepsy makes its appearance in three-fourths of the cases before the age of 20. When it develops later in life, there is always grave suspicion that some organic lesion in the brain, such as Tumour, is the originating cause of the disease, so that we are rather forced to the conclusion that the Epileptic convulsions, in which our members presumably died, were merely symptoms of some organic mischief in the brain.

1874-80.—Thirteen members fell victims to this disorder, at the average age of 47.

1881-87.—Seventeen deaths were caused by this disease, the average age at death being 53.

1888-94.—Ten deaths were registered under this head, at the average age of 45.

Hemiplegia.

It is well understood that by this term is meant loss of power and sensation on one side of the body, which must be regarded as a symptom of some disease of the encephalon, most commonly rupture of a cerebral artery. Consequently the term ought to disappear from our list of diseases, and the death be registered under (say) Apoplexy. But some practitioners feel hesitation or difficulty in asserting the true cause of the Hemiplegia, hence the reason of retaining the term in our nosology. In the cases recorded below many complications occurred, such as Disease of the Heart, Bronchitis, Brain Softening, etc., either as a sequence or as a contributing cause.

1874-80.—Under this heading twenty-four deaths are recorded.

1881-87.—Thirty-two deaths were reported to have been caused by this symptom of disease.

1888-94.—Under this heading are recorded thirty-five deaths, at the average age of 65.

Insanity.

In none of the twelve cases recorded below was there any family history of nervous disease.

1874-80.—Three of our members died of this mental disease, two of them of Melancholia, and one of Chronic Mania, which endured fifteen months. He fell short of his expectation by 12 years. Of the others, one exceeded his expectation by 7 years, and the other fell short of it by nearly 6 years.

1881-87.—This nervous affection caused the death of seven members. The forms which it took were three of Acute Mania, two of Chronic Mania, and two of Melancholia. Three of them exceeded their expectation of life.

1888-94.—Two cases were returned in which death was ascribed to this cause, without any further particulars. Their ages at death were respectively 43 and 41, and their Policies were in force for 14 and 18 years.

Meningitis.

1874-80.—This affection, an inflammation of the coverings of the brain, was the cause of death to fourteen members. One case was complicated with Rheumatism and Otitis, and endured three days; another was probably Tubercular in character; and a third was the result of a fall.

1881-87.—Twenty-seven claims arose from this cause. Three cases were due to Rheumatism; in two the spinal membranes were involved; two were the result of accident (one from a fall, the other from the kick of a horse); and other two were complicated with Gout.

1888-94.—From this acute affection twenty-one members died, at the average age of 46. In two cases an extra charge was made when the deceased joined the Society, for the existence of Gout. In one case the Meningitis was complicated with Influenza, and in another the disease was consequent to Otitis. Regarding the others, no particulars are forthcoming. In only one of the twenty-one cases was the expectation of life fulfilled.

Neuritis.

1881-87.—One case was returned under this heading. The member was a surgeon, and the disease was said to have lasted over five years. He was 46 years of age when he died.

1888-94.—Two members died from this disease, aged respectively 40 and 55. In one of the cases there existed Heart complications.

Paralysis.

By this term is understood the loss of power over some part of the body. As may be gathered from this definition, Paralysis is to be regarded merely as a symptom of some grave disease.

1874-80.—Thirty-one deaths are recorded under this heading. One of these was due to Paralysis Agitans; the member died at the age of 76, having exceeded his expectation of life by upwards of 2 years. Another case was caused by Embolism, probably due to Heart Disease.

1881-87.—Under this heading are recorded thirty-seven deaths. One was a case of Paralysis Agitans, which occurred in a Scotch artist, who, after an illness of upwards of a year, died at the age of 62. Another Scotchman died at the age of 66, of what was apparently Bulbar Paralysis, a disease of some rarity, and characterised by paralysis of the lips, tongue, and larynx. It is a slowly progressive disease in general, but sometimes it is rapidly acute, as in the case of our member, in whom the disease only endured for about two months; three died of Paralysis which was apparently Embolic, due to Heart Disease. Another case was complicated with Epilepsy.

1888-94.—Only five deaths are recorded under this title, as against sixty-eight in the two preceding Septennia combined. It is not to be assumed from this fact that the number of cases of Palsy is very much less than formerly, but merely that they are more correctly registered under the disease which gave rise to the Paralysis, and of which it is a leading symptom. The average age at death of these five was 64; and two exceeded their expectation by 5 and 2 years respectively.

Paralysis (General) of the Insane.

This is a disease which is year by year becoming increasingly common in our nosology, but I doubt much whether this is really due to an increase of the disease. I believe that the increase in the number of recorded deaths is simply due to more intimate acquaintance with the clinical features of the disease, and greater facility in diagnosing it.

It is "a disease usually affecting persons near the prime of life, and "characterised by a stage of mental excitement with exalted delusions, "followed by Dementia." It is a chronic inflammation of the encephalon and its covering, which usually terminates in Dementia and Paralysis. Hence the synonym Dementia Paralytica. It is more common in men than in women, and is believed to be due in at least 50 per cent of the cases to the poison of Syphilis, acquired or hereditary. While this is true of certain of the cases, it is attributed to other causes, which either alone, or combined with Syphilis, are believed to give rise to the disease. These are alcoholic excess, heredity, severe anxiety, mental strain, etc. Further, in a large proportion of the cases, there exists a history of nervous disorders in the ancestors.

Our average age at death was 44 years, and the average duration of the disorder two and one-half years. Of the eighty-three members recorded as dying from this disease, only one exceeded his expectation of life, and he did so by nearly 10 years. He was a Scotch shipping agent, who assured at age 28 and died at age 73.

1874-80.—Thirteen deaths are recorded in this Septennium. Eight of these were Englishmen, whose average age at death was 42; and five of them were Scotchmen, whose average age at death was 48.

1881-87.—In this Septennium we had eighteen examples. The average age at death was 43. Fourteen were Englishmen, whose average age was 42; three were Scotchmen, average age 44; and one Irishman, who died at age 52.

1888-94.—There was a most decided increase in the number of deaths registered under this heading as contrasted with the two previous septennial periods. In this Septennium they reached the high figure of fifty-two. This large number is probably accounted for by the constant office enquiry as to the true form of the "Paralysis," and by the greater care taken by the medical certifiers to distinguish between what is ordinarily termed Paralysis and this disease; for, if the two ailments be conjoined and the numbers be added together, the results show a very close approximation to each other. Thus, during 1888-94 we had fifty-two cases of General Paralysis of the Insane and five cases of Paralysis, together fifty-seven cases; during 1881-87 we had eighteen cases of General Paralysis of the Insane and thirty-seven cases of Paralysis, together fifty-five cases; and during 1874-80 we had thirteen cases of General Paralysis of the Insane and thirty-one cases of Paralysis, together forty-four cases. Proportioning these figures to

the total mortality from Nervous Diseases in each of their proper Septennia, we find that they represent 8·8 per cent, 8·7 per cent, and 8·9 per cent thereof respectively.

Of the fifty-two cases under review, the average age at death was 44, and the average duration of the disease was 28·5 months: thirty-three of the cases were English, and their average age at death was 43, and the duration of the illness 28·8 months; thirteen were Scotchmen, who died at the average age of 48, after an illness of 26·5 months; the other six were Irishmen, who died at the average age of 43, after an illness of 29·2 months.

Tetanus.

This disease, popularly known as Lockjaw, is characterised by persistent tonic contractions of muscles, and is an infectious malady, the virus of which is now believed to be due to a bacillus.

1874-80.—Two deaths were said to have been caused by Tetanus. In one of these cases the disease was attributed to an injury to the finger of a millwright aged 27, and in the other case to a gun accident to a farmer aged 36.

1881-87.—One case of death arose from this disease. The contributing cause was an injury to the thumb of a clothier aged 65.

CLASS IV.

DISEASES OF THE RESPIRATORY SYSTEM.[1]

The following diseases constitute this class:—Asthma, Bronchitis, Consumption, Disease of Lungs, Empyema, Hydrothorax, Laryngitis, Pleurisy, Pneumonia, Pneumothorax, Quinsy.

The number of deaths arising from these causes during the twenty-one years under observation was 2062, or 22·504 per cent of the total mortality. The average age at death was 53·671. The following is a comparative statement of the total deaths in each of the three Septennia:—

Septennium.	Number of Deaths.	Percentage of Deaths in Septennium.	Average Age at Death.
1874–1880	577	23·342	52·308
1881–1887	688	22·683	52·971
1888–1894	797	21·788	55·262

The decrease in the relative number of deaths and the actual increase in the age are practically reproduced in the "Consumption" experience of the Society. *See* sub-heading Consumption.

Asthma.

1874-80.—Two members died of the Bronchitic form of Asthma, after an illness of several years' duration. Their ages were 56 and 63.

1881-87.—Of this ailment seven members died at the average age of 66. Three of the cases were chronic and two were acute. One was of the Bronchitic and one of the Cardiac variety.

1888-94.—From this affection six claims arose. Three of the cases were chronic, lasting one, three, and twelve years respectively; one was acute, one was of the Cardiac variety, and one was what is styled Potter's Asthma. Their average age at death was 68.

Bronchitis and Pneumonia.

(See also Pneumonia.)

Bronchitis is an inflammation or congestion of the bronchial tubes, and may take on an acute or chronic form. Thus in several of our cases it carried

[1] In conformity with previous Reports, Consumption has been included in this class, though it should be treated as a constitutional disorder. This unduly raises the number of deaths by eight hundred and six, equivalent to 8·796 per cent of the total mortality, and greatly reduces the average age at death, for consumptives die early as a rule, our average age being 42·817.

off the patient in a few days—one member aged 91 died within twenty-four hours,—while in many others the affection endured for several years. It was responsible during the twenty-one years for the death of four hundred and sixty-one members, representing 5·031 per cent of the total mortality. Of these only 11 per cent died below the age of 50, and 89 per cent at or above that age. As it is a disease predominant among the very young—who do not, as a rule, become assured—and among those advanced in life, one will not be unprepared to learn that the average age at death was 66·187.

In marked contrast to Bronchitis stands Pneumonia, or Inflammation of the Lung-tissue, which is nowadays regarded as a general disease, probably of microbic origin, of which the Inflammation of the Lung is the local expression. It is an acute affection, and quickly terminates in recovery or death. Thus no less than 85 per cent of our deaths took place within fourteen days after the onset of the disease, and 53 per cent within seven days. Pneumonia has been the cause of death during the twenty-one years to six hundred and sixty-seven of our members, or 7·280 per cent of the total mortality. It attacks men of all ages, and after 30 years of age it becomes increasingly fatal, while after 70 it is almost invariably so. The average age at death of our members was 57·148, which is considerably above that of the community at large, where the greatest number of deaths occur about the age of 45. Of our deaths, 33 per cent occurred below the age of 50, while, as mentioned above, of the Bronchitic deaths only 11 per cent took place under that age. Another point of interest is that while the relative mortality from Pneumonia has been gradually increasing in each Septennium, that from Bronchitis has been as markedly falling; and under both diseases the average age at death was greater in 1888-94 than in 1874-80. (*See* Tables I^{A}, I^{B}, and I^{C}, in Appendix.)

The following Table, showing the number of deaths at groups of ages, and the percentages these numbers bear to the total deaths from each disease, illustrate what has been said, and is compiled from our own statistics:—

MORTALITY from BRONCHITIS and PNEUMONIA during the years 1874-94.

GROUPS OF AGES.	NUMBER OF DEATHS.		PERCENTAGES.	
	Bronchitis.	Pneumonia.	Bronchitis.	Pneumonia.
Ages under 25	1	2	·22	·30
Between Ages 25 & 35 . . .	3	55	·65	8·25
„ „ 35 & 45 . . .	31	118	6·72	17·69
„ „ 45 & 55 . . .	55	113	11·93	16·94
„ „ 55 & 65 . . .	104	148	22·56	22·19
„ „ 65 & 75 . . .	134	141	29·07	21·14
„ „ 75 & 85 . . .	113	81	24·51	12·14
Ages 85 and over	20	9	4·34	1·35
Total . .	461	667	100·00	100·00

Unfortunately, both of these diseases are of such a character that no amount of care on the part of the Medical Examiner can save the Society from loss by them. No doubt Pneumonia is particularly fatal to the debili-

tated, to those in poor health, and more especially to those addicted to over-indulgence in alcohol. But these are the very cases which the Medical Referee eliminates from the candidates for assurance, and further than this he cannot go; nor can he foretell who are likely to become the victims of either disease.

I must here mention that the sixty-four deaths caused by Pneumonia as a complication to Influenza are included under that sub-heading (see page 6), and that some cases were returned under Pneumonia whose proper designation was Phthisis. Where this appears to be clearly evident after careful examination of the papers, they have been included under that sub-heading. On the other hand, under the title of Pneumonia I have included the few cases which were returned as Congestion of the Lung, an ill-defined term, which in most cases may be regarded as a low form of Pneumonia.

1874-80.—In this Septennium Bronchitis brought about the death of one hundred and forty-nine members, equivalent to 6·028 per cent of the septennial mortality. The average age at death was 66·580.

On admission eleven were charged an extra premium, for various causes, equivalent to an addition of from one to five years to their age. Three of these exceeded their expectation of life; but in two of these cases the extra was imposed on account of Hernia, and in the third case the reason for the imposition of the extra does not appear. Two fell short of their expectation by 6 months and 12 months respectively, and the other six failed to fulfil their expectation by from 14 to 30 years.

Of the whole one hundred and forty-nine cases, sixty-six exceeded their expectation, in some cases very largely. Thus a Scotch lawyer who assured at the age of 34 died at the advanced age of nearly 90, having exceeded his expectation by 24 years. Another Scotch lawyer entered at 38, and died at the good age of 82, having exceeded his expectation by 16 years. A Scotch merchant joined the Society at the age of 27 and died at 86, having exceeded expectation by 22 years. Another Scotch gentleman became a member of the Society at 38; he died at 91, having exceeded his expectation by nearly 25 years. An English commission agent became a member at the age of 44, and died of Bronchitis at 83, having exceeded expectation by 15 years. An English merchant joined the Society at age 52, and died at the age of 84, having exceeded expectation by 14 years. These are a few specimens of the longest livers. The others who lived beyond their expectation did so by periods ranging from one month and a-half up to 12 and 13 years.

1881-87.—Bronchitis was the cause of death to one hundred and forty-three members. The average age at which these claims emerged was 64·787, which is considerably younger than that of either the previous or following Septennium. The percentage of deaths from this cause to the septennial mortality was 4·714.

Extra premiums, equivalent to an addition of from two to eight years to age, were exacted from twenty of these members when they effected their assurances. The reasons for imposing the penalty were very diverse; and of these twenty, six exceeded their expectation by from a month or two to 14 years.

Sixty-six out of the one hundred and forty-three were found to have exceeded their expectation of life by periods varying from a few months to 20 years.

1888-94.—During this Septennium Bronchitis carried off one hundred and sixty-nine members, representing 4·620 per cent of the septennial mortality, at the average age of 67·024.

The ages of thirteen of the members were rated up from 2 to 5 years when they joined the Society, and of these five exceeded their expectation of life, one by no less than 15 years. The other eight fell short of it by periods ranging from 4 to 23 years.

Of the one hundred and sixty-nine claims, eighty-nine were Englishmen, who died at the average age of 65; forty-two were Scotchmen, whose average age at death was 70; and thirty-eight were Irishmen, who died at the average age of 68. The large number of eighty-three exceeded their expectation of life, and this they did by from 1 to 21 years.

Consumption.

Consumption or Phthisis has ever since the foundation of the Society acted as a dominant factor in building up the mortality table, and it continues to do so to the present day, though happily in diminishing degree.

During the twenty-one years under review it has brought about the death of eight hundred and six members, equivalent on the whole mortality to a percentage of 8·796.

I may mention that I have transferred forty-seven cases to this heading which were returned under other diseases of the respiratory system, as, judging from internal evidence after careful consideration of the schedules, I believe that they more truly belong to this category.

The following is a summary of our Consumptive Experience for the three Septennia :—

Septennium.	Number of Deaths.	Percentage of Deaths in Septennium.	Average Age at Death.
1874–1880	249	10·071	41·773
1881–1887	275	9·067	41·805
1888–1894	282	7·709	44·726

As I shall have something to say about the age at death of those of our members who died of Consumption, I propose to show here that the average ages at death in this Table, which have been calculated in the customary manner, do not accurately represent the relative death ages for the Consumption Mortality in the three Septennia.

In 1874-80 seventeen members died of Consumption at ages 65 and over, whose average age at death was 70 years; in 1881-87 there were ten, with an average age of 71 years; and in 1888-94 there were twenty, with an average age of 70 years. Now, it is evident that if these cases are combined

with much larger numbers whose average age at death was about 30 years younger—as they are in the above Table—they will have an effect on the average age of the total out of all proportion to their numbers, and that the Second Septennium will show, as compared with the First and Third, too small an age at death. If then we exclude the few cases whose age at death was 65 or over, we will get a much more accurate view of the relative ages at death. They stand thus:—1874-80, 39·698 years; 1881-87, 40·714 years; 1888-94, 42·821 years.

From these figures we see that, instead of the abrupt increase in the average age at death as shown in the Table, there is in reality a regular and rapid increase from 1874-80 to 1888-94. This, if maintained, will of course prove of benefit to the Society, provided the age at entry does not correspondingly increase.

It is a fact of great interest and congratulation to know, that in the community at large a great decrease in the mortality from Consumption has been going on steadily and continuously during the last forty years. In the Supplement to the 55th Annual Report of the Registrar-General for England, Dr. Tatham states that in the course of the twenty years from 1870 to 1890, the crude death-rate from Phthisis decreased by 25 per cent among males. We would not expect that this Society would experience such a large decrease as the General Population in the rate of mortality from Consumption, for two good reasons: (1) The lives accepted by the Society are carefully selected, and every case which presents the slightest evidence of the disease is rigidly excluded. (2) The great preponderance of the decrease in the mortality in the community took place in youth and adolescence, that is to say, at ages below that at which our members enter the Society. On examining our Statistics, however, we find that, contrary to expectation, our rate of mortality for 1888-94 showed as great a decrease from the rate for 1874-80 as that claimed for the population of England from 1871 to 1890 by Dr. Tatham. The following Table is of interest:—

ANNUAL MORTALITY from CONSUMPTION in England and the Scottish Widows' Fund among 10,000 (Males) living at All Ages.

ENGLAND.			SCOTTISH WIDOWS' FUND LIFE ASSURANCE SOCIETY.					
Period.	Death-Rate.	Ratio.	Period.	Death-Rate.	Ratio.	Period.	Death-Rate.	Ratio.
1871–80	22·09	100	1874–80	16·03	100	1874–80	16·03	100
1881–90	18·47	84	1881–87	13·66	85	1888–94	11·66	73
Difference	3·62	16	Difference	2·37	15	Difference	4·37	27

Consideration of the above Table reveals the following facts:—

(1) That the death-rate from Consumption among the General Population decreased 16 per cent in 1881-90 as compared with 1871-80.

(2) That the death-rate among the members of the Scottish Widows' Fund:—

(*a*) Decreased 15 per cent from 1874-80 to 1881-87.

(*b*) „ 27 „ 1874-80 to 1888-94.

I have taken the official figures for the two decennial periods 1871-80 and 1881-90 from the Supplementary Report already referred to, because they are readily accessible, and near enough in point of time to our first two Septennial periods to allow of a fairly accurate comparison.

As indicated in the above Table, our death-rate for Consumption during the last twenty-one years was greatly below that of England during the ten years 1881-90 as recorded by the Registrar-General. They thus compare :—

ANNUAL MORTALITY from CONSUMPTION in England and the Scottish Widows' Fund among 10,000 (Males) living at each Group of Ages.

GROUPS OF AGES.	ENGLAND 1881-90.	SCOTTISH WIDOWS' 1874-94.
Between Ages 20 & 25 . . .	23·33	10·35
,, ,, 25 & 35 . . .	30·24	14·30
,, ,, 35 & 45 . . .	35·62	16·29
,, ,, 45 & 55 . . .	34·88	11·51
,, ,, 55 & 65 . . .	29·16	11·67
,, ,, 65 & 75 . . .	18·16	11·53
Ages 75 and over	6·88	5·50

The enormous disproportion between these rates in favour of the Office is undoubtedly due to the benefits of selection — to the thorough medical examination which each candidate for assurance has to undergo, to the minuteness with which all his antecedents are investigated and intelligently adjudicated upon by the Society's officials, and the discriminating care with which the Directors impartially weigh the merits and demerits of each case before admitting the Proposer to the benefits of the Society.

Let us now examine a little more closely the age at which our members died from Consumption. We have already seen that there is a marked advance in the average age at death in each Septennium, and the following Table confirms what has already been indicated, viz., that this increase was due to a general increment to the age at death, and not to the falling in of lives at advanced ages :—

TABLE showing the Percentages at Groups of Ages of the Total Number of Deaths from CONSUMPTION in each Septennium.

Septennium.	Ages under 25.	Between Ages 25 & 35.	Between Ages 35 & 45.	Between Ages 45 & 55.	Between Ages 55 & 65.	Between Ages 65 & 75.	Ages 75 and over.
1874–80	3·21	27·71	39·36	13·66	9·24	6·02	·80
1881–87	3·27	25·46	37·45	19·63	10·54	2·92	·73
1888–94	2·13	18·44	34·75	24·46	13·12	6·39	·71
Variations in incidence of Mortality for 1874–80 and for 1888–94.	*– 1·08*	*– 9·27*	*– 4·61*	*+ 10·80*	*+ 3·88*	*+ ·37*	*– ·09*

It will be observed from this table that, as contrasted with the first Septennium, the percentage of deaths during the third Septennium increased

greatly between the ages 45 and 65, with a corresponding decrease at the younger ages. The Table also shows that in all the three Septennia 90 per cent of the deaths occurred between ages 25 and 65. Keeping this fact in mind, we see from the following Table that the increase in the age at death was a true one, and not merely due to the increasing age of the Society :—

ANNUAL MORTALITY from CONSUMPTION among 10,000 (Males) living at each Group of Ages and at All Ages.[1]

PERIOD.	Ages under 25.	Between Ages 25 & 35.	Between Ages 35 & 45.	Between Ages 45 & 55.	Between Ages 55 & 65.	Between Ages 65 & 75.	Ages 75 and over.	All Ages.
1874–80	12·21	17·53	21·45	10·69	11·66	15·66	7·71	16·03
1881–87	11·01	14·78	16·29	12·38	12·11	6·91	5·63	13·66
1888–94	8·00	11·10	13·13	11·31	11·35	12·51	4·20	11·66

Examining the Groups included between ages 25 and 65, we find that a great part of the general decrease in our rate of mortality from Consumption, already demonstrated, took place between ages 25 and 45, and that the death-rates for Groups 45-55 and 55-65 are practically constant. This of course means that it is among our younger members that the mortality has been steadily becoming lighter, and that consequently the age at death has been really increasing. That the improvement in the mortality was general is shown by the fact that there was no large increase in the death-rate among the older members.

From the foregoing Tables we have also plainly brought before us the fact that the prevalence of Consumption is by no means confined to persons under middle life. It will be observed that our data show that between ages 45 and 75 the percentage of actual deaths from this disease was large, and that the death-rate for 1874-94 for the three decennial groups covered by these ages was somewhat higher than for the group 20-25. It would thus appear that Phthisis is a potent cause of death among our older members. These statistics directly contradict the popular belief that this disease belongs to the period of youth and young manhood, and is rarely encountered after 45 years of age.

Satisfactory as are these results, still it cannot be denied that the mortality is too high, and that more care is needed on the part of the Society's Medical Examiners to minimise the deaths arising from this disease, as it is from it of all others that "the greatest amount of premature mortality occurs." No clearer proof of this can I offer than the fact that during the first year of assurance no fewer than fifteen members died of this disease, in the second year thirty-four, in the third year thirty-five, in the fourth year fifty-two, and in the fifth year fifty. The deaths of no less than fifteen members in the first year of assurance from Consumption, which is usually a disease of slow progress, seems amazing, and implies some want of due care, for which I fear the Medical Examiners must be held in great part, if not entirely, responsible. No doubt, had no selection been made the mortality would have proved vastly higher, for it will be noted that in the fourth year of assurance,

[1] For quinquennial groups of ages see Tables II^{A}, II^{B}, and II^{C}, in Appendix.

when the benefits of selection are supposed to be nearly exhausted, the number of deaths mounted to fifty-two. (*See* Table III. in Appendix.)

Now, how is this state of matters to be rectified? Evidently by a more minute and thorough examination of the candidate, and more attention being given to certain points to which comparatively little importance is usually attached, but which often prove of service in helping one to form a just estimate of the risk. I propose to examine some of these in more or less detail.

A question is inserted in the schedule as to the existence or not of persistent cough. When the pulmonary disorder has arrived at the stage when cough becomes a marked feature of the ailment, there is little fear that its existence will be ignored, but in the incipient stage of Phthisis there often exists a short dry hacking cough which escapes the notice of the Candidate, or is regarded as a temporary catarrh, or a mere clearing of the throat. This may be noticed by the Examiner himself while the Candidate is in his consulting-room, and should lead to further enquiry as to its duration, and serve to stimulate minuter examination of the lung. ***Cough.***

Dyspepsia is a well-known accompaniment or precursor of Phthisis, as it is of many other disorders. Many a time this disturbance of digestion is of small import, a passing ailment, but if it be of long continuance, chronic in character, more especially if accompanied by loss of weight, or if there be a history of tuberculosis in the family, special investigation into its cause, duration, and severity ought to be made before dismissing the matter as one to which little importance need be attached. ***Dyspepsia.***

Occasionally a hint may be obtained from observation of the Pulse. In the case of Incipient Phthisis the pulse-rate is accelerated. The other characters, such as the rhythm, may present no alteration from that of health, but a rapid and weak pulse should arouse suspicion of some pulmonary lesion, provided that the observer can eliminate other causes which give rise to this condition. One of these is excitement under examination,—the "Insurance Heart," as it is termed,—where, owing to the ordeal through which the proposer is passing, the Heart gets out of control, and presents an extremely rapid and tumultuous action. This all disappears after some minutes of rest and cessation from examination. By engaging the Examinee in conversation about his family history, his occupation, or any indifferent subject, he will regain his natural composure, and the heart will correspondingly quieten down. The same characters of a weak and rapidly acting heart are met with in mitral disease, but in this case the physical examination of the organ will reveal the cause of the unusually rapid action. Excess of tobacco-smoking is another cause of rapid action of the heart, but is usually accompanied by dilated pupil and nervous tremor. The same characters of rapidity and weakness are met with in Fever, Anæmia, Neurasthenia, Exophthalmic Goitre, and persistent over-use of stimulants, but all of these are easily eliminated. ***Pulse.***

All these causes being excluded, and the pulse-rate remaining persistently high, recourse will naturally be had to the Thermometer. If it marks a slight rise above the normal limit, of perhaps only one degree, this is a confirmation of the suspicion of some tubercular affection. The rule then is of course to defer the case for a week or two for re-examination. ***Thermometer.***

Height and Weight.

As is well known, there exists for the healthy man a certain proportion between his height and his weight, and considerable deviation from the standard, on either side, calls for greater vigilance on the part of the Examiner; for neither the very heavy nor the very light weights are likely to prove profitable risks to the Society. Light-weights are looked upon as undesirable risks, because, being usually of nervous constitution, they take affairs of life more seriously than others, and are predisposed to early death from nervous breakdown and tubercular complaints. Those over-weight tend to die prematurely of apoplexy, heart disease, and atheromatous degeneration of the blood-vessels, and having poor resisting power do not throw off the effects of serious ailments so well as those of normal weight. If the Proposer be in every respect otherwise healthy, and his family record be good, it is usual to disregard a departure of 20 per cent above or below the standard weight in estimating the value of the life.

Some time ago I made an investigation of five hundred and twenty-four schedules of males who had died of Phthisis, hereafter called "Consumptives," and for the purpose of comparison five hundred and two schedules of those who had died of Apoplexy,[1] hereafter called "Non-Consumptives," in order to obtain exact data on which to ground an opinion as to the value of this factor as an aid in adjudicating upon the value of the risk. The information I then obtained is shown in the following Statement:—

TABLE showing the Numbers and Percentages of Consumptives and Non-Consumptives whose approximate height and weight were tabulated, above and below the normal weight[2] as observed on admission into the Society, arranged in decennial groups of ages at entry.

Groups of Ages at Entry.	Consumptives.				Non-Consumptives.			
	Above.		Below.		Above.		Below.	
	Number.	Percentage.	Number.	Percentage.	Number.	Percentage.	Number.	Percentage.
Ages under 20 . . .	...	...	7	2·76	...	...	...	..
Between Ages 20 & 30 .	12	4·73	106	41·72	14	9·21	9	5·92
,, ,, 30 & 40 .	25	9·84	71	27·95	34	22·37	30	19·74
,, ,, 40 & 50 .	7	2·76	14	5·51	30	19·74	15	9·86
,, ,, 50 & 60 .	3	1·18	4	1·58	13	8·55	6	3·96
,, ,, 60 & 70 .	2	0·79	3	1·18	...	...	1	0·65
Total . .	49	19·30	205	80·70	91	59·87	61	40·13

This experience is pretty much in accord with that of other offices, and seems to corroborate the popular opinion that men of light weight exhibit a special proclivity to Phthisis, and that over-weight, while not excluding the possibility of the individual falling a victim to lung disease, is much more

[1] These represented the number of deaths among males from Phthisis and Apoplexy during the period 1874 to 1887 in the Society's experience.

[2] The normal weight referred to was taken from the Standard Table in use in this Office, which was suggested by the late Dr. W. Robertson, at one time Principal Medical Adviser to the Society.

commonly associated with disease of the nervous system than with Phthisis: so that very light weight in a candidate for assurance must always be regarded by the Medical Examiner as a danger-signal, warning him to be more than usually vigilant in his investigation of the condition of the respiratory organs.

This observation of deficient weight should also lead to the inquiry whether or not there has been a recent loss of weight, and if so, whether or not it is progressive. It is not by any means always easy to elicit information on this point, either from inability or unwillingness on the part of the candidate to give it; and as the Examiner may possibly have seen the Proposer for the first time, he may have no personal knowledge to guide him. Should the under-weight be very pronounced, the candidate be under forty years of age—more especially if there be any suspicion that the emaciation is progressive—and some members of the family have died of Phthisis, it would seem to be a prudent course to defer consideration of the case for a year. The Medical Examiner would then have his previous record to fall back upon, as some guide, when the Proposer reappeared at the end of the period of probation.

Hereditary Predisposition.

Another point which is of importance in the estimate of a proposed risk is the occurrence of deaths from Phthisis in the immediate family of the Proposer. By all Assurance Societies the influence of heredity as a factor in the production of Phthisis has long been acknowledged, and any evidence of family predisposition to the disease in the Proposer's family record has been most carefully and jealously scrutinised; and where this has been found to exist in strong degree, the Candidate has usually been "rated up" or declined.

Before considering this point in detail, we must clearly understand what is usually meant by the term "Hereditary Predisposition."

Ever since the discovery of the tubercle bacillus by Koch in 1882, men's minds have turned from the consideration of the influence of heredity as a factor in the ætiology of Phthisis, and have been concentrated upon infection as the real cause in the production of Consumption. No doubt, we cannot escape from the conclusion that Tuberculosis is the result of infection, and that without the reception of the bacillus there can be no Tuberculosis. But manifestly this is not the whole state of the case. For how can we explain the fact, which has been abundantly proved by the experience of Brompton Hospital, that in hospitals devoted to the reception of tuberculous patients the medical officers, nurses, and servants do not take the disease? Indeed, the whole community is constantly exposed to the infection of the ubiquitous bacillus, and *is* infected, but only a small proportion suffer from and die of the disease. There must be something peculiar to those persons who, having received the bacillus into their systems, ultimately develop Phthisis. In their case the seed has fallen into receptive soil; it has taken root and flourished; that is to say, their constitutions are vulnerable to the bacillus, while the others who escape from its effects have stronger constitutions, have more resisting power to the bacillus, are immune to it. "*Experience* decidedly "forces us to assume that the perfectly healthy human organism is extremely "resistant to the permanent colonisation of the bacilli, and that their efficient "reception into the lungs, etc., only occurs when certain conditions are present

" which favour their colonisation and proliferation. This unknown pathological " something we call 'Predisposition to Tuberculosis' (Phthisis), applying this " term to a certain constitution of the tissues of the organism, which furnishes " a favourable soil for the reception of the germs." (Ziemssen.)

This is what is meant by " Predisposition " to the disease. By Hereditary Predisposition is understood that the vulnerability of constitution has been derived from the parents, and not merely acquired in after life; that the child has been born with *a weakness of constitution*, which manifests itself in some delicacy of special organ or tissue which is less able than the organ or tissue of the vigorous child to throw off or resist disease—a vulnerability of constitution, as it is termed—which renders the child specially liable to become the subject of Consumption when exposed to any of the exciting causes. Looked at in the light of the recent views as to the ætiology of Phthisis, this doctrine of heredity acquires greatly intensified importance and precision, as there already exists in such children the lessened power of resistance in the tissues, the special aptitude for the reception of the tubercle bacillus—where once received it can grow and flourish vigorously.

It has been sought by some to deny that such a factor as Hereditary Predisposition exists at all, and to attribute all cases of Phthisis to direct infection. Just as in former days Assurance Societies placed too great weight upon the family history of Phthisis, so now is there a tendency to run to the opposite extreme, and to refuse to admit that heredity has any influence whatever in the production of the disease, and to ascribe it all to infection. Some time ago the British Medical Association issued a circular to its members, inviting them to give instances of cases of infection which came within their own knowledge. To that letter it received two hundred and sixty-two replies, quoting cases of infection, and of those 71 per cent were instances of infection communicated by husband to wife and *vice versa*, proving that very close contact is necessary to convey infection from one human being to another, and that, in contrast to the number of deaths arising from the disease, the evidence of transmission from one person to another is very small. Further, the experience of generations of medical men, who can all quote instances in their own practice, of the run of this particular disease in certain families, where members have been cut off by it one after another, though living far apart, in different houses, even in different continents, is not thus to be set aside. Nor need it be: the two beliefs are not incompatible; in fact, they are necessary to each other; and it would be a serious matter for Assurance Societies were their medical officers to ignore entirely the effect of family predisposition. That too much importance and undue weight have been given to it in the past I frankly admit, and shall now proceed to show from our own statistics.

As already stated, in connection with the question of Height and Weight, I examined the proposal sheets of five hundred and twenty-four of our members who had died of Consumption, and whom I have called " Consumptives," and I then ascertained to what extent the history of the parents, brothers, and sisters of these persons gave evidence of a family taint of Consumption. In addition to those members of the Proposer's family who were specifically mentioned in the schedules as dying of Phthisis, I noted those who were reported to

have died of Cold, Catarrh, Laryngitis, Water in the Brain, Chest Disease, Over-study, Hæmoptysis, Lingering Illness, Hip Disease, Tabes Mesenterica, etc., where the subjects were under 40 years of age, for such terms are often used as euphemisms for Phthisis. The same remark applies to the term Childbirth, which in former years was often accepted as a cause of death, without further enquiry, when it ought more correctly to have been recorded as Phthisis. There were only fifteen such cases out of the whole group of five hundred and twenty-four claims, a fact which speaks well for the intelligence and alertness of the Medical Examiners of the Society. These I divided, treating seven of them as if they were cases of true Phthisis; and including the other eight among those who gave evidence of what may be termed a *suspicious* family history of Phthisis. I also included in this group persons more advanced in life who were reported to have died of Pulmonary Disease, Asthma, Break-up, Chronic Pneumonia, Debility, etc. These are they whom I term "*Possibly Consumptive.*" It will be observed that I have been most liberal and comprehensive in the terms which I have accepted as synonyms for Phthisis. Possibly I have exceeded the just limit. When I had collected and examined the data I found that out of five hundred and twenty-four cases of death by Phthisis only one hundred and twenty, or 22·89 per cent, presented in their family history distinct evidence of direct phthisical taint; and other sixty-two, or an additional 11·83 per cent, exhibited a suspicious family history of Phthisis. That is to say, that, at the very outside, only 34·72 per cent of these five hundred and twenty-four members who died of Consumption exhibited, in their family history, any evidence of family predisposition to the disease.

Now, this is a very interesting and important fact, viz. that certainly not more than 35 per cent of the Consumptives, that is, about one in three, exhibited any family predisposition to Phthisis. This percentage accords pretty closely with the published statistics of Dr. Williams and Dr. Cotton, who give as the result of their investigation into this point 34 per cent and 36 per cent respectively; and the figures, so far as they go, bear out what I have already stated, that too great weight has hitherto been attached to the mere fact that members of Proposers' families had succumbed to Phthisis. Possibly, also, too little importance has been given to the age the Proposer had attained before the death of the parent. For it is reasonable to suppose that if the parent dies of Phthisis one year after the birth of the child, the latter is much more likely to have inherited a vulnerable constitution than if he had attained the age of say 25 or 30 before the parent died of the disease. I regret that this is a point which, owing to defective data, I am quite unable to elaborate.

At the same time, it is hardly fair to assume that the remaining three hundred and forty-two who died of Consumption had no immediate relative who died of the disease. For it is to be observed that 46 per cent of our Consumptives entered the Society below the age of 30, and 88 per cent of them below the age of 40, so that when they joined the Society their family histories were not completed, and inevitably a certain proportion of their immediate families would die of Phthisis.

By examining these cases a little more minutely, we may learn how the taint is exhibited in the family. I have put the facts into tabular form, and have added a Table showing the average ages at death of our members and their consumptive relatives, which I hope may be of interest, but which I do not propose to examine in detail:—

TOTAL DEATHS FROM CONSUMPTION—CONSUMPTIVES—**524.**

TABLE showing the Frequency of Family Taint among Consumptives.

DEGREE OF TAINT.	Father and Mother.	Father.	Mother.	F. & B. or S.	M. & B. or S.	Two or more Bros. or Sis.	Bro. or Sis.	Total with Family Taint.	Total without Family Taint.
Actually Consumptive . .	...	16	21	3*	4*	16	60	120	...
Possibly Consumptive . .	...	11	18	3*	4*	5	21	62	...
TOTAL . .	...	27	39	6*	8*	21	81	182	342

* Included under "Parent Consumptive" and not under "Brothers and Sisters" in next Table.

TABLE showing Numbers consolidated from above and Percentages that these Numbers bear to the Total Consumptives.

DEGREE OF TAINT.	Parent Consumptive.						Brothers and Sisters.		Total with Family Taint.	
	Father.		Mother.		Total.					
	Number.	Percentage.	Number.	Percentage.	Number.	Percentage.	Number.	Percentage.	Number.	Percentage.
Actually Consumptive . .	19	3·62	25	4·77	44	8·39	76	14·50	120	22·89
Possibly Consumptive . .	14	2·67	22	4·20	36	6·87	26	4·96	62	11·83
TOTAL . .	33	6·29	47	8·97	80	15·26	102	19·46	182	34·72

TABLE showing Average Ages at Death of Consumptives and of their Actually and Possibly Consumptive Relatives.

RELATIVES AFFECTED.	No. of Cases.	Actually Consumptive. Average Age at Death.			No. of Cases.	Possibly Consumptive. Average Age at Death.		
		Assured.	Parents.	Br. or Sis.		Assured.	Parents.	Br. or Sis.
		Years.	Years.	Years.		Years.	Years.	Years.
Father and Mother . .	...	...	...	...	...	...	...	...
Father alone . . .	16	46·75	41·62	...	11	37·81	51·09	...
Mother alone . . .	21	35·85	37·76	...	18	44·66	44·05	...
Father and Br. or Sis. .	3	42·66	44·00	21·00	3	47·66	52·33	34·00
Mother and Br. or Sis. .	4	40·00	42·25	29·75	4	51·50	46·00	28·20
Brothers and Sisters . . .	76	37·84	...	23·21	26	45·65	...	25·18
TOTAL . .	120	38·90	40·00	23·38	62	44·45	47·11	26·59

In the next set of Tables we have the family history of those members who died of Apoplexy whom I have called "Non-Consumptives," and whose "Possibly Consumptive" relatives I have ascertained in exactly the same manner I did those of the "Consumptives." The numbers are sufficiently close to give fairly comparable results.

TOTAL DEATHS FROM APOPLEXY—NON-CONSUMPTIVES—**502.**

TABLE showing the Frequency of Family Taint among Non-Consumptives.

DEGREE OF TAINT.	Father and Mother.	Father.	Mother.	F. & B. or S.	M. & B. or S.	Two or more Bros. or Sis.	Bro. or Sis.	TOTAL WITH FAMILY TAINT.	TOTAL WITHOUT FAMILY TAINT.
Actually Consumptive . .	1*	10	15	5†	6†	18	62	117	...
Possibly Consumptive . .	5*	26	18	9†	8†	17	37	120	...
Total . .	6*	36	33	14†	14†	35	99	237	265

* Included under "Father" and not under "Mother" in next Table.
† Included under "Parent Consumptive" and not under "Brothers and Sisters" in next Table.

TABLE showing Numbers consolidated from above and Percentages that these Numbers bear to the Total Non-Consumptives.

DEGREE OF TAINT.	PARENT CONSUMPTIVE.						Brothers and Sisters.		TOTAL WITH FAMILY TAINT.	
	Father.		Mother.		Total.					
	Number.	Percentage.	Number.	Percentage.	Number.	Percentage.	Number.	Percentage.	Number.	Percentage.
Actually Consumptive . .	16	3·19	21	4·18	37	7·37	80	15·94	117	23·31
Possibly Consumptive . .	40	7·97	26	5·18	66	13·15	54	10·75	120	23·90
TOTAL . .	56	11·16	47	9·36	103	20·52	134	26·69	237	47·21

TABLE showing Average Ages at Death of Non-Consumptives and of their Actually and Possibly Consumptive Relatives.

RELATIVES AFFECTED.	No. of Cases.	Actually Consumptive. Average Age at Death.			No. of Cases.	Possibly Consumptive. Average Age at Death.		
		Assured.	Parents.	Br. or Sis.		Assured.	Parents.	Br. or Sis.
		Years.	Years.	Years.		Years.	Years.	Years.
Father and Mother . .	1	67·00	40·50	...	5	68·40	48·00	...
Father alone . . .	10	55·60	45·10	...	26	57·54	48·15	...
Mother alone . . .	15	57·60	33·33	...	18	64·05	41·16	...
Father and Br. or Sis. .	5	60·80	46·00	19·66	9	62·88	57·33	26·41
Mother and Br. or Sis. .	6	64·16	28·33	26·88	8	57·00	45·25	32·44
Brothers and Sisters . .	80	57·87	...	25·96	54	63·83	...	27·40
TOTAL . .	117	58·17	39·76	25·73	120	62·16	47·20	27·73

One important fact deduced from examination of the foregoing Tables is the small number of the Consumptives who show a direct hereditary tendency to the disease. Thus if we limit the term "Hereditary Predisposition" to its strict acceptation, and include only those whose parents were acknowledged to be tuberculous, we find that forty-four males came of such stock, or only 8·39 per cent of those who died of the disease. But if we add to those forty-four the thirty-six cases where there exists a suspicion that the parents were tuberculous, then we raise the percentage to 15·26 of our consumptive cases where there *may* have been hereditary predisposition. *Now, I am much of opinion that this will be found to be little, if at all, above the average for the members of the Society generally in which hereditary predisposition, in this narrow sense, exists.*

Among the Non-Consumptives we find that sixteen fathers and twenty-two mothers were acknowledged by the proposers to have died of Phthisis; or 7·37 per cent of those who died of Apoplexy had parents who died of Phthisis. This approximates very closely to the percentage of the Consumptives who acknowledged to having phthisical parents, viz. 8·39. But if we turn now to the examination of those with suspiciously consumptive parents we find a different state of matters. No less than sixty-six members—equivalent to 13·15 per cent of the total Non-Consumptives—gave a suspiciously consumptive history of their parents. Adding those with absolutely consumptive to those with suspiciously consumptive parents, the total amounts to one hundred and three Apoplectics, or 20·52 per cent, as against eighty Consumptives, or 15·26 per cent, who presented a probable hereditary predisposition to Phthisis.

From the figures which have been submitted, the contention appears to be amply justified, *that 15 per cent at least of proposers to the Society for assurance, and of those accepted by the Society, will show a record of death by Consumption among their parents.*

Again, if it be held, as some maintain, that "the family inclination to "disease is more manifest among brothers and sisters than between parents "and children," then it becomes necessary to include those brothers and sisters in both classes who were either actually or possibly consumptive. Let us therefore glance at the history, as set down in the proposal papers, of the other members of these families.[1] Of the one hundred and twenty Consumptives who gave distinct statement of the deaths of immediate relatives by this disease, seventy-six, equivalent to 14·50 per cent of the total Consumptives, stated that these were either brothers or sisters; and of the sixty-two whose statements suggested the probability of Phthisis being the cause of death to their immediate relatives, twenty-six, or 4·96 per cent of the total Consumptives, referred to their brothers and sisters. Thus, out of the whole one hundred and eighty-two men who gave some hint that Phthisis had carried off some members of their families, and who ultimately died of Phthisis themselves, one hundred and two, or 19·46 per cent of the total number at present under observation who died of Consumption, indicated that the disease had cut off brothers or sisters. Contrast this result with the statement emitted by the Non-

[1] NOTE.—As already stated, when the Phthisical taint involves both a parent and a brother or sister, the case has been included only among those with consumptive parents.

Consumptives as to the presence of Phthisis in their family circle. Of the one hundred and seventeen who gave distinct history of Consumption in their immediate families, eighty, or 15·94 per cent of the total Non-Consumptives, stated that it had occurred among their brothers or sisters; and of the one hundred and twenty who gave dubious history of their families as to Phthisis, fifty-four, equivalent to 10·75 per cent of the total Non-Consumptives, referred to their brothers and sisters. We find, then, that of the two hundred and thirty-seven men who gave some history of Consumption in their families, and who ultimately died of Apoplexy, one hundred and thirty-four, or 26·69 per cent of the total Non-Consumptives, indicated that it appeared among their brothers and sisters.

To summarise: Among the five hundred and twenty-four Consumptives the number who gave a history of actual family taint was one hundred and twenty, or 22·89 per cent, to which have to be added other sixty-two, or 11·83 per cent, who gave a history of suspicious family taint—together one hundred and eighty-two, or 34·72 per cent.

Among the five hundred and two Non-Consumptives, the number who gave a history of actual family consumptive taint was one hundred and seventeen, or 23·31 per cent, to which have to be added one hundred and twenty, or 23·90 per cent, who gave a history of suspicious family taint—together two hundred and thirty-seven, or 47·21 per cent.

Here, then, we have actually a larger percentage of members with consumptive relatives among those who ultimately died of Apoplexy than among those who ultimately died of Phthisis; but a part of the difference is probably accounted for by the difference in the ages at which the members of the two classes were admitted to the Society. The average age at entry of the Consumptives was 31 years, while that of the Non-Consumptives was 38 years, and this additional seven years would, of course, afford opportunity for giving a more accurate and complete record of the family history. After making allowance for this fact, however, the figures can certainly not be quoted as supporting the theory of the terribly pernicious influence of the existence of family predisposition and hereditary tendency to Consumption.

If we confine our attention to the cases where the Proposers themselves stated that one or more of their immediate relatives had actually died of Phthisis, the numbers are astonishingly close, and give cause for much reflection. Thus, among the Consumptives it is 22·89 per cent of the total, while among the Non-Consumptives it is 23·31 per cent. When we take into account the higher age at entry of the latter class, there is no doubt that not only will the small difference between these percentages disappear, but that there will be a preponderance of Consumptives. But even if we assume that, in the course of the seven additional years, the Consumptives with parents, brothers, or sisters who had undoubtedly died of Phthisis increased by 20 per cent of their own number,[1] we find that the percentage for Consumptives

[1] This addition of 20 per cent is purely arbitrary, but I submit that it is ample. What has to happen to justify the estimate is, that within the space of seven years a member—*other than our own Member, who may have been an only child*—of 24 different families out of 404 specified families, in none of which has a Phthisical Taint been acknowledged, must die of Consumption. Also, as the average age at entry is 31, it is unlikely that the parents will do so, which means, that probably in all the cases the victim must be a brother or sister of the Assured.

would stand at 27·48 against the 23·31 per cent for Non-Consumptives, showing a difference of 4 per cent, surely a very slender support on which to maintain a theory which in assurance risks had in former days such a far-reaching and supreme influence in the adjudication of proposals on lives having a consumptive family history.

Prior to the discovery of the tubercle bacillus, the predominant theory as to the development of Tuberculosis was the inherited predisposition to it. Of all diseases Consumption was held to be the one which most markedly exhibited a tendency to hereditary transmission—that phthisical parents very certainly produced weakly children, who, more than others, were likely to die of Phthisis. Hence the jealous care with which the family history of Proposers for assurance was scrutinised, and the formulation of the severe but eminently safe rule which guided our medical officers in the selection of cases, in whose family record there appeared some flaw of this character. The rule as originally adopted—probably somewhere about the year 1840—excluded from admission to the Society all in whose immediate family more than one instance of the disease had manifested itself. This rule was probably rigidly enforced for some years after its adoption, but it was gradually modified, until we find the late Dr. Warburton Begbie, in his Report for the Septennium 1867-73, suggesting that " the Society's rule not to accept a proposer in whose " immediate family more than *two* members have died of Consumption . . . " may admit of exceptions being made." This suggestion has been acted upon, and Proposals for Assurance, which showed a family history of Consumption, accepted, where, from the age and constitution of the Proposer, the number of his family, the proportion of those affected by the disease, and the period he had survived the age which had proved fatal to his relatives, the Directors in conjunction with their Medical Adviser thought such a course might safely be followed.

The statistics I have submitted do not give any support to the Rule as originally framed, for the actual figures only show a difference of 1 per cent between the Consumptives and Non-Consumptives in favour of the theory of direct hereditary susceptibility, and are practically identical for the two classes, if we include tuberculous brothers and sisters. Thus, while 8 per cent of the Consumptives stated that one or other of their parents had died of this disease, 7 per cent of the Non-Consumptives made the same admission; and 23 per cent of both classes admitted that parents, brothers, or sisters had fallen victims to Phthisis.

The logical conclusion from all the data is that, in the adjudication of a proposal with a family history of Phthisis, while we cannot discard from our minds altogether such history as a predisposing cause of the disease, we must attach a much less degree of importance to it than has been the practice in former days. But, while fully recognising that without the bacillus no Phthisis can exist, we must remember that the family predisposition may so act upon the constitution of the individual as to render his tissues more susceptible to the reception and development of the exciting agent than those of another Proposer who exhibits no such family history. Therefore we are not entitled, because too much has been made of this inherited vulnerability in the past,

wholly to ignore it, and to treat it as a negligible quantity. Experience and statistical researches both go to prove that such a proceeding would be as unwise as it would be in contradiction to their teaching.

1874-80.—No less than 10·071 per cent of the deaths in this Septennium arose from this cause, the total number of deaths being two hundred and forty-nine. Their average age at death was 41·773, and only ten of them exceeded their expectation of life, viz. two Englishmen, seven Scotchmen, and one Irishman. Twenty of them were surcharged from three to ten years, chiefly on account of family history.

Thirty-two per cent of the proposers admitted some taint of Consumption among their relatives, as Father, Mother, Brother, Sister, Uncle, Aunt, or Cousin. The records, so far as they go,—and they only refer to two hundred and five of the claims,—indicate that out of this number one hundred and eighteen were married and eighty-seven were single when they were admitted members of the Society.

1881-87.—From this cause of death two hundred and seventy-five claims arose, being 9·067 per cent of the septennial mortality. The average age at death was 41·805.

Of the two hundred and seventy-five claims only six exceeded their expectation of life (four Englishmen and two Scotchmen) by from 1 to 4 years. Their ages at death were 75, 70, 67, 66, 66, 60. One of them was rated up four years, because he appeared to be under average in strength and was not robust-looking, and had exhibited symptoms of Rheumatic Gout.

Thirty-three per cent of those who died of this disease showed evidence of some taint by Phthisis among their relatives, and, chiefly for this reason, forty-one were charged an extra premium.

When admitted as members of the Society, one hundred and twelve of them reported themselves to be married men, while one hundred and twenty declared themselves to be single men.

1888-94.—During this Septennium the number of deaths amounted to two hundred and eighty-two, and the average age at death was 44·726. This represents 7·709 per cent of the septennial mortality. Fifteen of the deceased exceeded their expectation by from a few months to 12 years. In thirty per cent of the cases the proposal papers disclosed some history of Phthisis among the relatives, and the ages of thirty-five of the deceased were rated up when they became members. As to nationalities, one hundred and seventy-nine of the claims emerged from Englishmen, sixty-seven from Scotchmen, and thirty-six from Irishmen.

Disease of Lungs.

It is sometimes difficult to say accurately of which precise form of Disease of the Lungs the patient died, and then the medical attendant takes the unsatisfactory plan of recording the death under this general title; hence a great variety of disorders were returned under this heading.

1874-80.—The records for this Septennium have been carefully analysed, and each case placed under its appropriate category, such as Phthisis, Pneumonia, Bronchitis, etc. There were thirty-four cases thus dealt with.

1881-87.—Under this indefinite title twenty-seven cases were reported. They included cases of Phthisis, Pneumonia, Bronchitis, Gangrene, Abscess, etc. These have been discriminated and tabulated under their respective headings.

1888-94.—Happily the numbers registered under this indeterminate term are rapidly decreasing each Septennium, and they are recorded under the special form of Lung Disease. Only six were thus designated, and internal evidence leads to the conclusion that probably some of them were really due to Phthisis, but they are retained here as doubtful.

Empyema.—*See* Pleurisy.

Hydrothorax.

1874-80.—Three deaths are recorded under this heading.

1881-87.—Three members were reported to have died of this ailment.

1888-94.—One case was returned under this title. The patient died at the age of 81, after six months' illness. He had exceeded his expectation by 12 years.

Laryngitis.

1874-80.—Nine cases of death occurred from this cause; one death was due to a Polypus of the Larynx, of one month's growth, producing spasm of the Glottis, from which death resulted in a few minutes.

1881-87.—Eight deaths were due to this disease. In one case the trachea became ulcerated, and implicated the aorta, from which complication death resulted by perforation.

1888-94.—From this affection eleven deaths occurred. Four of these were Acute, three were Chronic, one was Tubercular, two were due to Ulceration (the nature was not recorded), and one was accompanied by Congestion of the Lung.

Pleurisy and Empyema.

1874-80.—Thirteen members died of Pleurisy, or Inflammation of the covering of the Lung, and one of Empyema, which is the purulent form of Pleurisy. The average age at death was 57, and only four exceeded their expectation of life. Nine were examples of Acute Pleurisy, and four were Chronic. For complications, four had Pneumonia, three Bronchitis, and one Heart Disease.

1881-87.—Twenty-five members died of these complaints, at the average age of 59, seven of them having exceeded their expectation of life. Ten of

them died of Acute Pleurisy, eleven of the Chronic form, and four of Empyema. The complications were: Pneumonia, Hepatitis, Pericarditis, Ulcer of Stomach, etc.

1888-94.—Thirty-one members died from these diseases, at the average age of 55, and only four of them exceeded their expectation. There were eighteen cases of Acute, and ten of Chronic Pleurisy, and three examples of Empyema. Nine of the fatal attacks of Pleurisy were complicated with Pneumonia, one with Bronchitis, one with Congestion of the Lungs, and one with Gangrene of the Lung.

Pneumonia.

(*See also Bronchitis.*)

1874-80.—Pneumonia was the cause of death to one hundred and fifty-one members at the average age of 54·656 years. To it was due 6·110 per cent of the septennial mortality. It was more fatal to those above the age of 50 than to those below that age, in the proportion of 94 to 57.

Pneumonia, as already stated, is a disease of short duration. Thus, among our members eighty-eight of them died within a week of the onset of the disease, and fifty more died within fourteen days. The others lingered on for some weeks.

1881-87.—The number of deaths recorded as due to this disease is two hundred and twenty-six, or 7·452 per cent of the septennial mortality. The average age at death was 57·602.

Fourteen were charged an extra premium for various reasons, chiefly on account of family history of lung troubles. Only one of these attained his expectation of life, and he exceeded it by 2 years—but his was a Hernia extra, which is not now charged.

1888-94.—As each Septennium passes, Pneumonia appears as an increasing cause of death among our members. This Septennium the total number amounts to two hundred and ninety, equivalent to 7·928 per cent of the septennial mortality. In this Septennium it takes rank as the fourth heaviest cause of mortality, having relegated Consumption—which in the two previous Septennia took the third and fourth place respectively—to the fifth place. This is a matter of great importance from an assurance point of view, as the average age at death of the Pneumonics was 58·094, while that of the Consumptives was 44·726.

Of these two hundred and ninety cases, one hundred and seventy-three were Englishmen, who died at the average age of 56, and forty-three of whom exceeded their expectation by from 1 to 27 years; Scotchmen numbered seventy, and they died at the average age of 60, and twenty-four of them exceeded their expectation by from 1 to 16 years; Irishmen represented forty-seven of the total two hundred and ninety cases; they died at the average age of 64, and twenty-two of them exceeded their expectation by from 1 to 18 years.

It is to be noted that this number of deaths is independent of other sixty-four of our members who died of Pneumonia as a complication of Influenza.

Pneumothorax.

1881-87.—One member died of this disease at the age of 53.

Quinsy.

1888-94.—One Englishman died of this disease at the age of 50.

CLASS V.

DISEASES OF THE CIRCULATORY SYSTEM.

Included in this class are the following ailments:—Aneurism, Atheroma, Disease of the Heart, Embolism, Endocarditis, Pericarditis.

It is to be understood that, though some recorders specify the exact nature and form of the Disease of the Heart which led to the immediate death of the member, and these are here entered, these returns are by no means to be regarded as indicating the exact number of deaths arising from that specific form of Heart Disease. Thus, for instance, under the title Endocarditis, only sixteen deaths are placed, while probably ten times that number are included under the generic term Disease of Heart. It is hardly worth while keeping these records separately, but they are retained in deference to those medical gentlemen who have so specified them.

The number of deaths from Diseases of the Circulatory System during the twenty-one years under observation was 1424, or 15·538 per cent of the total mortality. The average age at death was 62·031. The following is a comparative statement of the total deaths in each of the three Septennia:—

Septennium.	Number of Deaths.	Percentage of Deaths in Septennium.	Average Age at Death.
1874–1880	359	14·518	60·533
1881–1887	449	14·809	61·977
1888–1894	616	16·840	62·943

The increase in the average age corresponds pretty closely to the increase in the average age at death from all causes.

Aneurism.

1874-80.—From this disease of the blood-vessels eighteen deaths are recorded. Their average age at death was 51, and only two exceeded their expectation: one, a clergyman, by 6 years. The Thoracic Aorta was the seat of the disease in thirteen cases, and the Abdominal Aorta in one. Where the Aneurism was situated in the other four was not specified.

1881-87.—From this cause twenty-seven deaths occurred. Their average age at death was 55. The disease affected the Thoracic Aorta in eight cases, the Abdominal Aorta in three, the Popliteal Artery in one, the Innominate Artery in one, the Brain Arteries in one, and the Heart in one. Of the others no details are given.

1888-94.—Twenty-four members were reported to have died of this disease, at the average age of 60. With two exceptions, in which the heart and the brain were affected, they were all thoracic. Eleven died by Rupture of the Aneurism.

Atheroma.

1881-87.—Three members were certified to have died of this affection of the blood-vessels. It is a disease of advanced life. The average age of the three at death was 72.

1888-94.—Five deaths were reported to have been caused by this disease.

Disease of the Heart.

Under this heading are included many varieties of Disease of the Heart, and some of the certificates were registered under distinct sub-classes, as noted in the subjoined Table:—

Variety of Heart Disease.	Period of Time.			
	1874-80.	1881-87.	1888-94.	1874-94.
Disease of Heart, undefined[1] .	81	151	255	487
Valvular Disease of Heart[2] .	104	115	120	339
Fatty Degeneration of Heart[3] .	78	40	44	162
Syncope	23	27	71	121
Enlargement of the Heart[4] .	29	27	28	84
Angina Pectoris . . .	9	24	43	76
Rupture of the Heart . .	...	1	3	4
Total .	324	385	564	1273

As will be observed, four hundred and eighty-seven, or 38 per cent of the cases, were returned under the generic title of Heart Disease. The largest sub-class is Valvular Disease of the Heart, but no indication was given, in any number of cases, which of the four valves was the one implicated, or in how many cases more than one valve was involved. Of Enlargement of the

[1] **Disease of Heart undefined.**—Under this title are included many forms of Heart Disease which were the immediate cause of death, as weak action, spasm, etc., but which cannot be more accurately defined than by the term Disease of Heart.

[2] **Valvular Disease of Heart.**—Affections of the valves of the heart are due chiefly to local inflammation, the result of Rheumatism, Acute Febrile Disorders, Kidney Disease, or Syphilis—or to degenerative changes, as Atheroma, frequent causes of which are Gout, Alcoholism, and Old Age.

[3] **Fatty Degeneration of Heart** is a pretty common form of Heart Disease, and may form part of the general failure of advanced life. In other cases it may prove one of the terminations of chronic wasting diseases, and especially of disease of the heart itself. Though by no means unknown in youth, it is more frequently met with in advanced life.

[4] **Enlargement of Heart** may be brought about by Hypertrophy of the Heart; that is, by an increase in the thickness of its walls, which may arise from affections of the heart itself, *e.g.* disease of valves or of the muscle, or from affections of the blood-vessels, as in Bright's Disease. Dilatation is another way in which the heart enlarges, by increase in the size of the cavities due to a weakened condition of the walls. These two conditions are not infrequently met together, or the one may succeed the other.

Heart eighty-four cases were certified; but as to what was the nature of this enlargement, whether Hypertrophy or Dilatation or both, or as to what was its cause, no indication was offered. In these circumstances it seems valueless to attempt to analyse these reports, or to draw any conclusions from such an analysis. They would prove as futile as they would be fallacious. Consequently, these subdivisions are ignored, and they are all grouped together under the one heading Disease of the Heart.

The following Table shows the number of deaths at groups of ages and at all ages for each Septennium and for the twenty-one years 1874-94; and the percentages that the numbers at groups of ages bear to the numbers at all ages:—

MORTALITY from HEART DISEASE during the three Septennia, separately and combined.

Period.	Ages under 35.		Between Ages 35 & 45.		Between Ages 45 & 55.		Between Ages 55 & 65.		Between Ages 65 & 75.		Ages 75 and over.		All Ages.
	Number.	Percentage.	Number.	Percentage.	Number.	Percentage.	Number.	Percentage.	Number.	Percentage.	Number.	Percentage.	Number.
1874–80	7	2·16	27	8·34	51	15·74	96	29·63	115	35·49	28	8·64	324
1881–87	7	1·82	34	8·83	61	15·84	94	24·42	125	32·47	64	16·62	385
1888–94	8	1·42	41	7·27	92	16·31	139	24·64	187	33·16	97	17·20	564
1874–94	22	1·73	102	8·01	204	16·03	329	25·85	427	33·53	189	14·85	1273

From this Table we see that the total number of deaths from this cause during the twenty-one years was twelve hundred and seventy-three, which is equivalent to 13·890 per cent of the total mortality—figures very largely in excess of those for any other of our sub-headings. It is interesting and instructive to note that it was not until age 55, when decadence of the various organs and of the general vitality has fairly set in, that the number of deaths from Heart Disease among our members became so serious as ultimately to place it in the position, which it held unchallenged during the three Septennia, of being the most fatal of all the diseases in our nosology.[1] This is more clearly brought out in the next Table:—

ANNUAL MORTALITY from HEART DISEASE among 10,000 (Males) living at each Group of Ages and at All Ages.[2]

Period.	Ages under 25.	Between Ages 25 & 35.	Between Ages 35 & 45.	Between Ages 45 & 55.	Between Ages 55 & 65.	Between Ages 65 & 75.	Ages 75 and over.	All Ages.
1874–80	1·53	1·53	5·91	16·03	48·66	120·05	107·90	20·86
1881–87	...	1·48	5·38	13·98	39·25	107·91	180·13	19·12
1888–94	...	1·71	5·49	15·08	42·63	129·97	203·82	23·33
1874–94	·45	1·57	5·56	14·95	43·13	120·11	173·28	21·27

It is a curious fact—although probably it is only a coincidence—that,

[1] See Tables in Appendix I[A] to II[D] inclusive.
[2] For quinquennial groups of ages see Tables II[A], II[B], II[C], and II[D], in Appendix.

while, as we have already seen, the Annual Rate of Mortality from Apoplexy fell from 14·89 per 10,000 living in 1881-87 to 12·29 in 1888-94, that from Heart Disease rose from 19·12 to 23·33.

It appears from both these Tables that Heart Disease, like Apoplexy, is a prolific source of death among our aged members. The average age at death for the three septennia was 61·665, 62·848, and 63·402 years respectively, and for the twenty-one years 1874-94 was 62·793 years, which is 1·367 years older than the average age for Apoplexy, and 4·530 years older than that for the total mortality. Among those who die from Heart Disease and Apoplexy, and indeed from all those diseases which are frequent causes of death among the aged, the average age at death must almost necessarily tend to increase with the advancing age of the Society.

As might be anticipated from the high age at death, a very large number of our members who died from Heart Disease exceeded what was their expectation of life at the time they joined the Society. The actual number was five hundred and sixteen, or rather over 40 per cent of the total, of whom 39 per cent were Englishmen, 19 per cent were Irishmen, and no less than 42 per cent Scotchmen.[1] Looking to the occupations of all those who exceeded their expectation, we find them as follows:—

Occupation.	Period of Time.			
	1874-80.	1881-87.	1888-94.	1874-94.
Tradesmen	23	34	50	107
Merchants	25	30	32	87
Clergymen	14	15	27	56
Lawyers	11	17	15	43
Clerks	6	11	23	40
Independent Gentlemen	7	8	9	24
Manufacturers	5	4	14	23
Medical Men	6	5	11	22
Farmers	2	8	10	20
Traders in Alcohol	4	6	9	19
Civil Servants	2	6	4	12
Schoolmasters and Teachers	1	2	3	6
Miscellaneous Occupations	10	20	27	57
Total	116	166	234	516

In reading this Table it must be remembered that the numbers are actual and not relative, the necessary data for the latter, *i.e.* Exposed to Risk for each Occupation, not being available.

Embolism.

By this term is understood an obstruction of a blood-vessel by some body which has been conveyed thither by the blood current from some part of the circulatory system.

[1] The large number of Scotchmen is probably accounted for by the fact that for the first twenty years of its existence the Society had no Branches or Agencies in England or Ireland.

1874-80.—Seven deaths were due to this cause. The average age at death was 51.

1881-87.—There were fifteen deaths reported to be due to this cause, the average age at death being 62 years. Two of the cases were Pulmonary, one was Cerebral in character, one was said to have occurred in the Coronary Arteries and to have been verified by post-mortem examination, five proceeded from the Heart, three were attributed to Gout.

1888-94.—From this affection sixteen members died at the average age of 58. Half of them died in less than twenty-one days after the onset of the affection. The illness of the others was more prolonged.

Endocarditis.

By this term is meant an inflammation of the lining membrane of the heart. It is hardly to be regarded as a distinct disease, but is almost always an accompaniment of some other disorder, most commonly of Acute Articular Rheumatism, Pneumonia, Scarlatina, etc.

1874-80.—The total number of cases recorded under this heading is six. Three of them were associated with acute Rheumatism, and in another Endocarditis was said to have supervened upon Congestion of the Brain. One member only survived his expectation of life, and this he did by five years, dying at the age of 72, after four days' illness.

1881-87.—Under this heading were included seven deaths at the average age of 59. In two cases the Endocarditis was accompanied by Pericarditis, and was probably rheumatic in character. Two more presented other signs of Heart Disease. Another was of the malignant or ulcerative type. One member was charged an extra of five years when he joined the Society on account of personal history of nervous troubles. Two exceeded their expectation of life—one by 15 years, the other by 5 years.

1888-94.—Three cases are recorded under this title. The duration of the illness was respectively twenty-three days, seven weeks, and two months. Their average age at death was 51.

Pericarditis.

By this term is understood an inflammation of the covering of the heart. Like Endocarditis, it is seldom a primary disorder, but is commonly the result of Rheumatism, Disease of Heart or Kidney, or Pneumonia.

1874-80.—Four deaths were said to be due to Pericarditis. In three of them no history of Rheumatism was given, but the fourth had Acute Rheumatism two years before he became a member of the Society. His expectation of life was 28 years, but he only lived about eighteen months.

1881-87.—Twelve cases are recorded under this heading. In some

it was secondary to Rheumatism, in one to Pneumonia, and in another probably to affection of the Kidneys. They all fell short of their expectation by from 1 to 45 years.

1888-94.—Four cases appeared under this term, though in not a few it is assigned as a complication in cases registered under Disease of the Heart. In one case the disease was complicated by Effusion into the Pericardium, in a second by Hyperpyrexia, and in a third by Pneumonia. The average age at death was 45.

CLASS VI.

DISEASES OF THE DIGESTIVE SYSTEM.

Into this class the following diseases fall:—Colic, Disease of Bowels, Disease of Liver, Disease of Pancreas, Disease of Spleen, Disease of Stomach, Hernia, Ileus, Intussusception, Peritonitis, Rupture of Gall-Bladder.

The number of deaths arising from these causes during the twenty-one years under observation was 876, or 9·561 per cent of the total mortality. The average age at death was 55·123. The following is a comparative statement of the total deaths in each of the three Septennia.

Septennium.	Number of Deaths.	Percentage of Deaths in Septennium.	Average Age at Death.
1874–1880	273	11·044	56·140
1881–1887	289	9·527	54·668
1888–1894	314	8·584	54·656

Colic.

By this term is usually meant a non-febrile spasm or irregular contraction of the walls of the bowel, attended with great pain.

1874-80.—Three members were said to have died of Colic. One case was that of an old man of 78, who died after a few days' illness; another was a medical man aged 80, who died from exhaustion after three days of pain. The third was a young man of 27, who ought not to have died of simple Colic. He died in Ohio after four days' illness, and beyond this we have no further information.

1881-87.—Three members died of this disorder: one by Syncope after twenty-six hours' illness, another by Syncope after ten days' illness, and the third by collapse after six days' illness. Their average age at death was 50.

1888-94.—From this disease two members died. One was an aged man of feeble heart-power, who died after four hours' illness, worn out by the agony of pain, which produced a syncopal attack. The other was a man of 50, who suffered also from Pleurisy.

Disease of Bowels.

1874-80.—Twenty-three claims arose from some one of the many affections included under this title, and it is probable that some of the cases recorded under Diarrhœa and Dysentery in Class I. should more correctly have been

placed under this heading. The forms of Bowel Disease specified in the returns are:—Ulceration of Bowel, ten; Stricture of Bowel, five; Enteritis, five. Perforation resulted in three of the cases of Ulceration, and hæmorrhage in two.

1881-87.—Thirty-five deaths were returned under this heading. The foregoing remark as to Diarrhœa and Dysentery applies to this Septennium also. Of these thirty-five, fourteen died of Enteritis, eight of Ulceration (in two cases perforation occurred), six of Stricture, and one of Diarrhœa.

1888-94.—The total deaths from Bowel Disease were thirty-six, and on this occasion every case was properly diagnosed and returned. The following were the special affections of the Bowel which brought about the fatal result:—

Diarrhœa . .	13 cases	Stricture of Bowel .	1 case
Enteritis . . .	13 „	Gangrene of Bowel .	1 „
Ulcer of Bowel .	3 „	Dysentery . . .	1 „
Perityphlitis . .	3 „	Melœna . . .	1 „

Disease of Liver.

This term includes many varieties of liver trouble, such as Abscess, Aneurism of Hepatic Artery, Congestion, Cirrhosis, Hepatitis or Inflammation, Gall-Stones, etc., but the form of Liver Disease which is of most interest from an assurance point of view is Cirrhosis or Interstitial Hepatitis. By the term is understood a hardening of the organ, attended later by a diminution of its size, due to the increase of the connective tissue. There are many causes of this disease, such as Syphilis, Malaria, chronic congestion of the blood-vessels in Heart Disease, etc., but by far the most common is the over-indulgence in spirituous liquors.

1874-80.—The number of deaths returned under one or other of the varieties of Liver Disease was one hundred and forty-nine, distributed as follows:—Disease of Liver undefined sixty, Cirrhosis fifty-four, Hepatitis twelve, Jaundice nine, Abscess four, Congestion three, Amyloid Disease three, Ascites two, Gall-Stones one, and Aneurism of Hepatic Artery, a very rare form of Liver Disease, one.

An attempt was made to separate the claims from Cirrhosis into two classes, viz. the Alcoholic and the Non-Alcoholic, and the results are believed to be fairly accurate. Into the Alcoholic class fell thirty-five cases, whose average age at death was 49, and into the Non-Alcoholic class nineteen cases, whose average age at death was 53.

1881-87.—The number of deaths recorded under this title was one hundred and forty-six, the certified cause of death being as follows:—Cirrhosis fifty-six, Disease of Liver undefined fifty-five, Hepatitis twelve, Jaundice nine, Abscess seven, Amyloid Disease three, Gall-Stones two, Congestion one, and Acute Yellow Atrophy of the Liver, a very uncommon condition, one.

An attempt was again made to separate the deaths from Cirrhosis into

the two categories, Alcoholic and Non-Alcoholic. The first class numbered thirty-eight, and the second class eighteen. The average ages at death were 46 and 54. We are thus offered a striking example of the power of alcohol for evil, and the loss it involves to the Society, for it will be seen that in this Septennium more than twice the number died of the Alcoholic form of Cirrhosis than of the Non-Alcoholic variety, thirty-eight to eighteen; while in the former the age at death was eight years junior to the latter, 46 as contrasted with 54.

1888-94.—The deaths returned under this heading amounted to one hundred and fifty-seven, equivalent to 4·292 per cent of the septennial mortality; and the average age at death was 53·304. This was the smallest percentage of deaths from this cause during the three Septennia, but, at the same time, the average age at death was the lowest. They stand thus:—

Septennium.	Number of Deaths.	Percentage of Deaths in Septennium.	Average Age at Death.
1874–1880	149	6·028	56·339
1881–1887	146	4·813	55·082
1888–1894	157	4·292	53·304

The varieties of Liver Disease were: Cirrhosis one hundred and six, Disease of Liver undefined twenty-seven, Hepatitis six, Abscess six, Jaundice six, Gall-Stones four, Congestion one, Hydatid (Bladder-Worm) one.

As in the former Septennia, an attempt was again made to separate the Alcoholic form of Cirrhosis from the Non-Alcoholic variety. The result is that fifty-four of the cases were believed to be of the Alcoholic form, and fifty-two to belong to the Non-Alcoholic form. Their respective average ages at death were 48 and 55.

Of the fifty-four Alcoholic Cirrhotic deaths, thirty-three were those of Englishmen who died at the average age of 45; thirteen were those of Scotchmen who died at the average age of 52; the remaining eight were those of Irishmen who died at the average age of 50.

Of the fifty-two deaths from Non-Alcoholic Cirrhosis, thirty-six were those of Englishmen who died at the average age of 55; twelve were Scotchmen whose average age at death was 58; and the remaining four were Irishmen who died at the average age of 41.

Disease of Pancreas.

1888-94.—One Scotch member died of this disorder, at the age of 53.

Disease of Spleen.

1874-80.—Four members died of this disease, and except in one case, this is all the information to be obtained from the papers as to the nature of the ailment. The exceptional case was one of Leucocythæmia, a disease characterised by the great increase of white cells in the blood, and attended

by great wasting of the body and many complications. Of the other three we have no particulars.

1881-87.—Six persons were reported to have died from disease of this organ. Three of them apparently died of Leucocythæmia. Of the other three, no further particulars can be gleaned than that their ailment was Disease of the Spleen.

1888-94.—Two Englishmen were reported to have died of this affection. One died of Leucocythæmia, after having attained a good old age, and exceeded his expectation by 10 years. The other died in Japan of Abscess of the Spleen, having fallen short of his expectation by 15 years. Their ages at death were 74 and 53.

Disease of Stomach.

1874-80.—Of the fifty-six claims arising from Disease of the Stomach, the fact was merely stated in fifteen cases. Eighteen of the members died from Ulceration of the Stomach, in one-third of which number perforation occurred; sixteen deaths were said to have occurred from Gastritis, or Inflammation of the coats of the Stomach, all of which were acute,—the illness lasting only from two days to one month,—except one case, in which it endured for two years; and seven were returned under Hæmatemesis, by which term is understood a vomiting of blood, met with as a symptom of various morbid conditions.

1881-87.—The number of deaths returned under this heading was forty-five. In fourteen of the cases no further information was given; twelve died from Gastritis, nine from Ulceration—perforation occurred in two—eight from Hæmatemesis, one from Dilatation of the Stomach with Hæmorrhage, and one from Disease of the Pyloric Orifice.

1888-94.—Under this title fifty-seven deaths were returned. Of the different varieties of Stomach Disease, Ulcer brought about seventeen deaths; Hæmorrhage from the Stomach was said to be the cause of death in fourteen cases; while under the simple term of Disease of the Stomach, no attempt having been made to diagnose the form of the disease, eleven deaths were certified. To Gastritis were attributed twelve deaths; to Atrophy of the Glands of the Stomach two; and to Dilatation of the Stomach one.

Hernia.

1874-80.—Two members fell victims to the strangulated form of this disease. Neither of them was afflicted with Rupture when they joined the Society. One was 51 years of age at death, and the other was 72.

1881-87.—Five members died from the effects of Strangulated Hernia, after a few days' illness in each case. They were all well advanced in life, their ages at death ranging from 64 to 88, and all exceeded their expectation by from 2 to 19 years. Not one of these five suffered from Hernia when admitted members.

1888-94.—Eight cases of death from this cause are recorded. They were probably all strangulated: of seven of them this is distinctly affirmed. Their average age at death was 60.

Ileus.

This term, or Iliac Passion as it was sometimes called, was used to signify a non-inflammatory affection of the bowel attended with great pain and vomiting, and, as the name implies, was believed to be due to a twisting of the gut. Later it was applied to all forms of intestinal obstruction in which fæcal vomiting occurred, without regard to the presence or absence of inflammation. The term is not much employed nowadays. It is synonymous with Volvulus—which is regarded as one of the causes of intestinal obstruction—and is described in medical text-books under that head. As the nature of the disease would lead one to expect, the ailment is of short duration, being measured most usually by days.

1874-80.—Seventeen cases were placed under this title. Their average age at death was 61, and six of them exceeded their expectation of life.

1881-87.—From this form of intestinal obstruction fourteen members were reported to have died. The average age at death was again 61, and rather more than half of the number exceeded their expectation.

1888-94.—From this disorder twenty-three members were reported to have died, at the average age of 53.

Intussusception.

This is another form of intestinal obstruction, and is caused by the slipping of one portion of the bowel into an adjacent portion, whence the obstruction arises. It is a disease vastly more common in children under 10 years of age than in adults.

1874-80.—The four of our members who were reported to have died of this disease attained the average age of 54.

1881-87.—From this form of intestinal obstruction four persons died at the average age of 54.

1888-94.—From this disorder two members died, at the average age of 41.

Peritonitis.

By this term is meant an inflammation of the serous membrane which invests the walls and contents of the abdomen. It is usually an acute affection.

1874-80.—Fifteen members were cut off by Peritonitis, at the average age of 59. Of these, six exceeded their expectation by from 1 to 19 years.

1881-87.—Twenty-nine claims arose from this cause. The duration of the illness was short in the majority. The average age at death was 47.

This low average age is partly due to the fact that one of those who died of this disease was a boy of the age of 14, who was insured at the age of 6, and fell short of his expectation by 44 years.

1888-94.—From this cause twenty-five members died, at the average age of 56.

Rupture of Gall-Bladder.

1881-87.—Two Scotchmen died of this rare affection, in both cases brought about, apparently, by acute suppurative Inflammation of the Gall-Bladder, the result of impacted Gall-Stones.

1888-94.—One case of this rare disease is again recorded this Septennium. The victim was an Irish salesman, and died at the age of 28.

CLASS VII.

DISEASES OF THE URINARY SYSTEM.

The following diseases are included in this class:—Cystitis, Diabetes, Disease of Bladder, Disease of Kidneys, Disease of Prostate Gland, Hæmaturia, Ischuria, Nephritis, Stone in the Bladder.

The number of deaths arising from these causes during the twenty-one years under observation was 745, or 8·132 per cent of the total mortality. The average age at death was 62·478. The following is a comparative statement of the total deaths in each of the three Septennia:—

Septennium.	Number of Deaths.	Percentage of Deaths in Septennium.	Average Age at Death.
1874–1880	184	7·444	61·120
1881–1887	248	8·176	62·460
1888–1894	313	8·557	63·295

Cystitis.

This is an inflammation of the bladder, and is met with in two varieties, the acute and chronic. It is a painful and wearing affection.

1874-80.—There were fifteen deaths from this cause. It is usually a disease of advanced life, and in the cases now under review the average age at death was 69. Of these, ten exceeded their expectation of life by from 2 to 12 years.

1881-87.—Thirty-six members succumbed to this disease, at the average age of 73 years. Of these, twenty-five exceeded their expectation of life by from 1 to 23 years.

1888-94.—From this disorder twenty-seven deaths occurred at the average age of 69. Nine of these fell short of their expectation of life, while eighteen exceeded it by from 1 to 13 years.

Diabetes.

This disease does not truly appertain to this class of ailments. It is an incurable constitutional disorder, but it is retained here in conformity with previous custom. It is a disease of adult life, and the largest number of deaths in the community occur between 50 and 60 years of age.

1874-80.—Twenty-three members were reported to have died of this disease, at the rather advanced average age of 61, and six exceeded their expectation of life. The disease was accompanied in many cases by various complications.

1881-87.—Twenty-eight claims arose from this cause. The average age at death was again 61, and eleven exceeded their expectation. The complications were many and various, the chief being Heart Affection, Brain Disease, Phthisis, and Coma.

1888-94.—From this disease fifty-six deaths were reported, at the average age of 58. Eighteen exceeded their expectation of life. Rather more than one-fifth of the whole died of Coma, and one-seventh of Phthisis, two common terminations of Diabetes. Other complications were: Pneumonia, Gangrene, Albuminuria, Carbuncle, Syncope.

Disease of Bladder.

1874-80.—Three deaths only were placed in this category, and the average age at death was 74. The first was a clerk, who died of Hæmorrhage from the Bladder after an illness of two days. His policy endured 44 years, and he exceeded his expectation by 16 years. The second was a warehouseman, who exceeded his expectation by 1 year; and the third was a carpenter, who fell short of his expectation by 4 months.

1881-87.—Twelve cases were registered under this heading. Their average age at death was 69, and seven exceeded their expectation of life by from 1 to 17 years. Several of these were due to Tumour, Villous Affection, Hæmorrhage, etc.

1888-94.—Under this heading twelve claims were registered at the average age of 71. Of these, only two fell short of their expectation, by 11 and 23 years respectively. As this is essentially a disease of advanced life, it is a little remarkable that these two should have fallen victims to this painful complaint at the ages of 40 and 52. No further particulars were supplied other than the bald announcement of the cause of death. The other ten exceeded their expectation by from 1 to 17 years.

Disease of Kidneys.

1874-80.—Under this name one hundred and one cases of death were returned, equivalent to 4·086 per cent of the septennial mortality. The average age at death was 55·335.

The simple fact is notified in thirty-seven cases. In other twenty-seven it is stated that the form of the disease was Bright's Disease. Twelve of the deaths were certified to be from Nephritis or Inflammation of the Kidneys, and in eleven cases the disease terminated in Uræmia. The Kidney Disease was accompanied by Affection of the Heart in five cases, of the Brain in two, by Dropsy in five, by Gout in two, by Liver trouble in two, etc.

Only eighteen of the whole one hundred and one exceeded their expectation by from 6 months to 16 years.

1881-87.—Under this comprehensive title one hundred and thirty-four deaths were recorded, or 4·418 per cent of the septennial mortality, the average age at death being 56·646.

Of fifty-five this is all the information afforded, no attempt being made to indicate the form of the affection. In thirty-four cases Nephritis was the form of the Kidney affection, and of six it is stated that Gout was the cause of the disease; only two are spoken of as Bright's Disease; six were said to be accompanied by Convulsions, six by Heart Affection, four by Dropsy, three by Ischuria, two were due to Renal Calculus, etc.

1888-94.—One hundred and sixty-five deaths fall under this heading, or 4·511 per cent of the septennial mortality, the average age at death being 60·460.

The different forms of Kidney Disease were more minutely described in the returns than in the preceding Septennia, and come out as follows :—

Bright's Disease . .	81	Disease of Kidney *plus* Gout	4
Nephritis . . .	26	Calculus . . .	2
Uræmia	25	Bright's Disease *plus* Cystitis	2
Disease of Kidneys, undefined	13	Bright's Disease *plus* Prostatic Disease . . .	1
Disease of Kidney *plus* Heart Complication .	10	Amyloid Disease of Kidney	1

All ranks and classes were among the victims of this disease.

Disease of Prostate Gland.

This is a disease of advanced life, and although it may not be the direct cause of death to very many, affections of the gland are very common. Sir Henry Thomson, indeed, asserts that one-third of all men above the age of 55 have some affection of the Prostate.

1874-80.—This was ascribed as the cause of death in thirty-one cases. The average age at death was 71, and twenty exceeded their expectation by from 3 to 18 years. Of the remaining eleven, nine fell short of their expectation by from only a few days to 3 years. The other two did so by 12 and 25 years respectively. The last case, where the member died, after an illness of eight months, at the early age of 35, was probably a case of tubercle of the gland, a not very common form of the disease.

1881-87.—Thirty-two claims arose from this cause, the average age at death being 72, or fourteen years above the average age at death of the septennial mortality. Of these thirty-two cases, twenty-six exceeded their expectation of life. Of the six who fell short of their expectation, five did so by from 1 to 12 years; the sixth, a young Scotchman, died at the age of 28 (having been admitted a member at age 23), after nine months' illness of Tubercular Disease of the Kidneys and Bladder, whence the disease probably

spread to the Prostate Gland. He required 34 years to complete his expectation.

1888-94.—Forty-eight members died of this disease at an average age of 74, and eight of them fell short of their expectation. One of these eight died at age 54, after six days' illness, the disease being complicated with Acute Cystitis. Although his Policy endured seventeen years, he fell short of his expectation by 12 years. Another fell short of his expectation by 20 years, his Policy having endured 15 years. This was a case of Tubercular Disease of the Prostate, which is the form which attacks the younger men. The other six fell short of their expectations by much more limited periods: two by 6 years, two by 3 years, one by 2 years, and one by 4 months.

The most common complications were Cystitis, Disease of the Kidneys and Uræmic Poisoning, and Gout.

Hæmaturia.

Hæmaturia, or a discharge of blood in the urine, should not appear as a separate title, as it is a mere symptom of many different morbid conditions. But it is sometimes difficult to locate the exact seat of the hæmorrhage—whether it proceed from the Urethra, Bladder, Prostate, or Kidney, or whether it be merely a symptom of some constitutional disorder—and hence the reporter makes use of this convenient term.

1881-87.—Two deaths were returned under this title. One member was an English warehouseman, who died, after six months' illness, at the age of 75, having exceeded his expectation by 8 years. The other was a Scotch advocate, who died, after an illness of about two years, at the age of 80, having exceeded his expectation by 15 years.

Ischuria.

By this term is meant suppression and sometimes retention of urine.

1874-80.—Four cases were included under this heading. Two of them seem to have been associated with Disease of the Kidney, one with Tumour in the Abdomen, and regarding the fourth no further information is obtainable. They were all men well advanced in years, having attained the ages of 65, 81, 68, and 59 respectively.

Nephritis. *See* Disease of Kidneys.

Stone in the Bladder.

1874-80.—Seven members died of this complaint at the average age of 71. Five of them submitted to operation, and died shortly thereafter. Three only lived beyond their expectation of life.

1881-87.—Four members died of this complaint, at the average age of 67.

1888-94.—From this affection five members died at the average age of 55. Two of them underwent the operation of Lithotomy, and died of the effects of it at ages 39 and 70.

CLASS VIII.

DISEASES OF THE ORGANS OF LOCOMOTION.

This class includes Chronic Rheumatism and Disease of Bones. The number of deaths arising from these causes during the twenty-one years under observation was twenty-one, and the average age at death was 54·617.

Chronic Rheumatism.

1874-80.—Six members were said to have died of this complaint. Their average age at death was 55.

1881-87.—One death from this disease is recorded. His age at death was 50, and he fell short of his expectation of life by 14 years.

1888-94.—From this cause two cases arose. They were both Englishmen. The first died after an illness of six years, at the age of 67, having exceeded his expectation by 6 months. The second was fifty years old at death, and fell short of his expectation by 17 years.

Diseases of Bones.

1874-80.—Under this heading were classed one case of Caries of the Ribs, one of Disease of the Spine, and one of Chronic Arthritis. In the last case the proposer was lame—the result of Rheumatism—and walked on crutches at the time he became a member, and for this reason he was rated up six years. He died at the age of 71, having outlived his expectation by one year.

1881-87.—Under this title are found one case of Caries of the Sternum, four cases of Disease of the Spine, one case of Rheumatoid Arthritis of the Hip, and two cases of Disease of the Joints.

1888-94.—One Scotchman died at the age of 33 of disease of the Hip Joint, after an illness of five years. He fell short of expectation by 29 years.

CLASS IX.

DISEASES OF THE INTEGUMENTARY SYSTEM.

This class, as its name implies, includes all Diseases of the Skin. Nineteen deaths were recorded under it during the twenty-one years under observation, and the average age at death was 59·295.

Carbuncle.

1874-80.—Under this sub-heading are recorded nine cases, the average age at death being 60.

1881-87.—Four claims arose from Carbuncle. Regarding these cases no further information was vouchsafed. Their average age at death was 56.

1888-94.—There were three deaths from this cause, at the average age of 71.

Disease of the Skin.

1881-87.—Two cases were put down under this comprehensive designation.

Phlegmon.

This is an old term which has almost disappeared from the modern vocabulary, being replaced by the term Inflammation of the Cellular Tissue.

1874-80.—One member was said to have died of Phlegmon.

CLASS X.

VIOLENT DEATHS.

This class of "Violent Deaths" is separable into two divisions, Casualties —under which are grouped all cases of violent death other than self-murder— and Suicides.

During the twenty-one years under investigation three hundred and seventy-seven of our members, equivalent to 4·114 per cent of the total mortality, died by violence. The average age at death was 47·353. The following is a comparative statement of the total deaths in each of the three Septennia:—

Septennium.	Number of Deaths.	Percentage of Deaths in Septennium.	Average Age at Death.
1874–1880	100	4·045	46·458
1881–1887	136	4·484	47·299
1888–1894	141	3·854	48·036

Large as is the number of our members who met their death by Violence during the twenty-one years 1874-94, yet it contrasts favourably with the mortality from this cause in England during the ten years 1881-90, as will be seen from the following Tables:—

ANNUAL MORTALITY from VIOLENT DEATHS in England and the Scottish Widows' Fund among 10,000 (Males) living at each Group of Ages.

Groups of Ages.	Casualties.		Suicides.		Total.	
	England 1881-90.	S. W. F. 1874-94.	England 1881-90.	S. W. F. 1874-94.	England 1881-90.	S. W. F. 1874-94.
Between Ages 20 & 25 . . .	6·20	4·05	·66	·90	6·86	4·95
„ „ 25 & 35 . . .	7·13	2·70	1·16	1·50	8.29	4·20
„ „ 35 & 45 . . .	9·29	3·76	2·01	1·96	11·30	5·72
„ „ 45 & 55 . . .	11·42	5·06	3·08	2·78	14·50	7·84
„ „ 55 & 65 . . .	14·09	5·38	4·36	2·62	18·45	8·00
„ „ 65 & 75 . . .	17·07	5·06	4·76	3·09	21·83	8·15
Ages 75 and over	23·99	7·33	3·72	...	27·71	7·33

Casualties.

There were two hundred and fifty Casualties during the twenty-one years under observation, and the average age at death was 47·344. Of these, two hundred and thirty-eight were killed by or died from the effects of accidents, nine were murdered, two were killed in action, and one died on the scaffold.

The following Table shows the manner of death in more detail :—

Manner or Cause of Death.	Period of Time.			
	1874-80.	1881-87.	1888-94.	1874-94.
Drowned accidentally . .	26	19	21	66
Falls	12	15	16	43
Carriage Accidents . . .	2	9	16	27
Railway Accidents . . .	3	9	6	18
Horse Accidents . . .	1	6	9	16
Poisoned accidentally . .	2	6	7	15
Firearms	3	5	3	11
Murdered [1]	2	3	4	9
Burns, Result of . . .	2	2	...	4
Suffocated accidentally . .	1	1	1	3
Battle, Killed in [2] . . .	1	1	...	2
Pit Accident	...	1	1	2
Crushed	...	1	...	1
Executed	...	1	...	1
Lightning	...	1	...	1
Accidents, undefined . .	13	11	7	31
Total .	68	91	91	250

[1] Scotchman assaulted and killed, 1878. Irishman shot by moonlighters, 1880. Englishman shot in Borneo, 1885. Missionary murdered in Uganda, 1885. Constable of R.I.C. killed in Belfast riots, 1887. Irish farmer shot through the heart, 1888. Englishman poisoned, Scotchman poisoned, Inspector of R.I.C. fractured skull, 1889.

[2] Scotch officer killed in Transvaal, 1880. Scotch officer killed at Tel-el-Kebir, 1882.

Suicidal Deaths.

One hundred and twenty-seven of our members committed Suicide during the twenty-one years 1874-94. Their average age at death was 47·372.

The following Table shows the various methods adopted by our members to commit Suicide :—

Manner of Suicide.	Period of Time.			
	1874-80.	1881-87.	1888-94.	1874-94.
Firearms	6	12	16	34
Poison	5	9	8	22
Drowning	9	8	5	22
Cutting throat . . .	3	6	8	17
Hanging	6	5	4	15
Railway	1	1	4	6
Jumped from a height . .	...	1	3	4
Stabbing	...	...	1	1
Unspecified	2	3	1	6
Total .	32	45	50	127

It is of some little interest to compare the means adopted to commit the fatal act by the English, Scotch, and Irish suicides :—

Manner of Suicide.	English.	Scotch.	Irish.	Total.
Firearms	25	5	4	34
Poison	12	7	3	22
Drowning	14	7	1	22
Cutting throat . . .	10	4	3	17
Hanging	9	5	1	15
Railway	4	2	...	6
Jumped from a height . .	3	...	1	4
Stabbing	...	...	1	1
Unspecified	2	3	1	6
Total .	79	33	15	127

It is useless to speculate as to the circumstances and motives which lead Suicides to commit the fatal act. Often these are exceedingly trivial. At other times, rather than endure a life of misery, the result of family troubles, business worries, embarrassed circumstances, or disgust of life — possibly the result of melancholia—the man prefers to end it. If it be assumed that all those who make away with themselves were, as the coroner's jury usually describe it, "of unsound mind" at the time they committed the deed,—and it is hard to believe that the man who has so far lost the natural instinct of self-preservation as to commit suicide is not, at the very least, *temporarily* insane,—then our statistics form a very strong argument in favour of the view that Insanity is on the increase among the community, a statement which has the support of the Registrar-General for England. But there is one remarkable feature with regard to those suicidal deaths which is worthy of observation, and that is the extraordinarily large number which took place in the early years of assurance. No less than 7·087 per cent of the total deaths by Suicide occurred in the very first year, and 3·175 per cent in the second year. Twenty-two deaths by suicide were committed during the first five years of assurance, and of these 59 per cent took place during the first and second years of assurance.

Of the total Suicidal Deaths there occurred—

During the first year of assurance	9 deaths	= 7·087	per cent of total Suicides.	
,, second ,,	4 ,,	= 3·150	,,	
,, third ,,	2 ,,	= 1·575	,,	
,, fourth ,,	2 ,,	= 1·575	,,	
,, fifth ,,	5 ,,	= 3·935	,,	
Total in five years,	22 ,,	= 17·322	,,	

These facts raise the unpleasant suspicion that there was floating in the minds of some at least of these men, before they became members of the Society, some thought, however vague, of putting an end to the weary struggle between duty and the desire to have done with what was to them a miserable

existence. Next came the feeling that in any case the family ought to be provided for, and a Life Assurance Policy was taken out. After effecting this Assurance, possibly all idea of suicide passed away entirely, till some renewed outburst of adverse circumstances overcame the power of moral resistance, and the unfortunate man yielded to the insane impulse. It is difficult to believe that any man would deliberately propose for life assurance with the fixed resolve in his mind of putting an end to his existence immediately after acceptance, though the number of Suicides during the first year of assurance certainly points to that view of the case.

CLASS XI.

SUDDEN DEATHS.

During the twenty-one years under observation there were twenty-nine cases in which the cause of death was certified as "Sudden Death." These members were found either dead or dying, and in all probability the medical man who certified death had no opportunity of ascertaining what was the exact cause. I have had occasion throughout this Report to comment on the vastly improved nature of the later returns, and in no class is it so strongly marked as in this. The numbers have fallen from nineteen in the first Septennium to two in the last, and in these two cases an indication was given of the probable cause of the sudden death. This undoubtedly shows greater care and reflection on the part of the Reporters. The average age at death of these twenty-nine men was 55·550.

1874-80.—Nineteen of our members were found either dead or dying. Their average age at death was 58·279, and four of them exceeded their expectation of life.

1881-87.—Eight deaths are recorded under this heading. Their average age at death was 50·742.

1888-94.—Two Scotchmen were found dead: in one case death was supposed to be due to Internal Hæmorrhage, and in the other to Cerebral Hæmorrhage. Their ages at death were 51 and 46.

CLASS XII.

OLD AGE.

The number of deaths arising from this cause during the twenty-one years under observation was 454, or 4·956 per cent of the total mortality. The average age at death was 81·061. The following is a comparative statement of the total deaths in each of the three Septennia :—

Septennium.	Number of Deaths.	Percentage of Deaths in Septennium.	Average Age at Death.
1874–1880	109	4·410	79·741
1881–1887	156	5·143	81·327
1888–1894	189	5·167	81·560

It is of interest to look at the various occupations of these four hundred and fifty-four octogenarians, to see which class afforded the largest number. The following Table shows the order according to number of deaths in the twenty-one years :—

Occupation.	Period of Time.			
	1874-80.	1881-87.	1888-94.	1874-94.
Tradesmen	15	26	48	89
Merchants	12	21	16	49
Clergymen	18	12	17	47
Independent Gentlemen	8	17	15	40
Lawyers	9	11	9	29
Medical Men	6	8	12	26
Farmers	4	8	10	22
Clerks	4	8	10	22
Manufacturers	5	8	8	21
Civil Servants	6	3	10	19
Traders in Alcohol	6	8	5	19
Military and Naval Men	4	3	5	12
Schoolmasters and Teachers	1	7	...	8
Miscellaneous Occupations	11	16	24	51
Total	109	156	189	454

In reading this Table it must be remembered that the numbers are actual and not relative, the necessary data for the latter, *i.e.* Exposed to Risk for each Occupation, not being available.

1874-80.—Of the one hundred and nine members ranked as having died of Old Age, or decay of nature, forty were Englishmen, whose average age at death was 79; fifty-one were Scotchmen,[1] whose average age at death was 81; and the remaining eighteen were Irishmen, who died at the average age of 77. Of the one hundred and nine, only five failed to attain their expectation of life, viz. two Englishmen, who fell short of it by 1 and 8 years respectively; and three Irishmen, who fell short by from a few months to one year. All the fifty-one Scotchmen exceeded their expectation, some by a very large number of years.

1881-87.—Of the one hundred and fifty-six deaths of members registered under this heading, sixty-one were English, seventy-one Scotch,[1] and twenty-four Irish. The average age at death was 81 for the Englishmen, 84 for the Scotchmen, and 77 for the Irishmen.

Of the whole number, only five failed to attain their expectation of life. The others exceeded it, in some cases very largely.

1888-94.—Of the one hundred and eighty-nine deaths the English contributed ninety-two, whose average age at death was 81, and ninety-one of whom exceeded their expectation of life by from 6 months to 24 years. Only one out of the ninety-two fell short of his expectation, and that by only 1 year.

The Scotch contributed sixty-eight claims. Their average age at death was 82 years, and sixty-seven of them exceeded their expectation by from 1 to 24 years, one only falling short of it by 9 months.

The number of Irishmen was twenty-nine, their average age at death was 82, and all of them exceeded their expectation by from 4 to 23 years.

[1] The large number of Scotchmen is probably accounted for by the fact that for the first twenty years of its existence the Society had no Branches or Agencies in England or Ireland.

CLASS XIII.

CAUSE UNASCERTAINED.

During the twenty-one years under observation fifteen members were reported as being dead, but no satisfactory evidence as to the cause of death has been produced. These include cases of disappearance, of unsatisfactory medical certificates, of death in great poverty, and where the death, although intimated, has not been proved. Examples may be of interest. One member, who resided in one of our Colonies, was lame and walked on crutches. One day he left his house and never returned. He was probably murdered. Another was certified to have died of Hæmorrhage, but from where or from what cause was not stated. Another of our members was proved, two years after death took place, to have died in the Poorhouse, but no record of cause of death was forthcoming.

1874-80.—Three such cases are recorded.

1881-87.—Nine deaths fall into this category.

1888-94.—In three cases the cause of death was not ascertained.

APPENDIX

Males—*Table* 1[A].—Mortality Experience in the Seven Years 1874 to 1880 both inclusive.

CAUSE OF DEATH.	NUMBER OF LIVING AT DIFFERENT AGES EXPOSED TO RISK FOR ONE YEAR.													Total Number of Living exposed to Risk for One Year, 155,301.		Number of Deaths at all Ages, 2472.	
	6550 ages under 25.	15,441 between ages 25 & 30.	23,912 between ages 30 & 35.	24,367 between ages 35 & 40.	21,320 between ages 40 & 45.	17,402 between ages 45 & 50.	14,408 between ages 50 & 55.	11,266 between ages 55 & 60.	8461 between ages 60 & 65.	5984 between ages 65 & 70.	3595 between ages 70 & 75.	1770 between ages 75 & 80.	613 between ages 80 & 85.	212 ages 85 and over.				
	DEATHS AT CORRESPONDING AGES FROM DIFFERENT CAUSES.														Number of Death	Percentage of Deaths on the number at risk.	Percentage of total Deaths.	Average Age at Death.
1. Zymotic Diseases	**9**	**15**	**17**	**17**	**13**	**15**	**18**	**15**	**6**	**13**	**8**	**7**	**2**	**6**	**161**	**.1037**	**6.513**	**49.267**
Enteric Fever	6	8	6	4	5	7	4	3	1	3	1	2	...	...	50	.0322	2.023	42.449
Other Diseases	3	7	11	13	8	8	14	12	5	10	7	5	2	6	111	.0715	4.490	52.340
2. Uncertain Seat	...	...	**5**	**7**	**7**	**9**	**14**	**26**	**35**	**33**	**26**	**9**	**2**	**3**	**176**	**.1134**	**7.120**	**61.211**
Cancer	...	...	2	5	5	4	11	17	24	27	18	5	2	2	122	.0786	4.935	61.980
Other Diseases	...	...	3	2	2	5	3	9	11	6	8	4	...	1	54	.0348	2.185	59.472
3. Nervous System	**4**	**12**	**21**	**31**	**49**	**38**	**43**	**66**	**60**	**57**	**55**	**39**	**14**	**3**	**492**	**.3168**	**19.904**	**57.389**
Apoplexy	1	1	6	8	18	17	19	33	24	27	25	15	8	...	202	.1301	8.173	59.172
Other Diseases	3	11	15	23	31	21	24	33	36	30	30	24	6	3	290	.1867	11.731	56.148
4. Respiratory System	**10**	**34**	**57**	**74**	**62**	**34**	**43**	**59**	**51**	**48**	**43**	**35**	**18**	**9**	**577**	**.3716**	**23.342**	**52.308**
Pneumonia	2	6	13	12	16	8	8	24	18	17	14	10	1	2	151	.0973	6.110	54.656
Bronchitis	...	...	1	3	4	4	17	17	18	17	24	23	15	6	149	.0960	6.028	66.580
Consumption	8	28	41	58	40	19	15	13	10	11	4	...	1	1	249	.1603	10.071	41.773
Other Diseases	...	...	2	1	2	3	3	5	5	3	1	2	1	...	28	.0180	1.133	57.382
5. Circulatory System	**2**	**2**	**7**	**14**	**20**	**28**	**35**	**42**	**62**	**61**	**58**	**18**	**8**	**2**	**359**	**.2311**	**14.518**	**60.533**
Heart Disease	1	1	5	12	15	19	32	38	58	60	55	18	8	2	324	.2086	13.101	61.665
Other Diseases	1	1	2	2	5	9	3	4	4	1	3	...	...	...	35	.0225	1.417	50.033
6. Digestive System	..	**6**	**7**	**25**	**23**	**36**	**29**	**42**	**30**	**31**	**17**	**18**	**3**	**6**	**273**	**.1759**	**11.044**	**56.140**
Disease of Liver	...	1	3	12	14	20	20	25	17	16	8	8	2	3	149	.0960	6.028	56.339
Other Diseases	...	5	4	13	9	16	9	17	13	15	9	10	1	3	124	.0799	5.016	55.896
7. Urinary System	**1**	**2**	**4**	**7**	**9**	**17**	**21**	**22**	**23**	**23**	**22**	**18**	**10**	**5**	**184**	**.1185**	**7.444**	**61.120**
Disease of Kidneys	1	2	4	5	8	14	16	15	13	6	8	6	3	...	101	.0650	4.086	55.335
Other Diseases	...	...	...	2	1	3	5	7	10	17	14	12	7	5	83	.0535	3.358	68.155
8. Organs of Locomotion / **9. Integumentary System**	1	...	1	...	1	1	4	3	2	1	4	1	...	...	19	.0122	.769	56.908
10. Violent Deaths	**4**	**9**	**10**	**11**	**13**	**18**	**14**	**5**	**7**	**1**	**3**	**2**	**1**	**2**	**100**	**.0644**	**4.045**	**46.458**
11. Sudden Deaths	...	...	**1**	**1**	...	**4**	**1**	**2**	**5**	**2**	**2**	**1**	...	...	**19**	**.0122**	**.769**	**58.279**
12. Old Age	...	...	...	...	...	...	...	...	**1**	**2**	**13**	**37**	**39**	**17**	**109**	**.0702**	**4.410**	**79.741**
13. Unascertained	...	..	...	1	1	...	...	...	...	...	1	...	...	...	3	.0020	.122	50.656
TOTAL DEATHS AT EACH AGE	31	80	130	188	198	200	222	282	282	272	252	185	97	53	2472	1.5920	100.000	Average Age at Death, 57.083
Percentage of Deaths from all causes on the number at risk at each Age	.4734	.5182	.5437	.7716	.9287	1.1490	1.5400	2.5031	3.3320	4.5450	7.0090	10.4500	15.8200	25.0000	1.592	Percentage of Deaths from all causes on the number at risk at each Age.		

Males—*Table* I[B].—Mortality Experience in the Seven Years 1881 to 1887 both inclusive.

CAUSE OF DEATH.	NUMBER OF LIVING AT DIFFERENT AGES EXPOSED TO RISK FOR ONE YEAR.														Total Number of Living exposed to Risk for One Year, 201,469.		Number of Deaths at all Ages, 3033.	
	8177 ages under 25.	18,857 between ages 25 & 30.	23,503 between ages 30 & 35.	32,460 between ages 35 & 40.	30,770 between ages 40 & 45.	24,975 between ages 45 & 50.	18,644 between ages 50 & 55.	13,862 between ages 55 & 60.	10,084 between ages 60 & 65.	7020 between ages 65 & 70.	4564 between ages 70 & 75.	2381 between ages 75 & 80.	901 between ages 80 & 85.	270 ages 85 and over.				
	DEATHS AT CORRESPONDING AGES FROM DIFFERENT CAUSES.														Number of Deaths.	Percentage of Deaths on the number at risk.	Percentage of total Deaths.	Average Age at Death.
1. Zymotic Diseases	**3**	**14**	**23**	**19**	**28**	**23**	**17**	**12**	**5**	**13**	**12**	**5**	**1**	**2**	**177**	**.0879**	**5.836**	**48.117**
Enteric Fever	3	8	10	8	6	6	7	5	...	3	1	...	...	...	57	.0283	1.878	42.438
Other Diseases	...	6	13	11	22	17	10	7	5	10	11	5	1	2	120	.0596	3.958	50.815
2. Uncertain Seat	...	**1**	**4**	**12**	**10**	**13**	**31**	**41**	**35**	**30**	**25**	**16**	**9**	**1**	**228**	**.1132**	**7.516**	**60.137**
Cancer	...	...	2	9	6	9	23	33	29	24	15	10	5	...	165	.0819	5.440	59.819
Other Diseases	...	1	2	3	4	4	8	8	6	6	10	6	4	1	63	.0313	2.076	60.963
3. Nervous System	**1**	**9**	**18**	**30**	**57**	**53**	**53**	**67**	**89**	**75**	**86**	**64**	**21**	**7**	**630**	**.3128**	**20.772**	**59.764**
Apoplexy	...	1	5	13	27	19	28	46	33	41	40	27	14	6	300	.1489	9.892	60.969
Other Diseases	1	8	13	17	30	34	25	21	56	34	46	37	7	1	330	.1639	10.880	58.667
4. Respiratory System	**10**	**32**	**60**	**84**	**78**	**53**	**59**	**61**	**60**	**72**	**47**	**38**	**27**	**7**	**688**	**.3416**	**22.683**	**52.971**
Pneumonia	...	5	13	18	21	16	21	24	27	32	19	15	12	3	226	.1122	7.452	57.602
Bronchitis	1	...	...	8	8	3	8	13	18	27	22	18	13	4	143	.0710	4.714	64.787
Consumption	9	25	45	56	47	32	22	19	10	6	2	2	...	...	275	.1366	9.067	41.805
Other Diseases	...	2	2	2	2	2	8	5	5	7	4	3	2	...	44	.0218	1.450	60.574
5. Circulatory System	**1**	**4**	**6**	**19**	**26**	**34**	**39**	**41**	**69**	**67**	**72**	**46**	**20**	**5**	**449**	**.2230**	**14.809**	**61.977**
Heart Disease	...	2	5	13	21	26	35	36	58	60	65	42	17	5	385	.1912	12.700	62.848
Other Diseases	1	2	1	6	5	8	4	5	11	7	7	4	3	...	64	.0318	2.109	56.725
6. Digestive System	**2**	**5**	**11**	**26**	**33**	**33**	**37**	**37**	**40**	**23**	**21**	**13**	**3**	**5**	**289**	**.1434**	**9.527**	**54.068**
Disease of Liver	1	1	4	14	17	17	23	15	20	14	8	7	1	4	146	.0724	4.813	55.082
Other Diseases	1	4	7	12	16	16	14	22	20	9	13	6	2	1	143	.0710	4.714	54.246
7. Urinary System	**1**	**4**	**7**	**11**	**17**	**16**	**21**	**19**	**21**	**36**	**46**	**27**	**20**	**2**	**248**	**.1231**	**8.176**	**62.460**
Disease of Kidneys	1	3	6	9	14	14	14	16	13	14	15	10	5	...	134	.0665	4.418	56.646
Other Diseases	...	1	1	2	3	2	7	3	8	22	31	17	15	2	114	.0566	3.758	69.294
8. Organs of Locomotion. / **9. Integumentary System**	2	...	...	1	...	3	...	2	3	2	1	...	...	1	15	.0074	.494	55.023
10. Violent Deaths	**5**	**14**	**9**	**16**	**21**	**13**	**16**	**16**	**11**	**6**	**6**	**2**	...	**1**	**136**	**.0675**	**4.484**	**47.299**
11. Sudden Deaths	...	...	...	2	...	1	2	1	2	...	...	...	...	...	8	.0040	.264	50.742
12. Old Age	...	...	...	...	...	...	...	...	...	2	23	37	52	42	156	.0775	5.143	81.327
13. Unascertained	1	...	...	3	...	...	2	1	...	1	1	...	...	...	9	.0045	.296	48.994
TOTAL DEATHS AT EACH AGE	26	83	138	223	270	242	277	298	335	327	340	248	153	73	3033	1.5059	100.000	Average Age at Death, 58.105
Percentage of Deaths from all causes on the number at risk at each Age	.3180	.4401	.4841	.6871	.8776	.9690	1.4870	2.1500	3.3230	4.6580	7.4490	10.4200	16.9600	27.0400	1.5059	Percentage of Deaths from all causes on the number at risk at each Age.		

Males—*Table* I^c.—Mortality Experience in the Seven Years 1888 to 1894 both inclusive.

CAUSE OF DEATH.	NUMBER OF LIVING AT DIFFERENT AGES EXPOSED TO RISK FOR ONE YEAR.														Total Number of Living exposed to Risk for One Year, 241,772.		Number of Deaths at all Ages, 3658.	
	7497 ages under 25.	17,164 between ages 25 & 30.	29,693 between ages 30 & 35.	36,748 between ages 35 & 40.	37,912 between ages 40 & 45.	33,852 between ages 45 & 50.	27,151 between ages 50 & 55.	19,260 between ages 55 & 60.	13,348 between ages 60 & 65.	8899 between ages 65 & 70.	5489 between ages 70 & 75.	3095 between ages 75 & 80.	1311 between ages 80 & 85.	353 ages 85 and over.				
	DEATHS AT CORRESPONDING AGES FROM DIFFERENT CAUSES.														Number of Deaths.	Percentage of Deaths on the number at risk.	Percentage of total Deaths.	Average Age at Death.
1. **Zymotic Diseases**	10	5	31	39	49	37	22	28	24	17	17	22	7	3	311	.1286	8.502	51.035
Enteric Fever	4	2	16	9	14	9	4	5	3	2	...	...	...	...	68	.0281	1.859	41.986
Other Diseases	6	3	15	30	35	28	18	23	21	15	17	22	7	3	243	.1005	6.643	53.566
2. **Uncertain Seat**	...	1	8	5	20	25	46	52	49	40	41	20	8	6	321	.1328	8.775	60.414
Cancer	...	...	7	3	19	20	35	40	40	34	31	16	5	2	252	.1042	6.889	59.985
Other Diseases	...	1	1	2	1	5	11	12	9	6	10	4	3	4	69	.0286	1.886	61.977
3. **Nervous System**	...	4	17	33	49	60	75	76	80	79	82	52	30	8	645	.2668	17.632	59.865
Apoplexy	...	...	1	7	13	18	36	42	44	35	51	28	18	4	297	.1229	8.119	63.419
Other Diseases	...	4	16	26	36	42	39	34	36	44	31	24	12	4	348	.1439	9.513	56.888
4. **Respiratory System**	6	37	37	73	90	78	88	80	69	71	60	57	37	14	797	.3297	21.788	55.262
Pneumonia	...	8	10	23	28	25	35	30	25	34	25	26	17	4	290	.1200	7.928	58.094
Bronchitis	...	1	1	3	5	9	14	16	22	19	25	26	18	10	169	.0699	4.620	67.024
Consumption	6	27	25	45	53	40	29	24	13	13	5	2	...	...	282	.1166	7.709	44.726
Other Diseases	...	1	1	2	4	4	10	10	9	5	5	3	2	...	56	.0232	1.531	58.160
5. **Circulatory System**	...	1	9	11	40	45	58	67	82	117	83	62	29	12	616	.2548	16.840	62.943
Heart Disease	...	...	8	11	30	39	53	61	78	109	78	57	29	11	564	.2333	15.418	63.402
Other Diseases	...	1	1	...	10	6	5	6	4	8	5	5	...	1	52	.0215	1.422	57.976
6. **Digestive System**	2	8	13	22	35	42	48	35	30	34	22	13	9	1	314	.1298	8.584	54.656
Disease of Liver	1	1	5	13	19	29	27	21	13	12	6	6	3	1	157	.0649	4.292	53.304
Other Diseases	1	7	8	9	16	13	21	14	17	22	16	7	6	...	157	.0649	4.292	55.954
7. **Urinary System**	1	2	1	12	19	20	30	42	29	44	46	39	20	8	313	.1295	8.557	63.275
Disease of Kidneys	1	2	...	6	13	13	20	30	16	20	20	14	6	4	165	.0683	4.511	60.460
Other Diseases	...	...	1	6	6	7	10	12	13	24	26	25	14	4	148	.0612	4.046	66.457
8. **Organs of Locomotion** / 9. **Integumentary System**	...	...	1	...	...	...	1	1	...	1	...	1	1	...	6	.0024	.164	60.978
10. **Violent Deaths**	2	3	11	15	29	24	22	10	12	7	6	...	...	...	141	.0583	3.854	48.030
11. **Sudden Deaths**	...	...	...	...	...	1	1	...	...	...	...	...	...	...	2	.0009	.055	48.844
12. **Old Age**	...	...	...	...	...	...	...	...	2	2	20	46	67	52	189	.0782	5.167	81.560
13. **Unascertained**	...	...	...	...	...	1	...	1	...	...	...	...	...	1	3	.0012	.082	63.133
TOTAL DEATHS AT EACH AGE	21	61	128	210	331	333	391	392	377	412	377	312	208	105	3658	1.5130	100.000	Average Age at Death, 59.192
Percentage of Deaths from all causes on the number at risk at each Age	.2800	.3554	.4311	.5714	.8732	.9837	1.4401	2.0353	2.8244	4.6298	6.8683	10.0800	15.8659	29.7459	1.513	Percentage of Deaths from all causes on the number at risk at each Age.		

Males—*Table* 1[D].—Mortality Experience in the Twenty-one Years 1874 to 1894 both inclusive.

CAUSE OF DEATH.	NUMBER OF LIVING AT DIFFERENT AGES EXPOSED TO RISK FOR ONE YEAR.													Total Number of Living exposed to Risk for One Year, 598,542.		Number of Deaths at all Ages, 9163.	
	22,224 ages under 25.	51,462 between ages 25 & 30.	82,108 between ages 30 & 35.	93,575 between ages 35 & 40.	90,002 between ages 40 & 45.	76,229 between ages 45 & 50.	60,203 between ages 50 & 55.	44,388 between ages 55 & 60.	31,893 between ages 60 & 65.	21,903 between ages 65 & 70.	13,648 between ages 70 & 75.	7246 between ages 75 & 80.	2826 between ages 80 & 85	835 ages 85 and over.				
	DEATHS AT CORRESPONDING AGES FROM DIFFERENT CAUSES.														Number of Deaths.	Percentage of Deaths on the number at risk.	Percentage of total Deaths.	Average Age at Death.
1. Zymotic Diseases	**22**	**34**	**71**	**75**	**90**	**75**	**57**	**55**	**35**	**43**	**37**	**34**	**10**	**11**	**649**	**.1084**	**7.084**	**49.801**
Enteric Fever	13	18	32	21	25	22	15	13	4	8	2	2	...	...	175	.0292	1.910	42.265
Other Diseases	9	16	39	54	65	53	42	42	31	35	35	32	10	11	474	.0792	5.174	52.582
2. Uncertain Seat	...	**2**	**17**	**24**	**37**	**47**	**91**	**119**	**119**	**103**	**92**	**45**	**19**	**10**	**725**	**.1211**	**7.914**	**60.620**
Cancer	...	...	11	17	30	33	69	90	93	85	64	31	12	4	539	.0900	5.883	60.385
Other Diseases	...	2	6	7	7	14	22	29	26	18	28	14	7	6	186	.0311	2.031	60.914
3. Nervous System	**5**	**25**	**56**	**94**	**155**	**151**	**171**	**209**	**229**	**211**	**223**	**155**	**65**	**18**	**1767**	**.2952**	**19.280**	**59.151**
Apoplexy	1	2	12	28	58	54	83	121	101	103	116	70	40	10	799	.1335	8.720	61.426
Other Diseases	4	23	44	66	97	97	88	88	128	108	107	85	25	8	968	.1617	10.560	57.273
4. Respiratory System	**26**	**103**	**154**	**231**	**230**	**165**	**190**	**200**	**180**	**191**	**150**	**130**	**82**	**30**	**2062**	**.3446**	**22.504**	**53.671**
Pneumonia	2	19	36	53	65	49	64	78	70	83	58	51	30	9	667	.1115	7.280	57.148
Bronchitis	1	1	2	14	17	16	39	46	58	63	71	67	46	20	461	.0770	5.031	66.187
Consumption	23	80	111	159	140	91	66	56	33	30	11	4	1	1	806	.1347	8.796	42.817
Other Diseases	...	3	5	5	8	9	21	20	19	15	10	8	5	...	128	.0214	1.397	58.821
5. Circulatory System	**3**	**7**	**22**	**44**	**86**	**107**	**132**	**150**	**213**	**245**	**213**	**126**	**57**	**19**	**1424**	**.2379**	**15.538**	**62.031**
Heart Disease	1	3	18	36	66	84	120	135	194	229	198	117	54	18	1273	.2127	13.890	62.793
Other Diseases	2	4	4	8	20	23	12	15	19	16	15	9	3	1	151	.0252	1.648	55.605
6. Digestive System	**4**	**19**	**31**	**73**	**91**	**111**	**114**	**114**	**100**	**88**	**60**	**44**	**15**	**12**	**876**	**.1463**	**9.561**	**55.123**
Disease of Liver	2	3	12	39	50	66	70	61	50	42	22	21	6	8	452	.0755	4.933	54.887
Other Diseases	2	16	19	34	41	45	44	53	50	46	38	23	9	4	424	.0708	4.628	55.363
7. Urinary System	**3**	**8**	**12**	**30**	**45**	**53**	**72**	**83**	**73**	**103**	**114**	**84**	**50**	**15**	**745**	**.1245**	**8.132**	**62.478**
Disease of Kidneys	3	7	10	20	35	41	50	61	42	40	43	30	14	4	400	.0668	4.366	57.890
Other Diseases	...	1	2	10	10	12	22	22	31	63	71	54	36	11	345	.0577	3.766	67.803
8. Organs of Locomotion. **9. Integumentary System**	**3**	...	**2**	**1**	**1**	**4**	**5**	**6**	**5**	**4**	**5**	**2**	**1**	**1**	**40**	**.0067**	**.437**	**56.250**
10. Violent Deaths	**11**	**26**	**30**	**42**	**63**	**55**	**52**	**31**	**30**	**14**	**15**	**4**	**1**	**3**	**377**	**.0630**	**4.114**	**47.353**
11. Sudden Deaths	...	...	**1**	**3**	...	**6**	**4**	**3**	**7**	**2**	**2**	**1**	...	...	**29**	**.0048**	**.316**	**55.550**
12. Old Age	...	...	...	...	...	...	...	...	**3**	**6**	**56**	**120**	**158**	**111**	**454**	**.0759**	**4.956**	**81.061**
13. Unascertained	**1**	...	...	**4**	**1**	**1**	**2**	**2**	...	**1**	**2**	...	...	**1**	**15**	**.0025**	**.164**	**52.120**
TOTAL DEATHS AT EACH AGE	73	274	396	621	799	775	890	972	994	1011	969	745	458	231	9163	1.5309	100.000	Average Age at Death, 58.263
Percentage of Deaths from all causes on the number at risk at each Age	.3510	.4352	.4823	.6636	.8878	1.0167	1.4783	2.1898	3.1167	4.6158	7.0999	10.2816	16.2070	27.6643	1.5309	Percentage of Deaths from all causes on the number at risk at each Age.		

Males—*Table* II^A.—Mortality Experience in the Seven Years 1874 to 1880 both inclusive.

Showing the Deaths at Different Ages and at All Ages Combined from Different Causes in an Equal Number of Lives (10,000) of Corresponding Ages Exposed to Risk for One Year.

The principal causes of death at each age are shown in Clarendon type **00**.

Cause of Death.	Ages under 25.	Between ages 25 & 30.	Between ages 30 & 35.	Between ages 35 & 40.	Between ages 40 & 45.	Between ages 45 & 50.	Between ages 50 & 55.	Between ages 55 & 60.	Between ages 60 & 65.	Between ages 65 & 70.	Between ages 70 & 75.	Between ages 75 & 80.	Between ages 80 & 85.	Ages 85 and over.	All ages.
Enteric Fever	**9.16**	5.18	2.51	1.64	2.35	4.02	2.78	2.66	1.19	5.01	2.78	11.30	...	...	3.22
Other Zymotic Diseases	4.58	4.53	4.60	**5.33**	3.75	4.60	9.71	10.65	5.91	16.71	19.47	28.25	32.62	**283.10**	7.15
Cancer	...	...	.84	2.05	2.35	2.30	7.63	15.09	**28.38**	**45.12**	50.07	28.25	32.62	94.34	7.86
Other Diseases of Uncertain Seat	...	...	1.25	.82	.94	2.87	2.08	7.99	13.00	10.02	22.25	22.60	...	47.18	3.48
Apoplexy	1.53	.65	2.51	3.28	**8.44**	9.77	13.18	**29.29**	**28.38**	**45.12**	**69.53**	84.74	**130.80**	...	13.01
Other Nervous Diseases	4.58	**7.13**	**6.27**	**9.44**	**14.51**	**12.07**	**16.65**	**29.29**	**42.54**	**50.13**	**83.45**	**135.60**	97.88	141.60	**18.67**
Pneumonia	3.05	3.89	**5.44**	4.93	7.50	4.60	5.55	21.30	21.27	28.41	38.94	56.49	16.31	94.34	9.73
Bronchitis	...	...	.42	1.23	1.88	2.30	11.80	15.09	21.27	28.41	66.76	**129.90**	**244.60**	**283.10**	9.60
Consumption	**12.22**	**18.13**	**17.15**	**23.80**	**18.76**	**10.92**	10.41	11.54	11.95	18.39	11.13	...	16.31	47.18	**16.03**
Other Diseases of Respiratory System	...	...	.84	.41	.94	1.72	2.08	4.44	5.91	5.01	2.78	11.30	16.31	...	1.80
Heart Disease	**1.53**	.65	2.09	4.93	7.04	**10.92**	**22.20**	**33.74**	**68.53**	**100.25**	**152.98**	101.70	**130.80**	94.34	**20.86**
Other Diseases of Circulatory System	1.53	.65	.84	.82	2.35	5.17	2.08	3.55	4.73	1.67	8.35	...	...	...	2.25
Disease of Liver	...	.65	1.25	4.93	6.57	**11.50**	**13.87**	22.19	20.08	26.75	22.25	45.20	32.62	141.60	9.60
Other Diseases of Digestive System	...	3.24	1.67	**5.33**	4.22	9.20	6.25	15.09	15.36	25.07	25.03	56.49	16.31	141.60	7.99
Disease of Kidneys	1.53	1.30	1.67	2.05	3.75	8.05	11.10	13.31	15.36	10.02	22.25	33.90	48.94	...	6.50
Other Diseases of Urinary System	...	...	...	.82	.47	1.72	3.47	6.21	11.95	28.41	38.94	67.79	114.20	235.90	5.35
Diseases of Organs of Locomotion and Integumentary System	1.53	...	.42	...	.47	.57	2.78	2.66	2.36	1.67	11.13	5.65	...	...	1.22
Violent Deaths	**6.11**	**5.83**	4.18	4.51	6.10	10.35	9.71	4.44	8.27	1.67	8.35	11.30	16.31	94.34	6.44
Sudden Deaths	...	...	.42	.41	...	2.30	.70	1.77	5.91	3.34	5.56	5.65	...	...	1.22
Old Age	...	...	...	...	...	...	...	...	1.19	3.34	36.16	**209.00**	**636.20**	**801.80**	7.02
Unascertained	...	...	...	.41	.47	...	...	...	...	...	2.78	...	...	...	.20
From all Causes	47.35	51.83	54.37	77.14	92.89	114.95	154.03	250.30	333.52	454.52	700.94	1045.11	1582.23	2500.52	159.20

Males—*Table* II[B].—Mortality Experience in the Seven Years 1881 to 1887 both inclusive.

Showing the Deaths at Different Ages and at All Ages Combined from Different Causes in an Equal Number of Lives (10,000) of Corresponding Ages Exposed to Risk for One Year.

The principal causes of death at each age are shown in Clarendon type **00**.

CAUSE OF DEATH.	Ages under 25.	Between ages 25 & 30.	Between ages 30 & 35.	Between ages 35 & 40.	Between ages 40 & 45.	Between ages 45 & 50.	Between ages 50 & 55.	Between ages 55 & 60.	Between ages 60 & 65.	Between ages 65 & 70.	Between ages 70 & 75.	Between ages 75 & 80.	Between ages 80 & 85.	Ages 85 and over.	All ages.
Enteric Fever	**3.67**	**4.24**	3.51	2.47	1.95	2.40	3.75	3.61	...	4.27	2.19	...	...	...	2.83
Other Zymotic Diseases	...	3.18	**4.56**	3.39	7.15	6.81	5.36	5.05	4.96	14.24	24.10	21.00	11.09	74.06	5.96
Cancer	...	...	.70	2.77	1.95	3.60	12.34	**23.81**	28.76	34.19	32.86	42.00	55.44	...	8.19
Other Diseases of Uncertain Seat	...	.53	.70	.92	1.30	1.60	4.29	5.77	5.95	8.55	21.91	25.20	44.35	37.03	3.13
Apoplexy	...	.53	1.76	4.01	**8.78**	7.61	**15.02**	**33.19**	**32.73**	**58.41**	**87.64**	113.40	155.22	**222.18**	**14.89**
Other Nervous Diseases	1.22	**4.24**	**4.56**	**5.24**	**9.76**	**13.61**	**13.41**	15.15	**55.55**	**48.44**	**100.80**	**155.30**	77.61	37.03	**16.39**
Pneumonia	...	2.65	**4.53**	**5.53**	6.83	6.41	11.27	17.32	26.79	45.58	41.63	63.00	133.04	111.10	11.22
Bronchitis	1.22	...	...	2.47	2.60	1.20	4.29	9.38	17.85	38.47	48.19	75.63	144.13	148.10	7.10
Consumption	**11.00**	**13.25**	**15.79**	**17.26**	**15.23**	**12.81**	11.80	13.71	9.92	8.55	4.38	8.40	...	...	13.66
Other Diseases of Respiratory System	...	1.06	.70	.62	.65	.80	4.29	3.61	4.96	9.97	8.76	12.60	22.17	...	2.18
Heart Disease	...	1.06	1.76	4.01	6.83	**10.41**	**18.78**	**25.97**	**57.53**	**85.49**	**142.40**	**176.40**	**188.50**	**185.20**	**19.12**
Other Diseases of Circulatory System	1.22	1.06	.35	1.85	1.63	3.20	2.14	3.61	10.91	9.97	15.33	16.80	33.26	...	3.18
Disease of Liver	1.22	.53	1.40	4.32	5.53	6.81	12.34	10.82	19.84	19.95	17.53	29.41	11.09	148.10	7.24
Other Diseases of Digestive System	1.22	2.12	2.46	3.70	5.20	6.41	7.51	15.87	19.84	12.82	28.48	25.20	22.17	37.03	7.10
Disease of Kidneys	1.22	1.59	2.11	2.77	4.55	5.61	7.51	11.52	12.89	19.95	32.86	42.00	55.44	...	6.65
Other Diseases of Urinary System	...	.53	.35	.62	.98	.80	3.75	2.16	7.94	31.34	67.92	71.39	**166.32**	74.06	5.66
Diseases of Organs of Locomotion and Integumentary System	2.44	...	...	.31	...	1.20	...	1.45	2.98	2.85	2.19	...	...	37.03	.74
Violent Deaths	**6.12**	**7.42**	3.16	4.93	6.82	5.21	8.58	11.52	10.91	8.55	13.14	8.40	...	37.03	6.75
Sudden Deaths	...	...	...	.62	...	.40	1.07	.72	1.98	...	...	...	...	...	.40
Old Age	...	...	...	...	...	...	...	...	...	2.85	50.39	**155.30**	**576.50**	**1555.00**	7.75
Unascertained	1.22	...	...	.92	...	...	1.07	.72	...	1.42	2.19	...	...	...	.45
From all Causes	31.77	43.99	48.43	68.75	87.78	96.90	148.57	214.96	332.29	465.86	744.89	1041.43	1696.33	2702.95	150.59

Males—*Table* II^{c}.—Mortality Experience in the Seven Years 1888 to 1894 both inclusive.

Showing the Deaths at Different Ages and at All Ages Combined from Different Causes in an Equal Number of Lives (10,000) of Corresponding Ages Exposed to Risk for One Year.

The principal causes of death at each age are shown in Clarendon type **00**.

Cause of Death.	Ages under 25.	Between ages 25 & 30.	Between ages 30 & 35.	Between ages 35 & 40.	Between ages 40 & 45.	Between ages 45 & 50.	Between ages 50 & 55.	Between ages 55 & 60.	Between ages 60 & 65.	Between ages 65 & 70.	Between ages 70 & 75.	Between ages 75 & 80.	Between ages 80 & 85.	Ages 85 and over.	All ages.
Enteric Fever	**5.34**	1.17	**5.39**	2.45	3.69	2.66	1.47	2.59	2.25	2.24	...	...	...	...	2.81
Other Zymotic Diseases	**8.00**	1.75	5.06	**8.16**	**9.23**	8.27	6.63	11.94	15.73	16.86	30.96	71.08	53.40	84.99	10.05
Cancer	...	...	2.35	.82	5.01	5.91	12.89	**20.77**	**29.97**	38.21	**56.48**	51.68	38.13	56.66	10.42
Other Diseases of Uncertain Seat	...	.58	.33	.54	.27	1.48	4.05	6.23	6.74	6.74	18.22	12.92	22.88	113.32	2.86
Apoplexy	...	...	.33	1.90	3.43	5.32	**13.26**	**21.81**	**32.96**	**39.33**	**92.91**	**90.46**	**137.30**	113.32	**12.29**
Other Nervous Diseases	...	2.33	**5.39**	**7.08**	**9.50**	**12.41**	**14.36**	17.66	26.98	**49.45**	**56.48**	77.54	91.53	113.32	**14.39**
Pneumonia	...	**4.60**	3.37	6.26	7.39	7.39	12.89	15.38	18.73	38.21	45.54	84.00	129.67	113.32	12.00
Bronchitis	...	.58	.33	.82	1.32	2.66	5.16	8.31	16.48	21.35	45.54	84.00	**137.30**	**283.29**	6.99
Consumption	8.00	**15.73**	**8.42**	**12.25**	**13.98**	**11.82**	10.68	12.46	9.74	14.61	9.12	6.46	...	...	**11.66**
Other Diseases of Respiratory System	...	.58	.33	.54	1.06	1.18	3.68	5.19	6.74	5.62	9.12	9.69	15.26	...	2.32
Heart Disease	...	...	2.70	2.99	7.91	**11.52**	**19.62**	**31.67**	**58.42**	**122.48**	**142.10**	**184.16**	**221.21**	**311.62**	**23.33**
Other Diseases of Circulatory System	...	.58	.33	...	2.64	1.77	1.84	3.11	3.00	8.99	9.12	16.15	...	28.33	2.15
Disease of Liver	1.33	.58	1.69	3.54	5.01	8.57	9.95	10.90	9.74	13.49	10.93	19.38	22.88	28.33	6.49
Other Diseases of Digestive System	1.33	**4.08**	2.70	2.45	4.22	3.84	7.74	7.27	12.74	24.72	29.14	22.62	45.77	...	6.49
Disease of Kidneys	1.33	1.17	...	1.63	3.43	3.84	7.37	15.58	11.99	22.48	36.44	45.23	45.77	113.32	6.83
Other Diseases of Urinary System	...	...	.33	1.63	1.58	2.06	3.68	6.23	9.74	26.97	47.36	80.77	106.80	113.32	6.12
Diseases of Organs of Locomotion and Integumentary System	...	...	.33	...	...	...	.37	.52	...	1.12	...	3.23	7.63	...	.24
Violent Deaths	2.67	1.75	3.72	4.08	7.65	7.09	8.10	5.19	8.99	7.87	10.93	...	...	...	5.83
Sudden Deaths	...	...	...	...	...	.29	.37	...	...	...	...	...	...	...	.09
Old Age	...	...	...	...	...	...	...	...	1.50	2.24	36.44	**148.63**	**511.06**	**1473.12**	7.82
Unascertained	...	...	...	...	...	.29	...	.52	...	...	...	...	...	28.33	.12
From all Causes	28.00	35.54	43.11	57.14	87.32	98.37	144.01	203.53	282.44	462.98	686.83	1008.00	1586.59	2974.59	151.30

Males—*Table* II[D].—Mortality Experience in the Twenty-one Years **1874** to **1894** both inclusive.

Showing the Deaths at Different Ages and at All Ages Combined from Different Causes in an Equal Number of Lives (10,000) of Corresponding Ages Exposed to Risk for One Year.

The principal causes of death at each age are shown in Clarendon type **00.**

Cause of Death.	Ages under 25.	Between ages 25 & 30.	Between ages 30 & 35.	Between ages 35 & 40.	Between ages 40 & 45.	Between ages 45 & 50.	Between ages 50 & 55.	Between ages 55 & 60.	Between ages 60 & 65.	Between ages 65 & 70.	Between ages 70 & 75.	Between ages 75 & 80.	Between ages 80 & 85.	Ages 85 and over.	All ages.
Enteric Fever	**5.85**	3.50	3.90	2.24	2.78	2.89	2.49	2.93	1.25	3.65	1.47	2.76	...	...	2.92
Other Zymotic Diseases	4.05	3.11	**4.76**	**5.77**	7.22	6.93	6.98	9.46	9.71	15.98	25.64	44.16	35.39	131.73	7.92
Cancer	...	...	1.34	1.82	3.33	4.33	11.45	**20.28**	29.16	38.81	46.90	42.78	42.46	47.90	9.00
Other Diseases of Uncertain Seat	...	.39	.73	.75	.78	1.84	3.65	6.54	8.16	8.22	20.51	19.32	24.77	71.86	3.11
Apoplexy	.45	.39	1.46	2.99	6.44	7.08	**13.79**	**27.26**	**31.68**	**47.02**	**85.00**	96.61	141.54	119.76	**13.35**
Other Nervous Diseases	1.80	**4.43**	**5.36**	**7.05**	**10.78**	**12.73**	**14.62**	19.83	**40.15**	**49.81**	**78.39**	**117.31**	88.47	95.81	**16.17**
Pneumonia	.90	3.69	4.38	5.67	7.22	6.43	10.63	17.57	21.96	37.89	42.49	70.39	106.16	107.78	11.15
Bronchitis	.45	.19	.24	1.50	1.90	2.10	6.48	10.36	18.19	28.76	52.02	92.46	**162.78**	**239.52**	7.70
Consumption	**10.35**	**15.54**	**13.52**	**16.69**	**15.56**	**11.93**	10.96	12.62	10.34	13.70	8.96	5.52	3.54	11.98	**13.47**
Other Diseases of Respiratory System	...	.58	.61	.53	.89	1.18	3.49	4.51	5.95	6.85	7.33	11.04	17.69	...	2.14
Heart Disease	.45	.58	2.19	3.85	**7.33**	**11.02**	**19.94**	**30.41**	**60.85**	**104.54**	**145.08**	**161.46**	**191.08**	**215.57**	**21.27**
Other Diseases of Circulatory System	.90	.78	.49	.85	2.22	3.02	1.99	3.38	5.95	7.31	10.99	12.42	10.62	11.98	2.52
Disease of Liver	.90	.58	1.46	4.16	5.56	8.66	11.63	13.74	15.67	19.18	16.11	28.98	21.23	95.81	7.55
Other Diseases of Digestive System	.90	3.11	2.32	3.63	4.55	5.90	7.31	11.94	15.67	21.01	27.85	31.75	31.85	47.90	7.08
Disease of Kidneys	1.35	1.36	1.22	2.14	3.89	5.38	8.31	13.74	13.17	18.26	31.51	41.40	49.54	47.90	6.68
Other Diseases of Urinary System	...	.19	.24	1.07	1.11	1.57	3.65	4.93	9.71	28.76	52.02	74.53	127.40	131.73	5.77
Diseases of Organs of Locomotion and Integumentary System	1.35	...	.24	.11	.11	.53	.83	1.35	1.57	1.83	3.66	2.76	3.54	11.98	.67
Violent Deaths	**4.95**	**5.05**	3.65	4.49	7.00	7.21	8.64	6.93	9.41	6.39	10.99	5.52	3.54	35.93	6.30
Sudden Deaths	...	...	.12	.32	...	.79	.66	.68	2.20	.91	1.47	1.38	...	...	.48
Old Age	...	...	...	...	...	...	...	...	.94	2.74	41.03	**165.61**	**559.10**	**1329.30**	7.59
Unascertained	.45	...	...	.43	.11	.13	.33	.45	...	.46	1.47	...	...	11.98	.25
From all Causes	35.10	43.52	48.23	66.36	88.78	101.67	147.83	218.98	311.67	461.58	709.99	1028.16	1620.70	2766.42	153.09

Males—*Table* III.—Mortality Experience in the Twenty-one Years 1874 to 1894 both inclusive.

Showing the **Distribution of Lives Assured emerged by Death over Assurance Periods**, and the percentage of such Deaths caused by each Disease during each Assurance Period to the Total Deaths in that Period.

Note.—*Duplicate Risks are included, unless effected in the Same Assurance Year.*

The principal Causes of Death in each Assurance Period are shown in Clarendon type **00**.

Assurance Period.	Total Number of Emerged Risks dealt with 11,001. Number of Emerged Risks in each Assurance Period.	Cause of Death. Percentage of Deaths caused by each Disease to Deaths in each Period.																			
		Enteric Fever.	Other Zymotic Diseases.	Cancer.	Other Diseases of Uncertain Seat.	Apoplexy.	Other Nervous Diseases.	Pneumonia.	Bronchitis.	Consumption.	Other Diseases of Respiratory System.	Heart Disease.	Other Diseases of Circulatory System.	Disease of Liver.	Other Diseases of Digestive Organs.	Disease of Kidneys.	Other Diseases of Urinary Organs.	Violent Deaths.	Sudden Deaths.	Old Age.	Diseases of Organs of Locomotion, etc.	Unascertained.
First Assurance Year .	150	9.33	**17.32**	2.00	.67	4.67	8.67	**10.00**	2.00	**10.00**	.67	5.33	3.33	.67	8.67	.67	.67	**14.00**	...	...	...	1.33
Second Assurance Year	211	8.05	9.01	2.84	1.90	2.37	**10.90**	9.48	2.37	**16.11**	2.37	4.27	4.74	4.74	4.74	3.79	.95	**10.90**	...	...	.47	...
Third Assurance Year .	231	5.19	**11.69**	4.32	2.60	7.79	**10.39**	9.09	.87	**15.15**	.87	5.63	2.60	5.63	5.19	3.90	1.30	6.93	.43	...	.43	...
Fourth Assurance Year	222	3.16	**10.36**	4.05	1.80	5.41	**8.56**	**8.56**	1.35	**23.42**	1.80	5.86	1.35	4.05	7.66	4.05	.45	6.31	.90	...	.90	...
Fifth Assurance Year .	242	3.72	6.20	6.20	.83	**9.09**	**9.09**	**9.50**	1.24	**20.66**	.41	6.61	2.07	6.20	2.48	5.79	.83	8.26	.41	...	.41	...
Sixth to Tenth Assurance Years	1450	3.52	7.10	4.07	1.38	7.24	**11.24**	7.31	2.21	**18.00**	.97	**8.83**	1.93	5.72	5.59	4.62	2.14	6.41	.62	.48	.34	.28
Eleventh Assurance Year and over	8495	1.00	4.29	6.42	2.39	**9.81**	**10.50**	7.45	6.07	5.20	1.47	**15.91**	1.44	4.38	4.68	4.36	4.59	3.00	.28	6.26	.38	.12

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