

Report on the causes of death among the assured in the North British Insurance Company, from the commencement of the business in 1823, up to 31st December 1860. Being a period of thirty-seven years.

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REPORT

ON

THE CAUSES OF

AMONG THE ASSURED IN THE

North British Insurance

FROM THE COMMENCEMENT OF THE BUSINESS

UP TO 31st DECEMBER 1861

BEING A PERIOD OF THIRTY SEVEN

EDINBURGH: PRINTED BY THOMAS

FRASER, TO THE QUEEN, AND TO THE CHURCH

1862.

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REPORT.

IN making up this Report it may be observed—

1. That as this is the first Investigation of the kind which has been made in connexion with this Company, it was found impossible to contrast the relative intensity with which the various diseases have contributed to the mortality during the *later* and *earlier* periods of the Company's existence, and we have not therefore the benefit of a comparison between these periods.

2. There have, however, been published for some years the results of the experience of two other offices—the Scottish Widows' Fund and the Standard—as ascertained at the periods of the Investigation into their financial position with the view of declaring a Bonus; and the evidence derived from these Reports affords the means of usefully contrasting their experience with the experience of this Office.

3. The method of classification followed in this Report is that adopted by the Registrar-General in his Annual Reports; and in all cases where an individual has died from a disease supervening on another, the primary disease, if known, has been stated as the cause of death.

4. Up to the close of the year 1860, the total number of deaths among the Assured has been 1303. The average duration of these lives on the Company's books is 10.66 years, and their average expectation, according to the Carlisle Tables, 25.07 years, so that they have fallen short of their expectancy on an average by about $14\frac{1}{2}$ years. This result is only what might have been anticipated, as during

the earlier years of the business all those risks that emerged by death occurred necessarily among those who had not reached the average duration of life at their age at entrance ; and even yet, from the rapid influx of lives, especially of young lives, a considerable proportion of the deaths must occur among those who have not lived out their expectation.

With these remarks, reference is made to the Appendix, showing the various Classes into which the mortality has been divided,—the number of deaths in each Class,—the number of years which, on an average, the cases have been on the books of the Company,—and the average expectation of each, according to the Carlisle Tables.

Class 1.

Under Class I., comprising Epidemic and Contagious diseases, there have been 187 deaths,—or $14\frac{1}{3}$ per cent. of the total mortality has been caused by these diseases. The mortality from the same causes experienced by the Scottish Widows' Fund, according to their last Report, coincides exactly with this, being also $14\frac{1}{3}$ per cent. Fever, as might be expected, contributes most largely to the mortality under this Class, occasioning no fewer than 94 deaths. The average duration of the 94 on the Company's books was 8.48 years, and their average expectation 28.66 years. The majority of the risks emerged within 10 years of their entrance.

It is curious to note the professions and occupations followed by those who fell victims to this disease. Thus, merchants and shopkeepers contributed 16 deaths, clergymen 4, military officers 4, farmers 6, innkeepers 4, and those described as having no profession 10. The deaths among females were 6, and the rest were spread over writers, clerks, teachers, bakers, shoemakers, bookbinders, etc.

It will be observed that small-pox, which would have come under this Class, has not a place in our mortality. This is the more surprising, as during the last few years it has been almost epidemic in some parts of the country.

Under Class II., containing, according to the Registrar-General's classification, diseases of uncertain seat, there have been 130 deaths, or about 10 per cent. of the total mortality. In the Scottish Widows' Fund the percentage was only $6\frac{1}{2}$. The average duration of these lives was 10.26 years, and their average expectation 23.30 years. The large number of 46 deaths have resulted from dropsy, and this number would have been greatly swelled if all those diseases stated as having terminated in dropsy had been referred to this head; but, as before mentioned, all such cases were classed under the primary disease. As dropsy frequently results from, or accompanies heart, kidney, and liver diseases, it is probable that a considerable number of the deaths reported as arising from dropsy should have gone to increase the mortality under those other diseases. This is inferred also from the circumstance, that although in the Scottish Widows' Fund the total number of deaths is considerably greater, yet only 17 deaths are ascribed to dropsy.

The deaths from Cancer were 25. They survived on an average 12.6 years, while their average expectation was 22 years. 18 males and 7 females fell victims to this disease. In the females it chiefly affected the breast, and in the males the stomach, tongue, and rectum. In one case it is stated that the immediate cause of death was erysipelas following an operation.

Inflammation furnished 11, and mortification 12 deaths. The returns under inflammation are vague, not specifying the part affected.

Class II.

Gout occasioned 6 deaths—3 noblemen, 2 private gentlemen, and 1 general agent. In four out of the six cases, gout had manifested itself at the time of acceptance, and an extra rate was charged in consequence. These lives on an average fell short of their expectation by 11 years.

Classes III.
and IV.

Tubercular diseases, and diseases of the Respiratory Organs, which comprise Classes III. and IV., have contributed 284 deaths, or $21\frac{3}{4}$ per cent. of the total mortality. This is low as compared with the mortality from the same causes among the general population, which is stated by the Registrar-General to be as high as 30 per cent. Such a comparison, however, is scarcely admissible, as the majority of the lives assured are above the age at which consumption most usually manifests itself; and besides, as is well known, the mortality from tubercular diseases among the general population is swelled by destitution, and by the unhealthy occupations of many classes of the community, which causes do not, to any great extent, apply to the assured.

In the Scottish Widows' Fund the proportion which diseases of the respiratory organs, including consumption, have contributed to the total mortality, is $20\frac{1}{2}$ per cent., and in the Standard a little more than 23 per cent.

Consump-
tion.

Consumption, which contributes so largely to the general mortality, occasioned 107 deaths, or 8.21 per cent. of the total number. In the Widows' Fund, since the commencement of their business, the percentage is 7.8, and during the earlier period of the Society's existence it was as high as $11\frac{1}{4}$ per cent. While in the Standard, during the last quinquennium, the percentage was 10.8 of the total mortality, and during the previous period it was 14.2 per cent. And this mortality has taken place in these

associations in spite of the very rigid rule which they adopt "of excluding as ineligible all in whose immediate family more than one instance of the disease has manifested itself."

Of the 107 deaths which have arisen from this disease, 6 emerged in the first year after acceptance, 3 in the second, 9 in the third, 12 in the fourth, 6 in the fifth, 9 in the sixth, 10 in the seventh, 11 in the eighth, 5 in the ninth, and 6 in the tenth year; so that of the total number 77, or about $\frac{3}{4}$ ths of them, succumbed within ten years from the date of their acceptance. The remaining 30 cases died after being on the Company's books from 10 to 26 years, which last period is the longest duration of any of the consumptive risks. The greatest mortality occurred between 40 and 50 (34 deaths), although in the previous decade 30 to 40, the number was nearly as great, being 32.

The average duration of the consumptive risks was 7 years 11 months, and their average expectation 30.64.

The next Class comprises diseases of the Brain and Nervous System. No fewer than 257 deaths, or 19.72 per cent. of the total mortality resulted from apoplexy, paralysis, epilepsy, inflammation of the brain, delirium tremens, and insanity. The diseases of the same class account for 22.4 per cent. of the deaths in the Widows' Fund, and for 20 per cent. in the Standard, during the last quinquennium. Apoplexy and paralysis appear to have been the cause of death in 172 cases. Of these 105 persons died from apoplexy, the average duration of whose lives was 10.18 years, and the average expectation 24 years. Class V.

Paralysis, which is chiefly a disease of old age, occasioned 67 deaths; and these lives showed a higher relative duration than those that fell victims to apoplexy, their average duration being 16.01 years, and their average expectation 22.37 years.

Delirium tremens contributed 11 deaths to this class of diseases. The average duration of these lives was 7.14, and the average expectation was 32.02 years, so that they did not survive on an average even a fourth part of their expectation. This low duration naturally leads to the conclusion that at the time of their acceptance some concealment must have been practised as to their habits.

Class VI.

Under the head of Diseases of the Organs of Circulation, 122 deaths have occurred, or 9.36 per cent. of the total mortality. In the Widows' Fund the proportion from the same causes from the commencement of their business has been 11 per cent.; and during the last septennial period, Dr. Begbie reports the percentage to have been as high as $13\frac{3}{4}$ per cent., which he explains by the advanced age of many of the assured, and from the fact of chronic diseases of the heart being beyond all others the disease of old age. The deaths in the Standard, during the last quinquennium, from the same causes, were a little more than 9 per cent. of the total mortality.

The average duration of the lives that died of heart disease was 12.64, and their average expectation, 24.72 years.

Class VII.

The Diseases of the Organs of Digestion have contributed 135 deaths, or 10.36 per cent. of the total mortality. The percentage in the Widows' Fund was 12.39, and in the Standard, during the last quinquennium, nearly 17 per cent.

Disease of the Liver has been the most fatal of this class of diseases, having occasioned 55 deaths. The average duration of these lives was 10.34 years; and their average expectation 24.89. It is understood that this disease is considered to some extent hereditary; and it

might be a proper subject of inquiry how far there has been any evidence, in the experience of offices, to justify placing it in such a category.

Diseases of the Urinary Organs account for 42 deaths, or 3.22 per cent. of the total mortality. Each survived on an average 11.17 years, while the average expectation was 20.6 years. The percentage in the Widows' Fund was 4.55 of the total mortality; and in the Standard, during the last quinquennium, it was 4.95 per cent. for the period. Class VIII.

The next three Classes require no comment. They contributed in all only 12 deaths. Classes IX., X., and XI.

Deaths by violence compose this class. Suicide or accident account for 45 deaths, or nearly $3\frac{1}{2}$ per cent. of the total mortality. The average survivancy of this Class has been very low as compared with the average expectation, 8.47 years to 28.82. Class XII.

Very various has been the nature of the accidents, which have occasioned these 45 deaths. 8 were killed by falls from a height; 8 by accidental drowning; 5 by accidents connected with travelling; 2 by falls from horseback; 3 by explosions; 4 by gun accidents; 1 killed in battle; 3 perished by shipwreck; 1 died of wounds received at a fire; 3 by an overdose of some poisonous mixture, whether taken intentionally or not was doubtful; and the rest from the result of injuries received in various ways.

Under this Class are included all those deaths which have been reported as resulting from old age. 49 deaths have been so returned; but from the circumstance of 5 of Class XIII.

these having died under 70, and a considerable number about 70, it seems probable that the Certificates in these cases have been carelessly filled up, otherwise some specific disease would have been stated as the cause of death.

The average duration of these lives was 17.34 years, and the average expectation 14.90 years.

Lastly, we have the large number of 40 deaths, in which the causes were not ascertained. These cases occur almost entirely at the commencement of the Company's business, and would, no doubt, could they have been classified under their proper heads, have modified to some extent the results arrived at in this investigation.

Since the Registration Act has come into operation in this country, the only difficulty that can now occur in ascertaining the cause of death is, where the party dies abroad; and even when this happens, it must be but very rarely that the information cannot be procured, so that in future such cases will, in all likelihood, disappear from our obituary.

In concluding this Report, it appears unnecessary to trouble the Directors with any conclusions for future use. The perusal of the Report will of itself naturally draw attention to those points which may be of use in the future practice of the Office.

Reported by

DAVID SMITH,
Manager.

Examined and approved by

J. G. M. BURT, M.D.,
Medical Officer.

EDINBURGH, *January 1862.*

TABLE showing the CAUSES of DEATH among the ASSURED in the NORTH BRITISH INSURANCE COMPANY, from the commencement of the Business up to 31st December 1860, with the Average Duration of Life after Assurance as compared with the Average Expectation.

CAUSES OF DEATH.	Deaths.	Average Duration.		Average Expectation	Percentage of Total Mortality.
		Yrs.	Mos.		
CLASS I.					
<i>Epidemic and Contagious Diseases—</i>					
1. Scarlatina,	5	6	10	38.73	.3837
2. Diarrhœa,	20	12	...	22.88	1.5349
3. Dysentery,	16	11	11	24.96	1.2279
4. Cholera,	16	8	6	26.74	1.2279
5. Influenza,	15	10	6	24.82	1.1512
6. Ague,	1	12	7	25.71	.0767
7. Fever (remittent), . .	8	6	1	30.07	.6139
8. Fever (continued), . .	94	8	6	28.66	7.2141
9. Erysipelas,	12	8	...	22.85	.9209
CLASS II.					
<i>Diseases of Uncertain Seat—</i>					
1. Hæmorrhage,	15	8	2	26.31	1.1512
2. Inflammation,	11	6	5	28.29	.8442
3. Dropsy,	46	8	7	21.89	3.5303
4. Abscess,	11	11	4	26.63	.8442
5. Tumour,	4	13	5	27.00	.3070
6. Mortification,	12	16	8	20.86	.9209
7. Cancer,	25	12	7	22.00	1.9186
8. Gout,	6	8	1	19.11	.4605
CLASS III.					
<i>Tubercular Diseases—</i>					
1. Atrophy,	8	16	7	27.92	.6139
2. Consumption,	107	7	11	30.64	8.2118
3. Hydrocephalus,	1	2	6	30.32	.0767

CAUSES OF DEATH.	Deaths.	Average Duration.		Average Expectation.	Percentage of Total Mortality.
		Yrs.	Mos.		
CLASS IV.					
<i>Diseases of Respiratory Organs—</i>					
1. Laryngitis,	3	9	6	18.05	.2302
2. Bronchitis,	59	13	11	20.56	4.5280
3. Pleurisy,	4	6	4	18.34	.3070
4. Pneumonia,	41	10	7	23.42	3.1466
5. Hydrothorax,	21	9	4	22.70	1.6117
6. Asthma,	6	15	4	20.73	.4605
7. Disease of Lungs,	34	9	4	28.95	2.6094
CLASS V.					
<i>Diseases of the Brain and Nerves—</i>					
1. Cephalitis,	15	7	6	29.63	1.1512
2. Apoplexy,	105	10	2	24.00	8.0583
3. Paralysis,	67	16	0	22.37	5.1420
4. Convulsions,	4	2	9	16.73	.3070
5. Delirium Tremens,	11	7	2	32.02	.8442
6. Epilepsy,	16	9	11	29.73	1.2279
7. Insanity,	3	14	1	30.60	.2302
8. Disease of Brain,	36	11	7	25.81	2.7629
CLASS VI.					
<i>Diseases of Organs of Circulation—</i>					
1. Pericarditis,	2	10	2	19.26	.1535
2. Aneurism,	17	9	10	26.49	1.3047
3. Disease of Heart,	103	12	8	24.72	7.9048
CLASS VII.					
<i>Diseases of Organs of Digestion—</i>					
1. Gastritis,	3	10	11	26.50	.2302
2. Enteritis,	13	5	6	32.26	.9977
3. Peritonitis,	5	11	6	25.23	.3837
4. Ulceration of Intestines,	7	10	11	29.49	.5372
5. Hernia,	3	21	10	24.79	.2302
6. Heus,	2	20	7	24.63	.1535
7. Hæmatemesis,	3	8	1	31.70	.2302
8. Disease of Stomach and Bowels,	27	8	10	21.57	2.0721
9. Hepatitis,	6	8	7	27.38	.4605
10. Jaundice,	11	11	6	23.49	.8442
11. Disease of Liver,	55	10	7	24.89	4.2210

CAUSES OF DEATH.	Deaths.	Average Duration.		Average Expectation.	Percentage of Total Mortality.
		Yrs.	Mos.		
CLASS VIII.					
<i>Diseases of the Urinary Organs—</i>					
1. Diabetes,	2	11	0	24.75	.1535
2. Disease of Kidneys, . . .	20	12	3	23.57	1.5349
3. Disease of Bladder, . . .	20	10	1	17.19	1.5349
CLASS IX.					
<i>Childbirth, &c.—</i>					
1. Childbirth,	5	7	3	33.15	.3837
2. Disease of Uterus, . . .	1	10	2	27.61	.0767
CLASS X.					
<i>Rheumatism and Disease of Joints—</i>					
1. Rheumatism,	1	0	10	25.71	.0767
2. Disease of Joints, . . .	1	5	5	25.09	.0767
3. Disease of Spine, . . .	1	10	8	13.82	.0767
CLASS XI.					
<i>Disease of Skin and Cellular Tissue—</i>					
Carbuncle,	3	12	7	18.06	.2302
CLASS XII.					
Violent Deaths,	45	8	5	28.82	3.4540
CLASS XIII.					
Old Age,	49	17	4	14.90	3.7610
Causes not ascertained, . . .	40	8	...	27.32	3.0699

ABSTRACT.

CAUSES OF DEATH.	Deaths.	Average Duration.		Average Expectation.	Percentage of Total Mortality.
		Yrs.	Mos.		
CLASS I. Epidemic and Contagious Diseases, .	187	9	4	27.19	14.3512
CLASS II. Diseases of Uncertain Seat, . . .	130	10	6	23.30	9.9769
CLASS III. Tubercular Diseases,	116	8	10	30.44	8.9024
CLASS IV. Diseases of Respiratory Organs, .	168	11	6	23.09	12.8934
CLASS V. Diseases of Brain and Nerve, . . .	257	11	7	24.82	19.7237
CLASS VI. Diseases of Organs of Circulation, .	122	12	3	24.80	9.3630
CLASS VII. Diseases of Organs of Digestion, .	135	10	1	25.37	10.3605
CLASS VIII. Diseases of Urinary Organs, . . .	42	11	4	20.59	3.2233
CLASS IX. Childbirth, &c.,	6	7	9	32.22	.4604
CLASS X. Rheumatism and Disease of Joints, .	3	5	8	21.54	.2301
CLASS XI. Disease of Skin and Cellular Tissue,	3	12	7	18.06	.2302
CLASS XII. Violent Deaths,	45	8	5	28.82	3.4540
CLASS XIII. Old Age,	49	17	4	14.90	3.7610
Causes not ascertained,	40	8	...	27.32	3.0699
	1303	10	8	25.07	100.0000



