

Report on the mortality experience of the Clergy Mutual Assurance Society, from 1829 to 1887, by F.B. Wyatt, with ... the medical history of the Society, by W.H. Stone.

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REPORT
ON THE
MORTALITY EXPERIENCE
OF THE
CLERGY MUTUAL ASSURANCE SOCIETY,
FROM 1829 TO 1887,
BY
FRANK B. WYATT, F.I.A.,
Actuary to the Society;
TOGETHER WITH
A REPORT ON THE MEDICAL HISTORY OF THE SOCIETY
DURING THE SAME PERIOD,
BY
WILLIAM H. STONE, M.B., F.R.C.P.,
Physician to the Society.

LONDON:
THE SOCIETY'S OFFICE, 2 & 3, THE SANCTUARY, WESTMINSTER.
—
1891.



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P R E F A C E .

In the year 1864 the Founder and late Secretary of the Society, the Rev. JOHN HODGSON, published his work "Observations in reference to Duration of Life amongst the Clergy of England and Wales," which was the result of many years' labour. This was probably the first trustworthy evidence that the mortality of the Clergy of England and Wales was appreciably lower than that of the general community.

The subjoined Reports are of special importance to Members of the Society because they shew what have been the results of fifty-eight years' work of the Society; they apply the test of experience to the principles upon which its business has been managed; and they shew that the anticipations of its Founders have been much more than justified by events.

It has always been assumed that the rate of mortality amongst the Clergy is lower than in other classes, but the experience of our Society has proved that this is so to a much greater degree than has been supposed. The difference between the aggregate amount of the anticipated and actual claims made on the death of assured members is very large, and accounts in great measure for the exceptionally high bonuses declared by the Society.

The Directors believe that these Reports will also be of general interest as a valuable addition to the existing information as to vital statistics during the nineteenth century.

In issuing this volume to the public the Directors are anxious to acknowledge the services of Mr. Wyatt, the Actuary, and Dr. Stone, the Physician, in the preparation and discussion of these statistics, and to congratulate them on having succeeded in presenting matters involving highly technical knowledge in such a form as to be readily intelligible and, it is hoped, interesting to the general reader.

G. G. BRADLEY,

Dean of Westminster,

Chairman of the Board of Directors.

CLERGY MUTUAL ASSURANCE SOCIETY,

2 & 3, THE SANCTUARY, WESTMINSTER.

24th February 1891.

REPORT
ON THE
MORTALITY EXPERIENCE
OF THE
CLERGY MUTUAL ASSURANCE SOCIETY,
FROM 1829 TO 1887.

To the Directors of the

CLERGY MUTUAL ASSURANCE SOCIETY.

GENTLEMEN,

I have the honour to lay before you the results of my investigation into the Mortality Experience of the Society from its foundation in the year 1829 down to the 31st May 1887, a period of 58 years.

The method employed in extracting the experience is identical with that employed by the Institute of Actuaries in the compilation of the "Mortality Experience of 20 Life Assurance Companies," published in the year 1869. A complete explanation of the several processes is given in the preface to that work, so that an explanation of the method of collecting, arranging and classifying the present statistics is unnecessary.

The observations embrace all lives assured under ordinary whole-life and term assurances effected prior to 1st June 1887, that is, all assurances on life except a few issued on joint lives, survivorships and contingencies. In the tables appended, however, only "healthy" lives, namely lives considered to be up to the average standard of health and charged the ordinary rate of premium, are dealt with. The experience among 355 "unhealthy" lives, or lives charged more than the ordinary rate of premium, has been kept distinct and will be referred to further on.

Great care has been taken to ensure accuracy in the results. Every portion of the work has been either checked by performance in duplicate, or by some other satisfactory means, so that no error of any consequence can have escaped detection.

The total number of policies issued on healthy lives during the fifty-eight years was 13,368, representing assurances on 9,370 lives, the average number of policies on each life being thus 1·43. The total number of years of life observed upon was 148,453.

The experience of the three classes of lives assured in the Society, namely Clergymen, Laymen and Females, was extracted separately and afterwards combined in order to obtain the aggregate experience. One hundred and seventy-nine Members who joined the Society as Laymen subsequently became Clergymen, and these, according to their ages at the time of ordination, were, for the purposes of the present statistics, transferred from the class of Laymen to that of Clergymen.

The numbers of lives in each class who entered, died, discontinued, or were existing at the close of the period of observation, were as follows:—

	Clergy	Lay	Female	Total
Entered	7,050	1,800	520	9,370
Died	1,831	177	111	2,119
Discontinued . . .	740	233	117	1,090
Transferred . . .	179	179	...	...
Existing 31st May 1887 .	4,658	1,211	292	6,161

From this statement it will be found that at the close of the period of observation out of the total number of lives assured

65·8 per cent were existing
 11·6 per cent had discontinued
 and 22·6 per cent had died.

The average ages at entry and the mean durations of assurance were as under,

	Average age at entry	Mean duration of assurance
Clergy	36·3 years	17·0 years
Lay	28·8 „	9·9 „
Female	38·7 „	13·1 „
Three classes combined .	35·2 „	15·7 „

The greater part of the experience relates to the lives of Clergymen, the number of years of life observed upon, or the number “exposed to risk” of death for one year, being 123,742·5 in that class and 24,710·5 in the other two classes together.

In the arrangement of the tables the general mortality experience of the Society in respect of the three classes combined is exhibited first, and then the experiences of the three classes are separately examined and compared.

The general experience is recorded in Table I, which shews the total number of lives who entered, lived, or passed out of observation by death or discontinuance at each current age.

Table II, deduced from the previous table, shews at each age the number of lives exposed to risk, the number of deaths, and the rate of mortality per cent. It also shews the number of deaths that might have been expected at each age according to three well-known Mortality Tables, namely the Carlisle, the Rev. John Hodgson's Clergy Table,* and the Institute of Actuaries' Healthy Male Table (20 Offices' experience—H^M).

* I have employed the Mortality Table constructed by Mr. Samuel Brown from Mr. Hodgson's original observations in all comparisons, except where the quinquennial rates of mortality are made use of. These rates Mr. Hodgson gives on pages 28—31 of his work, “Observations in reference to Duration of Life amongst the Clergy of England and Wales,” London 1865. I have re-computed the rates as in some instances the published rates do not quite accord with the “number under observation” and the “number of deaths.” On examining the manuscript of Mr. Hodgson's work I found that the number of deaths at ages 55—59 among “Entrants in this century” was 100 and not 90 as appears on page 29, so that the rate of mortality per cent for that group of ages is correctly stated at 1·655.

The rates of mortality at the several ages present irregularities which render it somewhat difficult to gain a comprehensive view of the general course of the experience. The figures in Table II have therefore been combined according to quinquennial groups of ages, and the results are recorded in Table III. On examination of this Table it will be apparent that a remarkably low rate of mortality has prevailed among the Members of the Society. The actual number of deaths, 2119, was only 68·5 per cent, or slightly more than two-thirds of the number expected according to the Carlisle Table; 79·8 per cent, or just four-fifths of the number expected according to Mr. Hodgson's Clergy Table; and 68·3 per cent, or slightly more than two-thirds of the number expected according to the Institute of Actuaries' H^M Table. The character of the experience is more remarkable at the younger than at the older ages, the actual deaths at ages under 55 being only 56·9 per cent of the expectation by the H^M Table, while at ages over 55 the actual deaths were 75·9 per cent of the expectation by the same table.

A graphic comparison of the actual deaths with the expected deaths by the H^M Table is given in Diagram I. The actual deaths for each group of five ages are represented by the ordinates to the continuous curve, and the expected deaths by the ordinates to the dotted curve. Speaking roughly, it may be said that the area comprised between the continuous curve and the base line represents the Society's actual losses by death, and the much larger area comprised between the dotted curve and the base line the losses that would have taken place if the Society's experience had coincided with that on which the H^M Table was based.

In Table IV the annual rates of mortality per cent according to the Society's experience are compared with the rates according to other Mortality Tables. It will be noticed that the Society's experience runs more closely to Mr. Hodgson's Clergy Table for entrants in the 19th century than to any of the other tables.

Table V is a Table of Mortality in the usual form deduced from the probabilities of dying in a year as obtained from the number

exposed to risk and the number of deaths recorded in Table II. It shews the number Living and Dying at each age out of 10,000 lives assumed to enter at the age of 20; also the probabilities of living and of dying in a year, and the expectation of life at each age.

The following table compares the number out of 10,000, assumed to come under observation at the age of 25, who would survive to the successive ages 35, 45, etc., according to the Society's experience, with the corresponding number of survivors according to other tables of mortality :—

Age	Society's Experience	Carlisle	Hodgson's Clergy	H ^M
25	10,000	10,000	10,000	10,000
35	9,570	9,121	9,440	9,278
45	9,070	8,041	8,718	8,382
55	8,247	6,928	7,605	7,166
65	6,749	5,134	5,819	5,304
75	4,066	2,849	3,288	2,739
85	1,005	757	914	582

The next two tables, Nos. VI and VII, are intended to indicate the influence of the duration of assurance on the rate of mortality. The former distributes the experience according to decennial groups of ages and quinquennial groups of years of assurance, and compares the actual number of deaths in each group with the number expected according to the general experience of the Society; while the latter records the experience by years of assurance irrespective of age. The beneficial effect of the medical examination of the lives at the time of admission is at once observable, the actual number of deaths being considerably less than the expected during the early years of assurance.

It must here be explained that the 1st, 2nd, etc., years of assurance correspond with years 0, 1, etc., in the Institute tables, and in computing the expected deaths for the purpose of comparison in Tables VI and VII, it was considered sufficiently accurate to make use of the quinquennial rates of mortality given in Table III.

Turning from the question of the rate of mortality among the members to that of the rate of discontinuance, it will be found that in this respect also the experience of the Society has been very satisfactory.

In the last column of Table VII the number of discontinuances is stated for each year of assurance, and by grouping these and the numbers exposed to risk the following summary is obtained :—

Years of assurance	Exposed to the risk of discontinuance	Number of discontinuances	Annual Rate of discontinuance per cent
1- 5	38,092	531	1·394
6-10	32,979	288	·873
11-15	24,962	122	·489
16-20	18,239	51	·280
21-25	13,269	49	·369
26 & over	20,397·5	49	·240
All years	147,938·5	1,090	·737

It will be observed that very nearly one-half of the whole number of discontinuances occurred in the first five years of assurances, and that the annual rate of discontinuance falls rapidly with the increase in the duration of the assurance. Taking all years of assurance together the annual rate has been only ·737 per cent.

The next three Tables, Nos. VIII, IX, and X, set out the separate experiences of the three classes of members, namely, Clergymen, Laymen, and Females.

Table XI contains a comparison between the decennial rates of mortality in the three classes as deduced from the entire experiences, and also as deduced from the experiences excluding the first five years of assurance. It will be seen from the first part of this table that under the age of 50 the mortality among the Laymen and Females has exceeded that among the Clergymen; that the mortality among Laymen over the age of 50 and among Females between the ages of

50 and 70 has been lower than among Clergymen; while over the age of 70 the mortality of Females has exceeded that of either of the other two classes. These several relations are also observable in the experience after the first five years of assurance.

The mortality among the Laymen and Females will be seen to have been favourable by comparing the actual deaths in each of the two classes with the deaths expected according to the Institute H^M and H^F Tables respectively.

	Actual Deaths	Expected Deaths	Ratio of Actual to Expected
Laymen	177	251	·705
Females	111	151	·735

The mortality among the Clergy lives differs very slightly from the general experience, the character of which has already been illustrated by comparison with other mortality tables.

The present results furnish additional evidence that the mortality among the Clergy is very much lower than that among the general community. Moreover, since the Rev. John Hodgson's observations embrace a period of 110 years from 1750 to 1860 and the Society's experience a period of 58 years from 1829 to 1887, we can compare the rates of mortality among the Clergy in what, for practical purposes, may be considered as three successive periods extending over 137 years. The following table shows the rates of mortality for groups of ages according to Mr. Hodgson's observations on entrants in the 18th and 19th centuries respectively, and according to the Society's experience :—

RATE OF MORTALITY PER CENT AMONG THE CLERGY DURING
SUCCESSIVE PERIODS.

Ages	1750-1860	1800-1860	1829-1887
	Hodgson's observations on entrants in the 18th century	Hodgson's observations on entrants in the 19th century	The Society's experience
24-29	·502	·422	·403
30-34	·643	·635	·334
35-39	·771	·620	·498
40-44	·943	·729	·521
45-49	1·210	·835	·693
50-54	1·998	1·333	1·141
55-59	2·677	1·655	1·782
60-64	3·511	2·910	2·277
65-69	4·726	4·397	4·045
70-74	7·682	6·801	5·556
75-79	12·184	10·724	9·012
80-84	17·140	16·769	16·081
85-89	23·274	23·404	21·168
90 & over	39·583	25·714	26·666

The above table affords strong proof that there has been a marked diminution in the mortality of the Clergy in later years, the improvement being most pronounced between the ages of 40 and 65.

Table XII is a Table of Mortality deduced from the experience of the Clergy lives only, and is of the same form as Table V deduced from the general experience.

With the view of rendering the present statistics relating to the mortality of so important a class as the Clergy of practical value, the probabilities of dying in a year in Table XII have been adjusted by means of the Graphic Method, and from the adjusted probabilities so obtained Table XIII has been constructed. This table will be found on examination to fulfil the conditions of a satisfactory adjustment, for the probabilities of dying proceed with regularity and, when they are

applied to the numbers exposed to risk in Table VIII, they reproduce with practical accuracy the actual number of deaths.*

Diagram II presents a graphic illustration of the adjusted probabilities of dying according to the Clergy experience of the Society, and also of the probabilities of dying according to the Rev. John Hodgson's observations (using the quinquennial rates of mortality in his table No. 3) and the adjusted H^M Table.

Table XIV contains the usual Commutation Columns, D and N, and shews the value of an annuity of 1 payable at the end of each year of life, on the basis of Table XIII with the assumption of interest at the rate of 3 per cent per annum. By means of this table and the preceding one problems depending on the duration of Clergy life in combination with compound interest at the stated rate can be solved.

In consequence of the longevity of the Clergy it naturally follows that the values of life annuities in Table XIV are high. To what extent they exceed the values of life annuities according

* The following table shews the "exposed to risk" and the deaths arranged according to the groups of ages, which were selected as suitable for the preliminary part of the adjustment, and the deaths expected in each group according to the final adjusted probabilities of dying in a year at each age. The total expected deaths are only 2·5 less than the actual—an agreement sufficiently close for all practical purposes.

Ages	Exposed to Risk	Actual Deaths	Expected Deaths	Ages	Exposed to Risk	Actual Deaths	Expected Deaths
23-30	7,385	26	26·7	67-69	113,327	1,143	1,144·0
31-36	15,924	66	66·1	70-72	3,674	154	152·3
37-41	17,422	86	84·9	73, 74	2,695	134	135·8
42-44	11,177	60	61·5	75, 76	1,301	88	85·5
45-47	11,033	74	71·3	77, 78	978·5	80	80·0
48-50	10,639·5	88	88·9	79, 80	711	68	69·8
51, 52	6,745·5	70	72·8	81-85	477	57	56·7
53-56	12,126	181	179·2	86-89	474	81	77·0
57-59	7,718·5	143	143·2	90-92	90	22	22·2
60, 61	4,433	93	93·4	93 & over	12	4	3·9
62-66	8,723·5	256	256·0		3	...	1·3
	113,327	1,143	1,144·0		123,742·5	1,831	1,828·5

to certain well-known tables may be gathered from the following comparison:—

VALUE OF A LIFE ANNUITY OF 1 AT 3 PER CENT
INTEREST.

Ages	Society's Clergy Experience (adjusted)	Hodgson's Clergy	Carlisle	H ^M	Government Male Annuitants 1883. (at date of purchase)
30	21·908	20·705	19·557	19·867	...
40	19·016	17·890	17·142	17·176	16·376
50	15·350	14·525	14·302	13·896	13·813
60	11·468	10·887	10·491	10·236	10·601
70	7·517	7·347	7·123	6·657	7·299
80	3·949	4·474	4·365	3·742	4·553

Table XV gives a comparative view of the expectation of life at every fifth age according to the Society's experience, the Rev. John Hodgson's Clergy Observations, and other Tables.

The fifteen tables to which reference has been made exhibit the experience of the Society in regard to *Lives Assured*. In order, however, to render the present investigation more complete I have also extracted the experience in regard to *Amounts Assured* (including additions by Bonus). The results are set out in Table XVI, which shews the amounts exposed to risk, the claims by death, and the rate of claim per cent. at each age. In Table XVII these results are arranged according to groups of ages, and comparison is made with the claims expected by the Carlisle Table.

The first fact which calls for attention is, that, whereas the total claims on death expected according to the Carlisle Table were £4,213,440, the total actual claims by death amounted to only £2,821,029, thus shewing a difference of £1,392,411 in favour of the Society.

It will readily be understood that such a remarkably favourable course of mortality has been a most powerful factor in the accumulations of profit, which have periodically been distributed among the Members of the Society.

On comparing Table XVII with the corresponding table for lives, No. III, it will be found that the average amount at risk on each life is much higher at the older ages than at the younger. This is partly in consequence of additional assurances taken out by Members as they become older, but mainly to the fact that very few additions have been made to policies by means of bonus until after the extinction of the premium in advanced age, and that the additions then made have been very large. For all ages under 55 the average amount at risk on each life was £1134, for ages 55-64, £1310, while for ages over 65 it was £1559. This absence of parallelism in the experience of lives and that of amounts prevents conclusions being legitimately drawn from the aggregate totals of the two tables, and so attention should be directed to the individual groups.

At the three consecutive groups of ages 40-44, 45-49 and 50-54, the rate of claim exceeds the rate of mortality, while at all the other groups of ages the rate of claim is lower than the rate of mortality, the difference being marked at the higher ages. Looking at the expectation by the Carlisle Table we find that at all ages under 55 the ratio of actual to expected losses is .522 for lives and .530, or about $1\frac{1}{2}$ per cent greater, for amounts; while for ages 55 and over the ratio of actual to expected losses is .810 for lives and .750, or about $7\frac{1}{2}$ per cent less, for amounts. On the whole the results support the conclusion that the rate of mortality has been higher among lives assured for small amounts than among those assured for larger amounts.

I have now to refer to the mortality among "unhealthy" lives, namely lives not considered up to the average standard of health and therefore charged more than the ordinary rate of premium. The experience in regard both to lives and amounts, arranged according to groups of actual ages, together with the expectation by the general experience of the Society in respect of healthy lives (Table III) is exhibited in the following table :

TABLE ILLUSTRATING THE EXPERIENCE OF THE SOCIETY IN RESPECT OF 355 "UNHEALTHY" LIVES (CLERGY, LAY, AND FEMALE).

Actual Ages	LIVES				AMOUNTS			
	Exposed to Risk	Died	Expected Deaths by Table III	Ratio of Actual to Expected	Exposed to Risk	Claims by Death	Expected Claims by Table III	Ratio of Actual to Expected
Under 30	250	1	1'09	'917	£ 231,138	£ 500	£ 1,004	'498
30-39	1,288'5	4	6'08	'658	1,297,116	2,700	6,123	'441
40-49	1,664'5	11	10'71	1'027	1,700,708	16,762	10,914	1'536
50-59	1,302	30	18'16	1'652	1,302,319	30,055	18,208	1'651
60-69	560'5	14	15'96	'877	623,856	18,092	17,919	1'010
70-79	126	10	8'23	1'215	164,156	10,420	10,175	1'024
80-83	5	1	'79	1'266	1,362	227	216	1'051
	5,196'5	71	61'02	1'164	5,320,675	78,756	64,559	1'220

It will be seen from the above table that the mortality among "unhealthy" lives has exceeded that among the general body of healthy assured lives, the actual deaths exceeding the expected according to the general healthy experience (Table III) by 9'98 or 16 per cent, and the actual claims exceeding the expected claims by £14,197, or 22 per cent. For this excess of mortality the Society has probably been compensated by the additional premiums charged.

In closing this report I venture to express the hope that, in view of the character and extent of the Society's experience, the accompanying Tables will be found a useful contribution to vital statistics.

I have the honour to be, Gentlemen,

Your obedient Servant,

FRANK B. WYATT,

Actuary.

CLERGY MUTUAL ASSURANCE SOCIETY,
2 & 3, THE SANCTUARY,
WESTMINSTER.

9th December, 1890.

TABLES.

TABLE I.
SUMMARY OF OBSERVATIONS.
GENERAL EXPERIENCE—CLERGY, LAY, AND FEMALE LIVES.

Current Age	ENTRANTS			Total Entrants	Lived	Died	Discontinued	Existing	Sum of died discontinued and existing
	died	discontinued	existing						
11	...	3	...	3	3	...	...	...	...
12	...	3	2	5	8	...	...	...	...
13	...	2	2	4	12	...	1	...	1
14	2	2	20	24	35	...	1	1	2
15	...	5	15	20	53	...	1	4	5
16	1	4	12	17	65	...	...	4	4
17	...	9	15	24	85	...	1	6	7
18	3	6	19	28	106	...	...	8	8
19	5	15	20	40	138	...	1	5	6
20	8	20	46	74	206	1	3	4	8
21	10	15	58	83	281	1	11	6	18
22	6	23	63	92	355	1	18	17	36
23	12	17	99	128	447	1	8	20	29
24	21	42	162	225	643	6	12	33	51
25	30	25	275	330	922	1	29	41	71
26	34	48	291	373	1,224	5	27	51	83
27	40	38	307	385	1,526	8	14	62	84
28	56	38	316	410	1,852	9	29	93	131
29	62	51	315	428	2,149	5	32	91	128
30	61	42	338	441	2,462	8	21	99	128
31	72	43	323	438	2,772	8	24	107	139
32	71	43	304	418	3,051	16	29	124	169
33	90	42	265	397	3,279	11	37	127	175
34	93	45	270	408	3,512	15	36	136	187
35	86	37	238	361	3,686	15	28	137	180
36	71	38	252	361	3,867	12	37	141	190
37	84	31	221	336	4,013	20	35	158	213
38	82	37	204	323	4,123	20	26	149	195
39	90	42	178	310	4,238	19	38	154	211
40	79	30	185	294	4,321	28	25	146	199
41	91	24	151	266	4,388	27	34	159	220
42	67	31	143	241	4,409	19	32	142	193
43	78	26	134	238	4,454	33	22	171	226
44	73	21	92	186	4,414	24	30	161	215
45	60	23	120	203	4,402	19	35	166	220
46	58	21	97	176	4,358	22	28	137	187
47	53	25	88	166	4,337	36	29	151	216
48	49	17	75	141	4,262	32	29	137	198
49	45	14	62	121	4,185	33	31	156	220
50	43	12	59	114	4,079	27	21	119	167
51	46	11	56	113	4,025	45	24	139	208
52	34	11	40	85	3,902	39	23	130	192
53	28	11	39	78	3,788	42	22	133	197
54	40	6	31	77	3,668	47	27	135	209
	1,934	1,049	6,002	8,985	108,105	655	911	3,960	5,526

TABLE I.—*Continued.*

Current Age	ENTRANTS			Total Entrants	Lived	Died	Discontinued	Existing	Sum of died discontinued and existing
	died	discontinued	existing						
	1,934	1,049	6,002	8,985	108,105	655	911	3,960	5,526
55	29	11	28	68	3,527	45	16	141	202
56	25	8	17	50	3,375	60	23	122	205
57	17	4	19	40	3,210	47	17	120	184
58	21	3	15	39	3,065	51	16	107	174
59	15	3	21	39	2,930	51	13	122	186
60	18	3	8	29	2,773	51	9	122	182
61	11	3	13	27	2,618	54	16	119	189
62	7	...	5	12	2,441	47	7	109	163
63	6	1	9	16	2,294	63	12	105	180
64	10	2	5	17	2,131	33	8	114	155
65	7	2	4	13	1,989	58	8	95	161
66	8	...	4	12	1,840	64	5	95	164
67	1	...	4	5	1,681	69	1	90	160
68	3	...	2	5	1,526	60	4	84	148
69	4	1	3	8	1,386	57	1	83	141
70	2	...	...	2	1,247	57	3	75	135
71	...	...	1	1	1,113	40	2	66	108
72	...	...	1	1	1,006	49	1	55	105
73	1	...	...	1	902	61	3	52	116
74	...	...	...	...	786	59	3	57	119
75	...	...	...	...	667	42	...	42	84
76	...	...	...	...	583	44	2	32	78
77	...	...	...	...	505	43	1	34	78
78	...	...	...	...	427	33	3	28	64
79	...	...	...	...	363	43	1	27	71
80	...	...	...	...	292	30	1	22	53
81	...	...	...	...	239	32	1	27	60
82	...	...	...	...	179	24	2	18	44
83	...	...	...	...	135	26	...	8	34
84	...	...	...	...	101	22	...	7	29
85	...	...	...	...	72	11	...	8	19
86	...	...	...	...	53	8	...	4	12
87	...	...	...	...	41	10	...	2	12
88	...	...	...	...	29	4	...	3	7
89	...	...	...	...	22	6	...	3	9
90	...	...	...	...	13	4	...	1	5
91	...	...	...	...	8	4	...	...	4
92	...	...	...	...	4	1	...	1	2
93	...	...	...	...	2	1	...	...	1
94	...	...	...	...	1	...	...	...	...
95	...	...	...	...	1	...	...	...	...
96	...	...	...	...	1	...	...	1	1
	2,119	1,090	6,161	9,370	153,683	2,119	1,090	6,161	9,370

TABLE II.

EXPOSED TO RISK, DIED, RATE OF MORTALITY PER CENT,
AND EXPECTED DEATHS, AT EACH AGE.
(GENERAL EXPERIENCE.)

Age	Exposed to Risk	Died	Rate of Mortality per cent	EXPECTED DEATHS BY UNDERMENTIONED TABLES		
				Carlisle	Hodgson's Clergy	Institute of Actuaries, HM
10-14	81'5	...	...	'434	'397	'244
15-19	506	1	'198	3'464	2'464	2'279
20	234	1	'427	1'652	1'140	1'481
21	300	1	'333	2'084	1'461	2'018
22	379	1	'264	2'651	1'846	2'594
23	524'5	6	1'144	3'694	2'554	3'548
24	742'5	1	'135	5'267	3'616	4'930
25	1,024	5	'488	7'490	5'136	6'789
26	1,326'5	8	'603	9'774	6'852	8'868
27	1,632'5	9	'551	12'681	8'686	11'271
28	1,919	5	'261	16'694	10'516	13'763
29	2,231	8	'359	21'927	12'592	16'583
30	2,541	8	'315	25'671	14'771	19'624
31	2,827'5	16	'566	28'858	16'929	22'385
32	3,062	11	'359	31'018	18'883	24'818
33	3,290	15	'456	33'068	20'896	27'258
34	3,491'5	15	'430	35'449	22'840	29'691
35	3,668	12	'327	37'623	24'714	32'183
36	3,827'5	20	'523	40'388	26'561	34'865
37	3,948'5	20	'507	42'861	28'221	37'368
38	4,064	19	'468	45'383	29'917	39'746
39	4,161'5	28	'673	49'427	31'553	41'957
40	4,238	27	'637	55'115	33'096	43'677
41	4,272'5	19	'445	58'853	35'260	44'805
42	4,324	33	'763	62'150	37'711	46'414
43	4,306	24	'557	62'790	39'685	47'913
44	4,283	19	'444	63'380	41'716	49'495
45	4,256	22	'517	63'027	43'807	51'890
46	4,239'5	36	'849	62'812	46'115	54'858
47	4,177	32	'766	60'996	48'015	57'232
48	4,109	33	'803	57'260	49'917	59'335
49	4,011'5	27	'673	54'890	51'500	61'055
50	3,956'5	45	1'137	53'088	53'678	63'106
51	3,848	39	1'014	54'996	55'839	64'148
52	3,738	42	1'124	56'821	58'016	65'598
53	3,616	47	1'300	58'392	60'027	67'257
54	3,485	45	1'291	58'882	61'877	68'773
	106,642	700	...	1,341'010	1,008'804	1,229'819

TABLE II.—Continued.

Age	Exposed to Risk	Died	Rate of Mortality per cent	EXPECTED DEATHS BY UNDERMENTIONED TABLES		
				Carlisle	Hodgson's Clergy	Institute of Actuaries, H ^M
	106,642	700	...	1,341'010	1,008'804	1,229'819
55	3,338'5	60	1'797	59'836	63'400	70'218
56	3,181'5	47	1'477	60'448	64'622	71'433
57	3,037'5	51	1'679	63'475	65'990	72'870
58	2,904	51	1'756	70'294	67'479	74'418
59	2,754	51	1'852	77'866	68'445	75'842
60	2,596'5	54	2'080	86'954	69'021	77'058
61	2,431'5	47	1'933	87'010	69'600	77'900
62	2,280	63	2'763	85'288	70'280	78'970
63	2,118'5	33	1'558	81'033	70'322	79'424
64	1,978'5	58	2'932	78'688	70'723	79'952
65	1,831'5	64	3'494	75'251	70'500	79'544
66	1,678	69	4'112	71'318	69'555	78'143
67	1,521'5	60	3'943	67'537	67'916	75'905
68	1,381'5	57	4'126	64'171	66'406	73'543
69	1,244'5	57	4'580	61'115	64'418	71'359
70	1,111'5	40	3'599	57'404	61'957	69'126
71	1,005	49	4'876	59'144	60'730	68'391
72	900	61	6'778	61'315	58'955	67'445
73	784'5	59	7'521	61'283	55'708	65'002
74	667	42	6'297	60'142	51'348	60'828
75	582	44	7'560	55'593	48'570	57'245
76	504'5	43	8'523	51'948	45'643	53'664
77	425'5	33	7'756	45'712	41'732	48'801
78	362'5	43	11'862	39'448	38'543	44'664
79	291'5	30	10'292	34'517	33'599	38'787
80	238'5	32	13'417	29'030	29'802	34'499
81	178	24	13'483	23'818	23'584	28'131
82	135	26	19'259	18'993	18'966	23'132
83	101	22	21'782	15'239	15'046	18'771
84	72	11	15'278	11'433	11'373	14'319
85	53	8	15'094	9'290	8'877	11'124
86	41	10	24'390	7'932	7'282	9'006
87	29	4	13'793	6'271	5'461	6'706
88	22	6	27'273	4'836	4'393	5'265
89	13	4	30'769	2'801	2'753	3'292
90	8	4	50'000	2'085	1'796	2'236
91	4	1	25'000	1'143	'917	1'251
92	2	1	50'000	'560	'468	'703
93	1	...	...	'259	'239	'416
94	1	...	...	'250	'244	'507
95	1	...	...	'233	'249	'637
	148,453	2,119	...	3,091'973	2,655'716	3,100'346

TABLE III.

EXPOSED TO RISK, DIED, RATE OF MORTALITY PER CENT,
AND EXPECTED DEATHS, AT GROUPS OF AGES.

(GENERAL EXPERIENCE.)

Ages	Exposed to Risk	Died	Rate of Mortality per cent	EXPECTED DEATHS BY UNDERMENTIONED TABLES			RATIO OF ACTUAL TO EXPECTED DEATHS		
				Carlisle	Hodgson's Clergy	Institute of Actuaries, H ^M	Carlisle	Hodgson's Clergy	Institute Actuaries H ^M
Under 20	587.5	1	.170	3.9	2.9	2.5	.256	.345	.400
20-24	2,180	10	.459	15.3	10.6	14.6	.654	.943	.685
25-29	8,133	35	.430	68.6	43.8	57.3	.510	.799	.611
30-34	15,212	65	.427	154.1	94.3	123.8	.422	.689	.525
35-39	19,669.5	99	.503	215.7	141.0	186.1	.459	.702	.532
40-44	21,423.5	122	.569	302.3	187.5	232.3	.404	.651	.525
45-49	20,793	150	.721	299.0	239.4	284.4	.502	.627	.527
50-54	18,643.5	218	1.169	282.2	289.4	328.9	.773	.753	.663
55-59	15,215.5	260	1.709	331.9	329.9	364.8	.783	.788	.713
60-64	11,405	255	2.236	419.0	349.9	393.3	.609	.729	.648
65-69	7,657	307	4.009	339.4	338.8	378.5	.905	.906	.811
70-74	4,468	251	5.618	299.3	288.7	330.8	.839	.869	.759
75-79	2,166	193	8.910	277.2	208.1	243.2	.849	.927	.794
80-84	724.5	115	15.873	98.5	98.8	118.9	1.168	1.164	.967
85-89	158	32	20.253	31.1	28.8	35.4	1.029	1.111	.904
90 and upwards	17	6	35.294	4.5	3.9	5.8	1.333	1.538	1.034
Under 55 Over 55	148,453	2,119	...	3,092.0	2,655.8	3,100.6	...	...	...
	106,642	700	.656	1,341.1	1,008.9	1,229.9	.522	.694	.569
	41,811	1,419	3.394	1,750.9	1,646.9	1,870.7	.810	.862	.759
	148,453	2,119	1.427	3,092.0	2,655.8	3,100.6	.685	.798	.683

TABLE IV.

ANNUAL RATE OF MORTALITY PER CENT ACCORDING TO
THE SOCIETY'S GENERAL EXPERIENCE AND CERTAIN
OTHER TABLES OF MORTALITY.

Ages	Society's Experience	Hodgson's Clergy Table	Ditto Entrants in 19th century	Carlisle	Institute of Actuaries' Healthy Males
20-24	·459	...	...	·70	·688
25-29	·430	·474*	·422*	·82	·690
30-34	·427	·640	·635	1·01	·821
35-39	·503	·706	·620	1·09	·953
40-44	·569	·846	·729	1·41	1·067
45-49	·721	1·035	·835	1·44	1·362
50-54	1·169	1·686	1·333	1·52	1·736
55-59	1·709	2·214	1·655	2·20	2·399
60-64	2·236	3·255	2·910	3·68	3·477
65-69	4·009	4·593	4·397	4·45	5·017
70-74	5·618	7·337	6·801	6·97	7·329
75-79	8·910	11·627	10·724	10·54	10·999
80-84	15·873	17·005	16·769	13·86	16·523
85-89	20·253	23·323	23·404	19·92	22·346
90 & over	35·294	33·735	25·714	...	33·766

* These are the rates for ages 24-29.

TABLE V.

TABLE OF MORTALITY—GENERAL EXPERIENCE.

NUMBER LIVING AND DYING AT EACH AGE, OUT OF 10,000
ENTERING AT AGE 20; ALSO PROBABILITIES OF LIVING
AND DYING IN A YEAR, AND EXPECTATION OF LIFE.

Age	Number Living	Number Dying	Probability of living a year	Probability of dying in a year	Expectation of life
20	10,000	43	.99573	.00427	47.64
21	9,957	33	.99667	.00333	46.84
22	9,924	26	.99736	.00264	46.00
23	9,898	113	.98856	.01144	45.12
24	9,785	14	.99865	.00135	44.63
25	9,771	47	.99512	.00488	43.69
26	9,724	59	.99397	.00603	42.90
27	9,665	53	.99449	.00551	42.16
28	9,612	25	.99739	.00261	41.39
29	9,587	35	.99641	.00359	40.50
30	9,552	30	.99685	.00315	39.64
31	9,522	54	.99434	.00566	38.77
32	9,468	34	.99641	.00359	37.99
33	9,434	43	.99544	.00456	37.12
34	9,391	40	.99570	.00430	36.29
35	9,351	30	.99673	.00327	35.44
36	9,321	49	.99477	.00523	34.56
37	9,272	47	.99493	.00507	33.74
38	9,225	44	.99532	.00468	32.91
39	9,181	61	.99327	.00673	32.06
40	9,120	58	.99363	.00637	31.27
41	9,062	41	.99555	.00445	30.47
42	9,021	69	.99237	.00763	29.60
43	8,952	50	.99443	.00557	28.83
44	8,902	39	.99556	.00444	27.99
45	8,863	46	.99483	.00517	27.11
46	8,817	75	.99151	.00849	26.25
47	8,742	67	.99234	.00766	25.47
48	8,675	69	.99197	.00803	24.66
49	8,606	58	.99327	.00673	23.86
50	8,548	97	.98863	.01137	23.01
51	8,451	86	.98986	.01014	22.27
52	8,365	94	.98876	.01124	21.50
53	8,271	108	.98700	.01300	20.73
54	8,163	105	.98709	.01291	20.00

TABLE V.—*Continued.*

Age	Number Living	Number Dying	Probability of living a year	Probability of dying in a year	Expectation of life
55	8,058	145	.98203	.01797	19.26
56	7,913	117	.98523	.01477	18.60
57	7,796	131	.98321	.01679	17.87
58	7,665	134	.98244	.01756	17.17
59	7,531	140	.98148	.01852	16.46
60	7,391	153	.97920	.02080	15.77
61	7,238	140	.98067	.01933	15.09
62	7,098	197	.97237	.02763	14.38
63	6,901	107	.98442	.01558	13.77
64	6,794	199	.97068	.02932	12.98
65	6,595	231	.96506	.03494	12.36
66	6,364	261	.95888	.04112	11.79
67	6,103	241	.96057	.03943	11.27
68	5,862	242	.95874	.04126	10.72
69	5,620	257	.95420	.04580	10.15
70	5,363	193	.96401	.03599	9.62
71	5,170	252	.95124	.04876	8.96
72	4,918	334	.93222	.06778	8.39
73	4,584	344	.92479	.07521	7.97
74	4,240	267	.93703	.06297	7.57
75	3,973	301	.92440	.07560	7.05
76	3,672	313	.91477	.08523	6.58
77	3,359	260	.92244	.07756	6.15
78	3,099	368	.88138	.11862	5.62
79	2,731	281	.89708	.10292	5.31
80	2,450	329	.86583	.13417	4.87
81	2,121	286	.86517	.13483	4.54
82	1,835	353	.80741	.19259	4.17
83	1,482	323	.78218	.21782	4.05
84	1,159	177	.84722	.15278	4.04
85	982	148	.84906	.15094	3.68
86	834	204	.75610	.24390	3.24
87	630	87	.86207	.13793	3.13
88	543	148	.72727	.27273	2.55
89	395	121	.69231	.30769	2.32
90	274	137	.50000	.50000	2.12
91	137	34	.75000	.25000	2.74
92	103	52	.50000	.50000	2.48
93	51	0	1.00000	.00000	3.50
94	51	0	1.00000	.00000	2.50
95	51	0	1.00000	.00000	1.50
96	51	51	.00000	1.00000	.50

TABLE VI.

EXPOSED TO RISK AND DIED, ACCORDING TO GROUPS OF AGES AND GROUPS OF YEARS OF ASSURANCE; ALSO EXPECTED DEATHS ACCORDING TO SOCIETY'S GENERAL EXPERIENCE.—(GENERAL EXPERIENCE.)

Ages	Years of assurance	Exposed to Risk	Died	Expected Deaths	Ratio of Actual to Expected Deaths
Under 30	1- 5	8,735'5	36	36'81	'978
	6-10	1,843	9	7'80	1'154
	11 & over	322	1	1'39	'719
30-39	1- 5	15,878'5	55	73'55	'748
	6-10	12,956'5	63	60'91	1'034
	11-15	5,151'5	32	25'13	1'273
	16 & over	895	14	4'41	3'175
40-49	1- 5	9,258'5	41	58'31	'703
	6-10	11,641'5	86	73'95	1'163
	11-15	10,877	73	69'80	1'046
	16-20	7,349'5	51	48'42	1'053
	21 & over	3,090	21	21'52	'976
50-59	1- 5	3,283	33	44'44	'743
	6-10	5,048'5	74	69'12	1'071
	11-15	6,356'5	95	87'30	1'088
	16-20	6,978'5	96	97'41	'986
	21-25	6,436	100	91'68	1'091
	26-30	4,227'5	60	63'02	'952
	31 & over	1,529	20	25'03	'799
60-69	1- 5	719'5	15	19'53	'768
	6-10	1,349'5	33	37'48	'880
	11-15	2,033	54	57'13	'945
	16-20	2,596'5	70	73'82	'948
	21-25	3,304'5	97	94'52	1'026
	26-30	3,675'5	109	108'20	1'007
	31-35	3,203	113	98'17	1'151
	36-40	1,707	51	55'42	'920
	41 & over	473'5	20	17'73	1'128
70-79	1- 5	43'5	4	2'45	1'633
	6-10	133	9	8'01	1'124
	11-15	329	18	20'79	'866
	16-20	562	35	36'49	'959
	21-25	781'5	50	51'46	'972
	26-30	1,062	73	69'63	1'048
	31-35	1,275'5	99	84'87	1'166
	36-40	1,297'5	87	87'75	'991
	41 & over	1,150	69	82'55	'836
80 & over	11-15	4	1	'65	1'538
	16-20	29	4	4'64	'862
	21-25	70	9	11'48	'784
	26-30	126	15	21'44	'700
	31-35	155'5	28	26'33	1'063
	36-40	185'5	32	31'78	1'007
	41 & over	329'5	64	56'68	1'129
		148,453	2,119	2,119'00	...

TABLE VII.

EXPOSED TO RISK, DIED, AND DISCONTINUED IN EACH YEAR OF ASSURANCE; ALSO EXPECTED DEATHS BY SOCIETY'S GENERAL EXPERIENCE.

(GENERAL EXPERIENCE).

Year of assurance	Exposed to Risk	Died	Expected Deaths	Ratio of Actual to Expected Deaths	Discontinued
1	4,684	17	26.60	.639	2
2	8,995	35	53.18	.658	98
3	8,556.5	42	52.79	.796	187
4	8,042.5	42	51.66	.813	151
5	7,640.5	48	50.86	.944	93
6	7,267.5	58	51.06	1.136	89
7	6,910	58	51.23	1.132	70
8	6,599.5	61	51.48	1.185	49
9	6,266.5	51	51.68	.987	43
10	5,928.5	46	51.82	.888	37
11	5,624	57	52.13	1.093	34
12	5,293	54	52.16	1.035	30
13	5,000.5	57	52.52	1.085	19
14	4,686	51	52.30	.975	24
15	4,434.5	55	52.94	1.039	15
16	4,185.5	66	53.24	1.240	9
17	3,927.5	53	53.31	.994	15
18	3,650	49	52.84	.927	10
19	3,398.5	49	53.16	.922	11
20	3,185	49	52.27	.937	6
21	3,022	59	53.01	1.113	12
22	2,845	54	53.49	1.010	10
23	2,672.5	51	54.15	.942	9
24	2,501	51	53.92	.946	10
25	2,342	61	53.81	1.134	8
26	2,174	55	53.92	1.020	4
27	2,016	50	52.70	.949	4
28	1,882	52	53.16	.978	10
29	1,759.5	48	52.85	.908	3
30	1,627	56	52.23	1.072	4
31	1,483.5	59	51.16	1.153	1
32	1,339.5	60	48.53	1.236	5
33	1,196	45	46.01	.978	2
34	1,078	43	43.92	.979	2
35	970	52	42.86	1.213	4
36	844.5	33	40.14	.822	1
37	748.5	44	38.43	1.145	1
38	661	39	35.48	1.099	2
39	573	33	33.29	.991	...
40	488	23	29.71	.774	2
41-58	1,955	153	157.00	.975	4
	148,453	2,119	2,119.00	...	1,090

TABLE VIII.

CLERGY LIVES.—EXPOSED TO RISK, DIED, AND RATE OF MORTALITY PER CENT, AT EACH AGE.

Age	Exposed to Risk	Died	Rate of Mortality per cent	Age	Exposed to Risk	Died	Rate of Mortality per cent
					100,170.5	794	...
23	73	...	...	60	2,288.5	49	2.141
24	263	1	.380	61	2,144.5	44	2.052
25	504	2	.397	62	2,009	54	2.688
26	772.5	3	.388	63	1,866.5	28	1.500
27	1,040.5	7	.673	64	1,747.5	54	3.090
28	1,295.5	4	.309	65	1,616	57	3.527
29	1,578	5	.317	66	1,484.5	63	4.244
30	1,858.5	4	.215	67	1,345	54	4.015
31	2,119.5	9	.425	68	1,224.5	50	4.083
32	2,348	7	.298	69	1,104.5	50	4.527
33	2,577.5	9	.349	70	994.5	37	3.720
34	2,780.5	10	.360	71	897.5	44	4.903
35	2,964.5	11	.371	72	803	53	6.600
36	3,134	20	.638	73	703	52	7.397
37	3,266	14	.429	74	598	36	6.020
38	3,394.5	17	.501	75	525	42	8.000
39	3,498.5	19	.543	76	453.5	38	8.379
40	3,599	21	.583	77	383.5	28	7.301
41	3,664	15	.409	78	327.5	40	12.214
42	3,727	24	.644	79	263.5	28	10.626
43	3,739	20	.535	80	213.5	29	13.583
44	3,711	16	.431	81	157	23	14.650
45	3,697	16	.433	82	118	22	18.644
46	3,690	32	.867	83	90	21	23.333
47	3,646	26	.713	84	62	8	12.903
48	3,606	29	.804	85	47	7	14.894
49	3,537	23	.650	86	36	9	25.000
50	3,496.5	36	1.030	87	25	4	16.000
51	3,418	34	.995	88	18	5	27.778
52	3,327.5	36	1.082	89	11	4	36.364
53	3,222.5	42	1.303	90	6	2	33.333
54	3,098	41	1.323	91	4	1	25.000
55	2,969	52	1.751	92	2	1	50.000
56	2,836.5	46	1.622	93	1	...	...
57	2,702.5	47	1.739	94	1	...	...
58	2,579	47	1.822	95	1	...	...
59	2,437	49	2.011				
	100,170.5	794	...		123,742.5	1,831	...

TABLE IX.

LAY LIVES.—EXPOSED TO RISK AND DIED AT EACH AGE.

Age	Exposed to Risk	Died	Age	Exposed to Risk	Died
				14,229	93
10	1'5	...	50	277	6
11	5	...	51	250	3
12	8'5	...	52	235	4
13	19'5	...	53	222'5	4
14	35	...	54	217	4
15	45'5	...	55	203'5	3
16	59	...	56	189	...
17	77	...	57	180'5	3
18	99'5	...	58	170'5	...
19	145'5	1	59	167'5	1
20	205'5	1	60	161	3
21	268'5	1	61	147	2
22	342'5	1	62	137'5	4
23	406	6	63	127	2
24	429'5	...	64	117'5	3
25	468'5	2	65	106	5
26	496'5	5	66	96'5	3
27	522'5	2	67	91'5	4
28	543	1	68	79'5	6
29	562'5	2	69	68	1
30	589	3	70	57	1
31	607'5	6	71	51'5	1
32	606'5	3	72	48	3
33	600'5	4	73	40'5	4
34	592	3	74	32	3
35	576	1	75	24	...
36	558'5	...	76	21	2
37	538	6	77	17	3
38	514	2	78	13	2
39	498'5	7	79	8	...
40	474	5	80	7	...
41	442'5	3	81	7	...
42	428	7	82	7	1
43	394'5	4	83	4	...
44	393'5	2	84	4	...
45	374'5	3	85	4	...
46	362'5	3	86	4	...
47	338'5	5	87	4	...
48	310	3	88	4	1
49	289'5	1	89	2	...
			90	2	2
	14,229	93		17,834	177

TABLE X.
FEMALE LIVES.—EXPOSED TO RISK AND DIED AT
EACH AGE.

Age	Exposed to Risk	Died	Age	Exposed to Risk	Died
				3,685'5	25
11	'5	...	50	183	3
12	1	...	51	180	2
13	3	...	52	175'5	2
14	7'5	...	53	171	1
			54	170	...
15	11	...			
16	13'5	...	55	166	5
17	15	...	56	156	1
18	18	...	57	154'5	1
19	22	...	58	154'5	4
			59	149'5	1
20	28'5	...			
21	31'5	...	60	147	2
22	36'5	...	61	140	1
23	45'5	...	62	133'5	5
24	50	...	63	125	3
			64	113'5	1
25	51'5	1			
26	57'5	...	65	109'5	2
27	69'5	...	66	97	3
28	80'5	...	67	85	2
29	90'5	1	68	77'5	1
			69	72	6
30	93'5	1			
31	100'5	1	70	60	2
32	107'5	1	71	56	4
33	112	2	72	49	5
34	119	2	73	41	3
			74	37	3
35	127'5	...			
36	135	...	75	33	2
37	144'5	...	76	30	3
38	155'5	...	77	25	2
39	164'5	2	78	22	1
			79	20	2
40	165	1			
41	166	1	80	18	3
42	169	2	81	14	1
43	172'5	...	82	10	3
44	178'5	1	83	7	1
			84	6	3
45	184'5	3			
46	187	1	85	2	1
47	192'5	1	86	1	1
48	193	1	...	...	...
49	185	3	...	...	...
	3,685'5	25		6,876'5	111

TABLE XI.

COMPARISON OF THE MORTALITY OF THE THREE CLASSES,
CLERGY, LAY, AND FEMALE.

PART I.—ALL YEARS OF ASSURANCE.

Ages	CLERGY			LAY			FEMALE		
	Exposed to Risk	Died	Rate of Mortality per cent	Exposed to Risk	Died	Rate of Mortality per cent	Exposed to Risk	Died	Rate of Mortality per cent
Under 20	...	...	...	496	1	·202	91·5	...	...
20-29	5,526·5	22	·398	4,245	21	·495	541·5	2	·369
30-39	27,941·5	120	·429	5,680·5	35	·616	1,259·5	9	·715
40-49	36,616	222	·606	3,807·5	36	·946	1,793	14	·781
50-59	30,086·5	430	1·429	2,112·5	28	1·325	1,660	20	1·205
60-69	16,830·5	503	2·989	1,131·5	33	2·916	1,100	26	2·364
70-79	5,949	398	6·690	312	19	6·090	373	27	7·239
80-89	777·5	132	16·977	47	2	4·255	58	13	22·414
90 & over	15	4	26·667	2	2	100·	...	...	...
	123,742·5	1,831	...	17,834	177	...	6,876·5	111	...

PART II.—EXCLUDING FIRST FIVE YEARS OF ASSURANCE.

Ages	CLERGY			LAY			FEMALE		
	Exposed to Risk	Died	Rate of Mortality per cent	Exposed to Risk	Died	Rate of Mortality per cent	Exposed to Risk	Died	Rate of Mortality per cent
Under 20	...	...	...	71	...	...	9	...	...
20-29	686	3	·437	1,194·5	7	·586	204·5	...	...
30-39	14,739	75	·509	3,569·5	30	·840	694·5	4	·576
40-49	28,614	185	·647	3,085·5	33	1·070	1,258·5	13	1·033
50-59	27,408	404	1·474	1,884·5	25	1·327	1,283·5	16	1·247
60-69	16,291	492	3·020	1,083	31	2·862	968·5	24	2·478
70-79	5,914	395	6·679	304·5	19	6·240	372	26	6·989
80-89	777·5	132	16·977	47	2	4·255	58	13	22·414
90 & over	15	4	26·667	2	2	100·	...	...	...
	94,444·5	1,690	...	11,241·5	149	...	4,848·5	96	...

TABLE XII.

TABLE OF MORTALITY—CLERGY.

NUMBER LIVING AND DYING AT EACH AGE, OUT OF 10,000
ENTERING AT AGE 23; ALSO PROBABILITIES OF LIVING
AND DYING IN A YEAR, AND EXPECTATION OF LIFE.

Age	Number Living	Number Dying	Probability of living a year	Probability of dying in a year	Expectation of life
23	10,000	0	1'00000	'00000	45'82
24	10,000	38	'99620	'00380	44'82
25	9,962	39	'99603	'00397	43'99
26	9,923	39	'99612	'00388	43'16
27	9,884	66	'99327	'00673	42'33
28	9,818	31	'99691	'00309	41'61
29	9,787	31	'99683	'00317	40'74
30	9,756	21	'99785	'00215	39'87
31	9,735	41	'99575	'00425	38'95
32	9,694	29	'99702	'00298	38'11
33	9,665	34	'99651	'00349	37'23
34	9,631	35	'99640	'00360	36'35
35	9,596	35	'99629	'00371	35'49
36	9,561	61	'99362	'00638	34'62
37	9,500	41	'99571	'00429	33'83
38	9,459	47	'99499	'00501	32'98
39	9,412	51	'99457	'00543	32'14
40	9,361	55	'99417	'00583	31'32
41	9,306	38	'99591	'00409	30'49
42	9,268	60	'99356	'00644	29'62
43	9,208	49	'99465	'00535	28'81
44	9,159	39	'99569	'00431	27'96
45	9,120	40	'99567	'00433	27'08
46	9,080	79	'99133	'00867	26'19
47	9,001	64	'99287	'00713	25'42
48	8,937	72	'99196	'00804	24'60
49	8,865	57	'99350	'00650	23'79
50	8,808	91	'98970	'01030	22'94
51	8,717	87	'99005	'00995	22'18
52	8,630	93	'98918	'01082	21'40
53	8,537	111	'98697	'01303	20'62
54	8,426	112	'98677	'01323	19'89
55	8,314	145	'98249	'01751	19'15
56	8,169	133	'98378	'01622	18'48
57	8,036	140	'98261	'01739	17'78
58	7,896	143	'98178	'01822	17'09
59	7,753	156	'97989	'02011	16'39

TABLE XII.—*Continued.*

Age	Number Living	Number Dying	Probability of living a year	Probability of dying in a year.	Expectation of life
60	7,597	163	·97859	·02141	15·72
61	7,434	152	·97948	·02052	15·05
62	7,282	196	·97312	·02688	14·36
63	7,086	106	·98500	·01500	13·74
64	6,980	216	·96910	·03090	12·94
65	6,764	239	·96473	·03527	12·34
66	6,525	276	·95756	·04244	11·77
67	6,249	251	·95985	·04015	11·27
68	5,998	245	·95917	·04083	10·72
69	5,753	261	·95473	·04527	10·15
70	5,492	204	·96280	·03720	9·61
71	5,288	259	·95097	·04903	8·96
72	5,029	332	·93400	·06600	8·40
73	4,697	347	·92603	·07397	7·96
74	4,350	262	·93980	·06020	7·55
75	4,088	327	·92000	·08000	7·01
76	3,761	315	·91621	·08379	6·57
77	3,446	252	·92699	·07301	6·13
78	3,194	390	·87786	·12214	5·57
79	2,804	298	·89374	·10626	5·27
80	2,506	340	·86417	·13583	4·84
81	2,166	318	·85350	·14650	4·52
82	1,848	344	·81356	·18644	4·22
83	1,504	351	·76667	·23333	4·07
84	1,153	149	·87097	·12903	4·15
85	1,004	149	·85106	·14894	3·69
86	855	214	·75000	·25000	3·25
87	641	103	·84000	·16000	3·17
88	538	149	·72222	·27778	2·68
89	389	142	·63636	·36364	2·52
90	247	82	·66667	·33333	2·67
91	165	41	·75000	·25000	2·75
92	124	62	·50000	·50000	2·50
93	62	0	1·00000	·00000	3·50
94	62	0	1·00000	·00000	2·50
95	62	0	1·00000	·00000	1·50
96	62	62	·00000	1·00000	·50

TABLE XIII.

ADJUSTED TABLE OF CLERGY MORTALITY.

Age	Number Living	Number Dying	Probability of living a year	Probability of dying in a year	Expectation of life
23	100,000	340	'99660	'00340	45'76
24	99,660	342	'99658	'00342	44'91
25	99,318	342	'99655	'00345	44'07
26	98,976	346	'99651	'00349	43'22
27	98,630	349	'99646	'00354	42'37
28	98,281	355	'99640	'00360	41'52
29	97,926	360	'99633	'00367	40'67
30	97,566	365	'99625	'00375	39'81
31	97,201	373	'99616	'00384	38'96
32	96,828	381	'99606	'00394	38'11
33	96,447	390	'99595	'00405	37'26
34	96,057	399	'99583	'00417	36'41
35	95,658	411	'99570	'00430	35'56
36	95,247	423	'99556	'00444	34'71
37	94,824	433	'99542	'00458	33'86
38	94,391	445	'99528	'00472	33'01
39	93,946	457	'99514	'00486	32'17
40	93,489	468	'99500	'00500	31'32
41	93,021	479	'99485	'00515	30'48
42	92,542	491	'99469	'00531	29'63
43	92,051	505	'99451	'00549	28'79
44	91,546	521	'99430	'00570	27'94
45	91,025	546	'9940	'0060	27'10
46	90,479	579	'9936	'0064	26'26
47	89,900	629	'9930	'0070	25'43
48	89,271	678	'9924	'0076	24'60
49	88,593	735	'9917	'0083	23'79
50	87,858	808	'9908	'0092	22'98
51	87,050	887	'9898	'0102	22'19
52	86,163	983	'9886	'0114	21'41
53	85,180	1081	'9873	'0127	20'66
54	84,099	1186	'9859	'0141	19'92
55	82,913	1294	'9844	'0156	19'19
56	81,619	1388	'9830	'0170	18'49
57	80,231	1445	'9820	'0180	17'80
58	78,786	1457	'9815	'0185	17'12
59	77,329	1485	'9808	'0192	16'43

TABLE XIII.—*Continued.*

Age	Number Living	Number Dying	Probability of living a year	Probability of dying in a year	Expectation of life
60	75,844	1,540	.9797	.0203	15.74
61	74,304	1,628	.9781	.0219	15.06
62	72,676	1,744	.9760	.0240	14.39
63	70,932	1,879	.9735	.0265	13.73
64	69,053	2,037	.9705	.0295	13.09
65	67,016	2,211	.9670	.0330	12.47
66	64,805	2,332	.9640	.0360	11.88
67	62,473	2,430	.9611	.0389	11.30
68	60,043	2,504	.9583	.0417	10.74
69	57,539	2,549	.9557	.0443	10.18
70	54,990	2,585	.953	.047	9.63
71	52,405	2,621	.950	.050	9.08
72	49,784	2,738	.945	.055	8.54
73	47,046	2,917	.938	.062	8.00
74	44,129	3,090	.930	.070	7.50
75	41,039	3,201	.922	.078	7.03
76	37,838	3,254	.914	.086	6.58
77	34,584	3,250	.906	.094	6.15
78	31,334	3,228	.897	.103	5.74
79	28,106	3,176	.887	.113	5.34
80	24,930	3,141	.874	.126	4.95
81	21,789	3,051	.860	.140	4.60
82	18,738	2,904	.845	.155	4.26
83	15,834	2,708	.829	.171	3.95
84	13,126	2,467	.812	.188	3.66
85	10,659	2,196.1	.794	.206	3.40
86	8,462.9	1,904.2	.775	.225	3.15
87	6,558.7	1,606.8	.755	.245	2.92
88	4,951.9	1,317.2	.734	.266	2.70
89	3,634.7	1,046.8	.712	.288	2.50
90	2,587.9	804.8	.689	.311	2.31
91	1,783.1	597.4	.665	.335	2.12
92	1,185.7	426.83	.640	.360	1.94
93	758.87	295.96	.610	.390	1.75
94	462.91	199.05	.570	.430	1.55
95	263.86	127.97	.515	.485	1.33
96	135.89	76.10	.440	.560	1.12
97	59.79	39.461	.340	.660	.91
98	20.329	16.060	.210	.790	.71
99	4.269	4.269	.000	1.000	.50

TABLE XIV.

COMMUTATION COLUMNS **D** AND **N**, AND VALUE OF AN ANNUITY OF 1 AT END OF EACH YEAR OF LIFE (*a*). INTEREST 3 PER CENT.

ADJUSTED TABLE OF CLERGY MORTALITY.

Age	D	N	<i>a</i>	Age	D	N	<i>a</i>
23	50,669	1,192,092	23'527	60	12,873	147,630	11'468
24	49,026	1,143,066	23'316	61	12,244	135,386	11'057
25	47,435	1,095,631	23'097	62	11,627	123,759	10'644
26	45,894	1,049,737	22'872	63	11,018	112,741	10'233
27	44,402	1,005,335	22'641	64	10,414	102,327	9'827
28	42,957	962,378	22'404	65	9,812'1	92,515'2	9'429
29	41,555	920,823	22'159	66	9,211'9	83,303'3	9'043
30	40,196	880,627	21'908	67	8,621'8	74,681'5	8'662
31	38,879	841,748	21'650	68	8,045'1	66,636'4	8'283
32	37,602	804,146	21'386	69	7,485'0	59,151'4	7'903
33	36,363	767,783	21'114	70	6,945'0	52,206'4	7'517
34	35,161	732,622	20'836	71	6,425'8	45,780'6	7'125
35	33,995	698,627	20'551	72	5,926'7	39,853'9	6'724
36	32,863	665,764	20'259	73	5,437'5	34,416'4	6'329
37	31,764	634,000	19'960	74	4,951'9	29,464'5	5'950
38	30,699	603,301	19'652	75	4,471'1	24,993'4	5'590
39	29,664	573,637	19'338	76	4,002'2	20,991'2	5'245
40	28,660	544,977	19'016	77	3,551'5	17,439'7	4'911
41	27,685	517,292	18'684	78	3,124'0	14,315'7	4'583
42	26,741	490,551	18'344	79	2,720'6	11,595'1	4'262
43	25,824	464,727	17'996	80	2,342'8	9,252'3	3'949
44	24,934	439,793	17'638	81	1,988'0	7,264'3	3'654
45	24,070	415,723	17'271	82	1,659'9	5,604'4	3'376
46	23,230	392,493	16'896	83	1,361'8	4,242'6	3'116
47	22,408	370,085	16'516	84	1,096'0	3,146'6	2'871
48	21,603	348,482	16'131	85	864'05	2,282'51	2'642
49	20,815	327,667	15'742	86	666'07	1,616'44	2'427
50	20,041	307,626	15'350	87	501'16	1,115'28	2'225
51	19,278	288,348	14'957	88	367'36	747'92	2'036
52	18,526	269,822	14'564	89	261'79	486'13	1'857
53	17,782	252,040	14'174	90	180'97	305'16	1'686
54	17,044	234,996	13'788	91	121'05	184'107	1'521
55	16,314	218,682	13'404	92	78'157	105'950	1'356
56	15,592	203,090	13'025	93	48'564	57'386	1'181
57	14,881	188,209	12'648	94	28'761	28'625	'995
58	14,187	174,022	12'266	95	15'916	12'709	'799
59	13,519	160,503	11'872	96	7'958	4'751	'597
				97	3'400	1'351	'397
				98	1'122	'229	'204
				99	'229	...	...

TABLE XV.

EXPECTATION OF LIFE ACCORDING TO THE SOCIETY'S
EXPERIENCE, AND OTHER TABLES OF MORTALITY.

Ages	SOCIETY'S EXPERIENCE		Hodgson's Clergy Table	Carlisle	HM	English Life Table No. 3 (males)	Government Male Annuitants 1883
	General	Clergy					
20	47'64	...	...	41'46	42'06	39'48	...
25	43'69	43'99	40'83	37'86	38'41	36'12	...
30	39'64	39'87	36'86	34'34	34'68	32'76	...
35	35'44	35'49	32'94	31'00	31'02	29'40	...
40	31'27	31'32	29'05	27'61	27'40	26'06	...
45	27'11	27'08	25'23	24'46	23'79	22'76	...
50	23'01	22'94	21'58	21'11	20'31	19'54	20'51
55	19'26	19'15	18'13	17'58	16'96	16'45	17'57
60	15'77	15'72	14'94	14'34	13'83	13'53	14'61
65	12'36	12'34	12'05	11'79	11'01	10'82	11'57
70	9'62	9'61	9'50	9'18	8'50	8'45	8'95
75	7'05	7'01	7'34	7'01	6'38	6'49	6'84
80	4'87	4'84	5'66	5'51	4'72	4'93	5'05
85	3'68	3'69	4'46	4'12	3'51	3'73	3'68
90	2'12	2'67	3'62	3'28	2'36	2'84	2'68

TABLE XVI.

AMOUNTS EXPOSED TO RISK, CLAIMS BY DEATH, AND
RATE OF CLAIM PER CENT, AT EACH AGE.
GENERAL EXPERIENCE (CLERGY, LAY, AND FEMALE).

Age	Amounts Exposed to Risk	Claims by death	Rate of Claim per cent	Age	Amounts Exposed to Risk	Claims by death	Rate of Claim per cent
10-14	£ 57,482	£ ...	...		£ 120,975,654	£ 820,690	...
15-19	427,466	300	·070	55	4,289,899	69,302	1·615
20	175,058	300	·171	56	4,121,314	46,959	1·139
21	216,114	150	·069	57	3,934,611	62,554	1·590
22	281,919	200	·071	58	3,781,160	65,846	1·741
23	413,433	1,008	·244	59	3,572,028	49,872	1·396
24	614,427	800	·130	60	3,373,396	73,065	2·166
25	889,974	1,700	·191	61	3,202,176	52,595	1·642
26	1,210,810	4,318	·357	62	3,021,968	63,243	2·093
27	1,525,786	9,004	·590	63	2,862,333	32,136	1·123
28	1,841,595	5,840	·317	64	2,717,411	75,644	2·784
29	2,197,618	5,650	·257	65	2,517,818	78,432	3·115
30	2,553,402	12,524	·490	66	2,326,520	86,510	3·718
31	2,873,992	20,746	·722	67	2,162,811	82,603	3·819
32	3,164,775	9,029	·285	68	1,981,557	87,338	4·408
33	3,482,557	11,913	·342	69	1,796,303	67,948	3·783
34	3,769,971	8,677	·230	70	1,645,056	51,604	3·137
35	4,002,639	13,550	·339	71	1,520,355	69,947	4·601
36	4,191,825	21,000	·501	72	1,396,114	75,061	5·376
37	4,378,958	20,630	·471	73	1,248,549	84,584	6·775
38	4,551,258	20,700	·455	74	1,103,366	66,410	6·019
39	4,658,540	21,991	·472	75	993,338	62,645	6·307
40	4,837,195	27,567	·570	76	888,654	64,437	7·251
41	4,882,065	23,092	·473	77	779,375	51,326	6·585
42	4,984,592	45,451	·912	78	693,747	86,550	12·476
43	5,009,022	30,839	·616	79	578,998	55,969	9·666
44	5,071,786	22,761	·449	80	469,957	55,540	11·818
45	5,116,438	34,766	·679	81	386,463	61,524	15·920
46	5,100,875	30,218	·592	82	286,333	41,375	14·450
47	5,092,122	45,627	·896	83	240,996	57,268	23·763
48	5,027,494	35,203	·700	84	172,802	25,662	14·851
49	4,944,302	41,599	·841	85	123,414	22,148	17·947
50	4,911,994	67,960	1·384	86	106,896	29,808	27·884
51	4,800,110	51,904	1·081	87	71,449	10,077	14·104
52	4,704,955	54,707	1·163	88	61,030	8,170	13·387
53	4,590,099	72,858	1·587	89	47,286	9,725	20·566
54	4,423,006	46,108	1·042	90	30,095	9,372	31·141
				91	22,398	1,328	5·929
				92	13,294	5,762	43·343
				93	7,532	...	...
				94	7,532	...	...
				95	9,077	...	...
	120,975,654	820,690	...		179,541,065	2,821,029	...

TABLE XVII.

AMOUNTS EXPOSED TO RISK, CLAIMS BY DEATH, RATE OF CLAIM PER CENT, AND EXPECTED CLAIMS BY CARLISLE TABLE, IN GROUPS OF AGES.

GENERAL EXPERIENCE (CLERGY, LAY, AND FEMALE).

Ages	Amounts Exposed to Risk	Claims by Death	Rate of Claim per cent	Expected Claims by Carlisle Table	Ratio of Actual to Expected Claims
	£	£		£	
Under 20	484,948	300	·062	3,232	·093
20-24	1,700,951	2,458	·145	11,979	·205
25-29	7,665,783	26,512	·346	64,901	·408
30-34	15,844,697	62,889	·397	160,469	·392
35-39	21,783,220	97,871	·449	238,973	·410
40-44	24,784,660	149,710	·604	349,896	·428
45-49	25,281,231	187,413	·741	363,414	·516
50-54	23,430,164	293,537	1·253	354,884	·827
55-59	19,699,012	294,533	1·495	429,938	·685
60-64	15,177,284	296,683	1·955	558,150	·532
65-69	10,785,009	402,831	3·735	478,590	·842
70-74	6,913,440	347,606	5·028	466,560	·745
75-79	3,934,112	320,927	8·158	414,172	·775
80-84	1,556,551	241,369	15·507	212,999	1·133
85-89	410,075	79,928	19·491	81,366	·982
90 & over	89,928	16,462	18·306	23,917	·688
Under 55	120,975,654	820,690	·678	1,547,748	·530
Over 55	58,565,411	2,000,339	3·416	2,665,692	·750
	179,541,065	2,821,029	1·571	4,213,440	·670

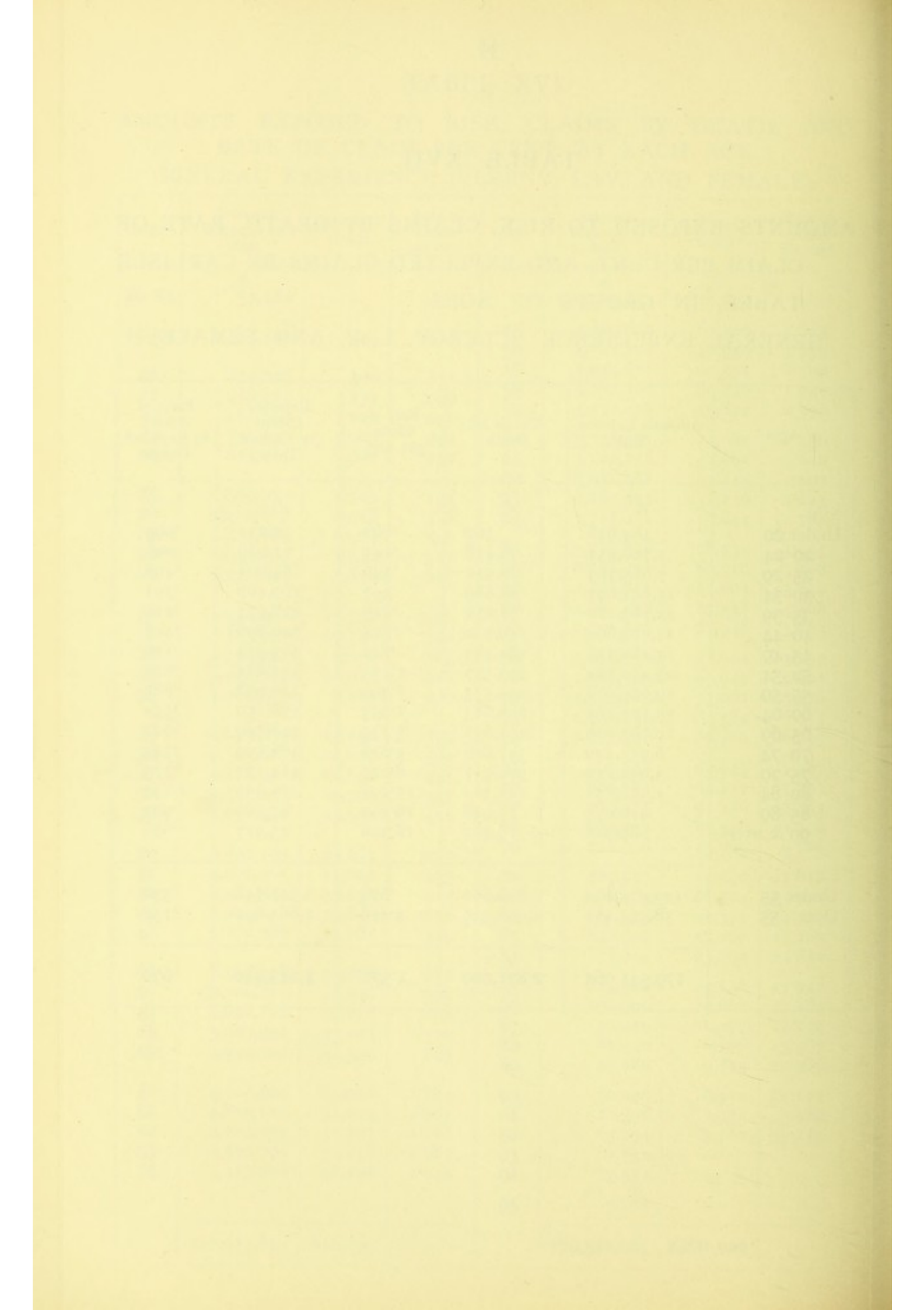
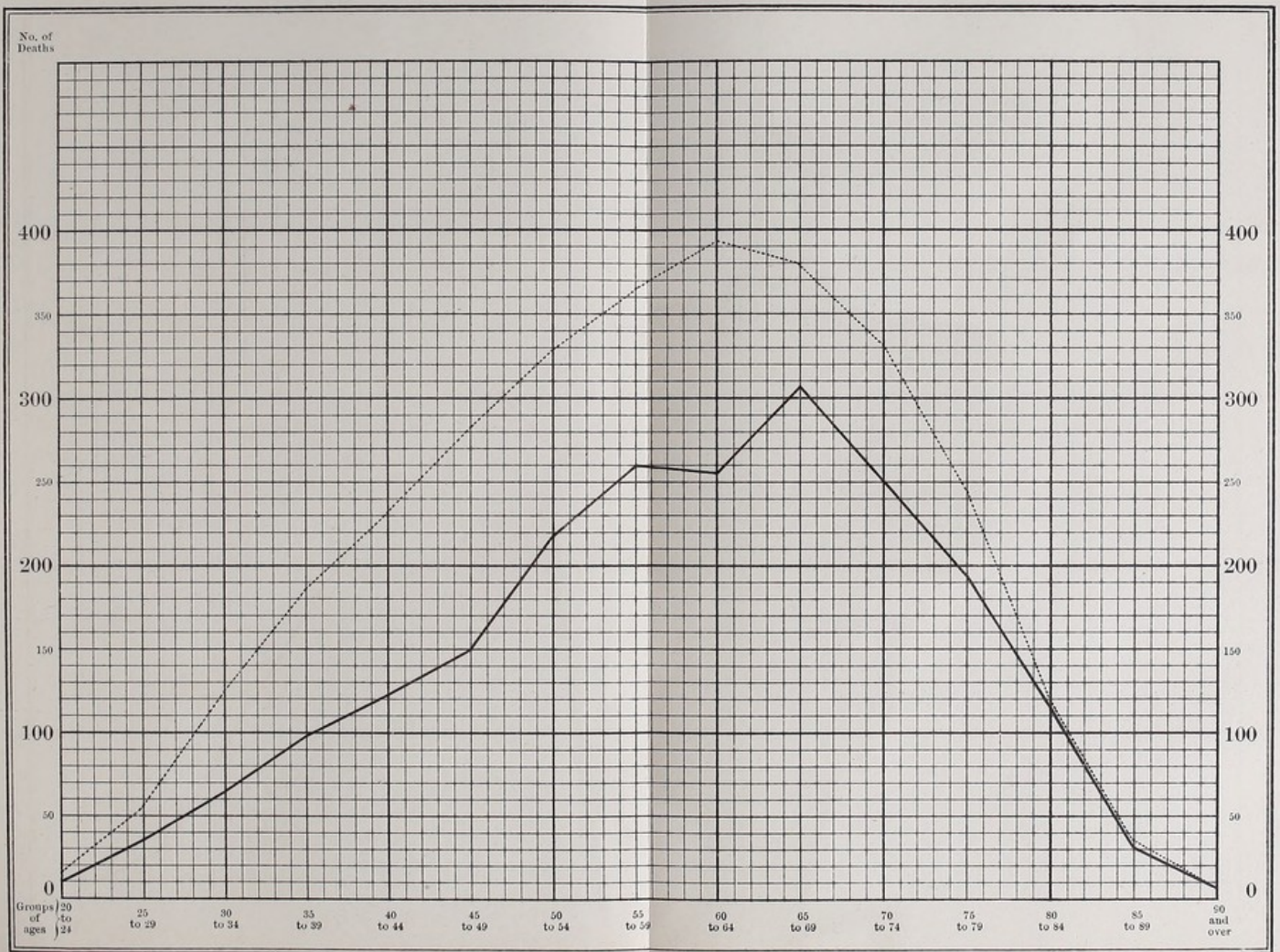


DIAGRAM I.

Comparison of the Actual Number of Deaths in each group of five ages with the Expected Number according to the Institute of Actuaries' H^M Table.

(Actual Number —————)

Expected Number).



Journal of the United States Fish Commission
Vol. 10, No. 1, 1901

Published by the United States Fish Commission
Washington, D. C.

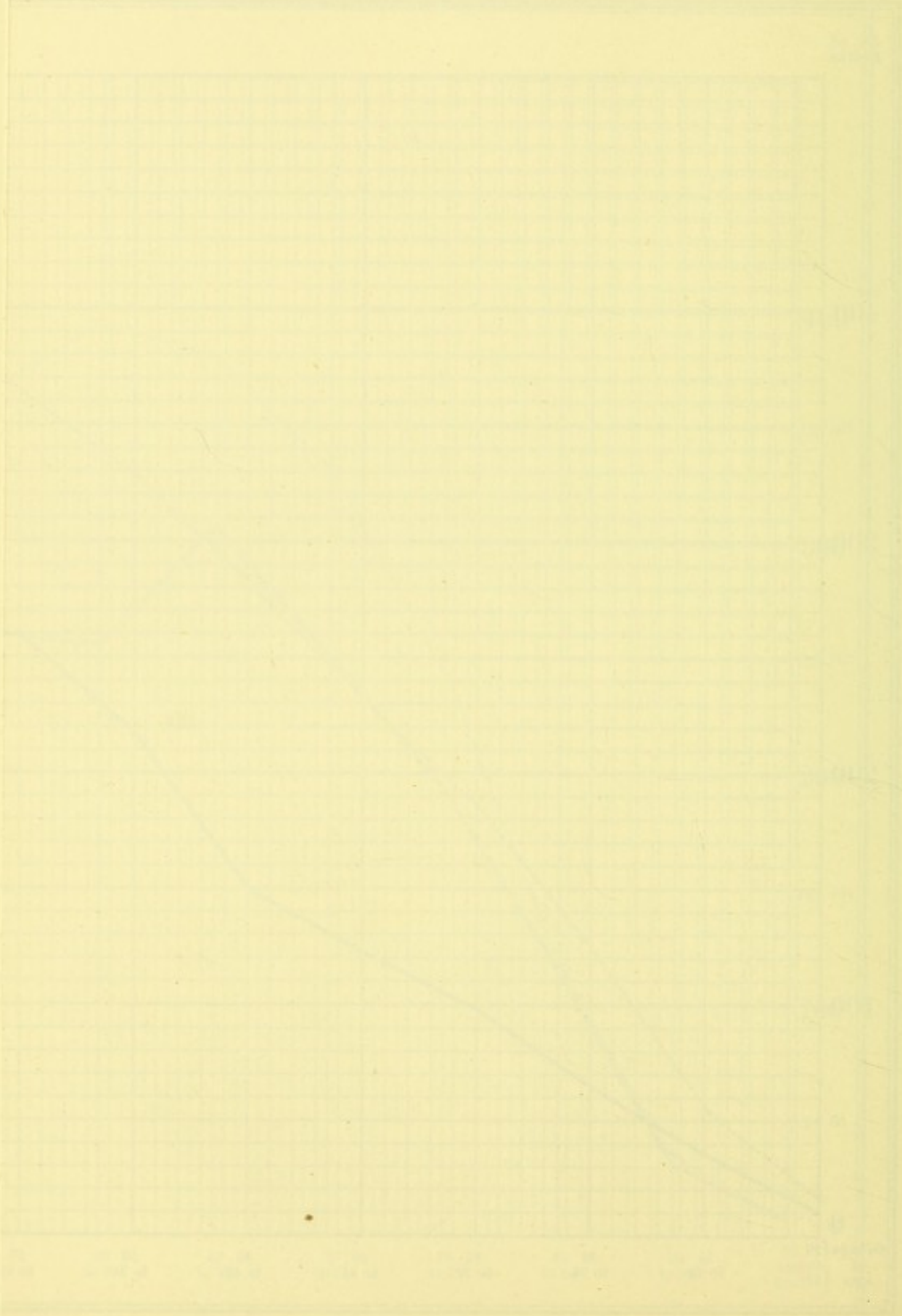
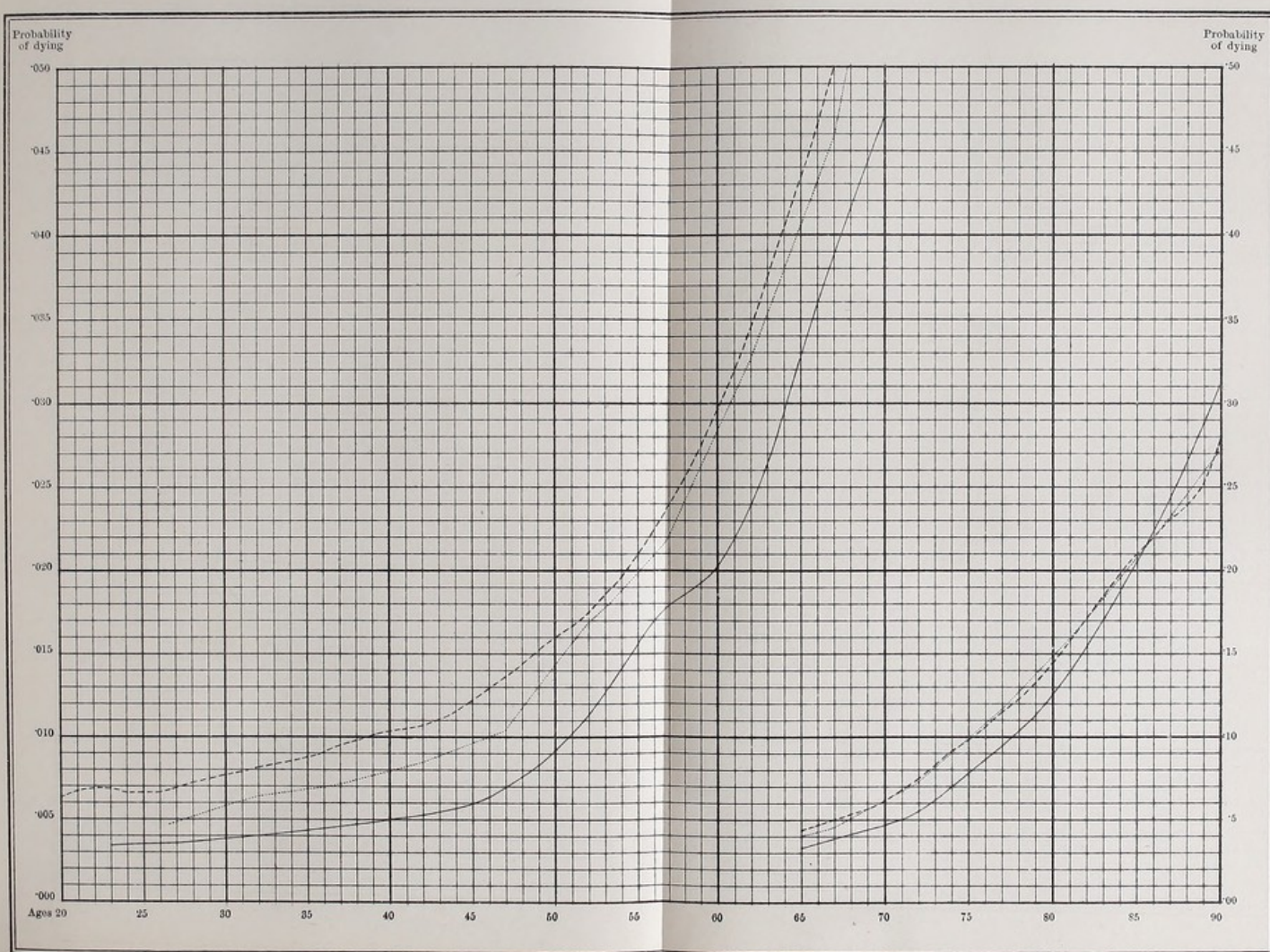


DIAGRAM II.

*Comparison of the Probabilities of Dying at each age according to the Society's adjusted Clergy Experience, the
Revd. JOHN HODGSON's Observations, and the Institute of Actuaries' H^M Table.*

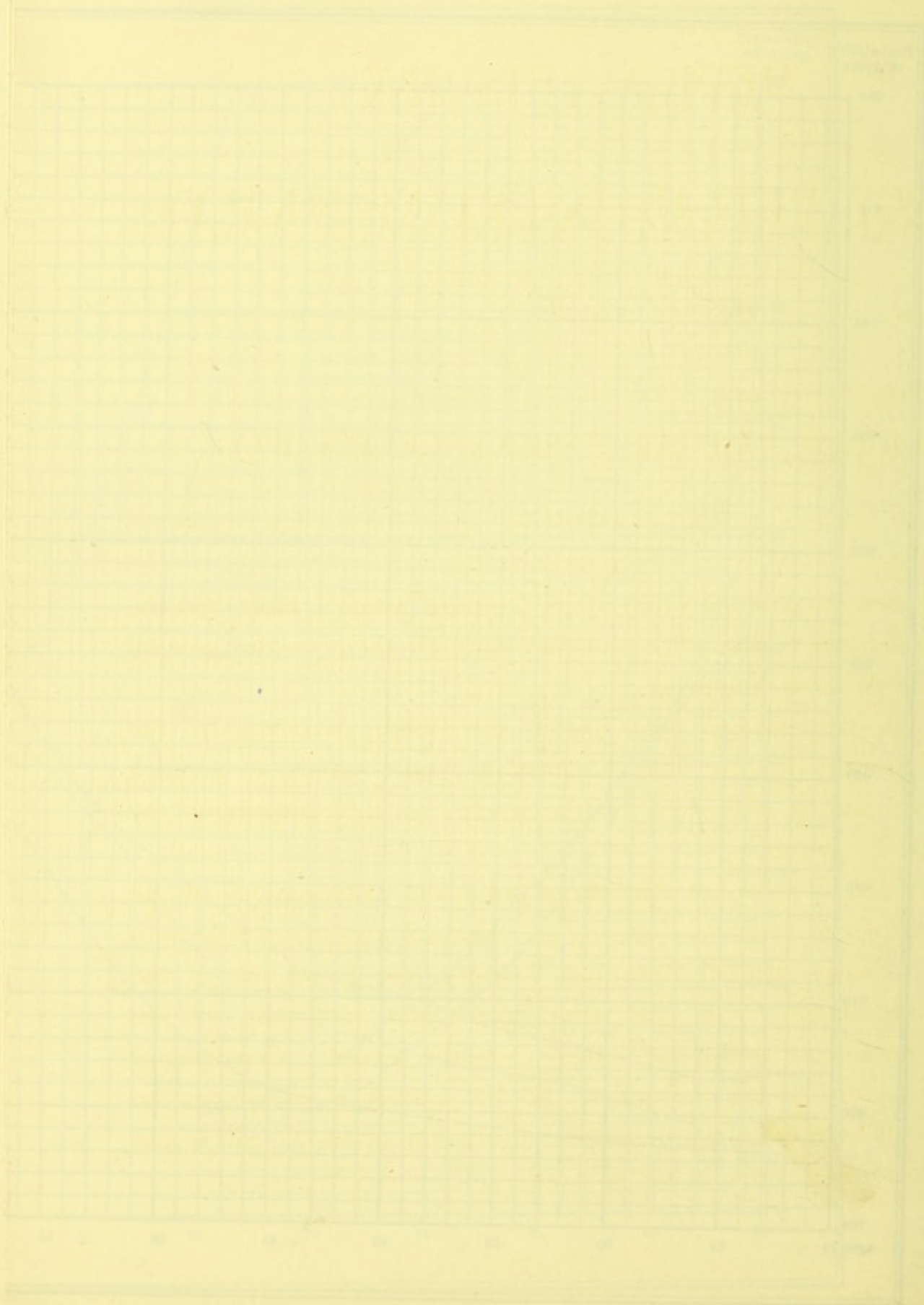
The Society's Clergy Experience _____
 Revd. John Hodgson's Observations
 Institute of Actuaries' H^M Table -----

[The ordinates in the second part of the diagram (ages 65 to 90) are on
 a scale one-tenth of that used in the first part.]



Journal of the Proceedings of the
General Assembly of the
Presbyterian Church of the United States
and of the
Foreign Missions of the
Same

Vol. 10. 1854.
Published by the
General Assembly, at the
City of New York.
1854.



REPORT
ON THE
MEDICAL HISTORY
OF THE
CLERGY MUTUAL ASSURANCE SOCIETY,
FROM 1829 TO 1887.

To the Directors of the

CLERGY MUTUAL ASSURANCE SOCIETY.

GENTLEMEN,

The present communication forms the third which I have had the honour to present to the Directors, and through them to the general body of the Assured Members.

On the two former occasions I was kindly assisted by the late Mr. Stewart Helder, but the present report stands on a much larger basis and is supported by the figures so ably contributed by Mr. Frank B. Wyatt.

There can be no doubt that these periodical examinations of the real results of the business done by an Office of the magnitude into which the Clergy Mutual Assurance Society has grown are of the greatest importance; and that they correspond medically to the financial statements which are issued from the actuarial department. But a step further can be taken and the causes of death can be analysed, not only in the aggregate but also in the divisions which can be made according to the causes of death.

The duty which devolves upon the Medical Officer is to divide the experience into separate sections, and to shew how far each particular cause of death has operated in increasing the general mortality, and at what ages such increase has occurred. It will therefore be a safe and prudent course to take, in the first case, the general results and subsequently to subdivide them according to particular diseases. It will be a further function to divide the deaths which have occurred to the number of 2119 among lives accepted as first-class into their special categories; and to compare them with the experience of other well-accredited offices.

There can be no doubt that in advanced periods of life certain forms of disease or degeneration are almost natural, and form a quiet calm and happy termination of a well-spent life. Among these especially we may name cerebral diseases.

Taking the totals from all causes it would appear that the experience of the Clergy Mutual Assurance Society is highly satisfactory, and this may be proved by selection of two or three prominent diseases. Phthisis for example stands in our list comprising a period of 58 years at only 112 deaths in a total of 2119 or 5·3 per cent. There can be no question that this low mortality from so common and fatal a disease depends in great measure upon medical selection. On the other hand the disease which is almost equally fatal, namely albuminuria, has caused in 58 years only 81 deaths, or 3·8 per cent, and here again the influence of medical selection is palpably evident. Nervous diseases stand in our list at 466 deaths, or 22 per cent of the total numbers of deaths. It may be safely therefore said that a very large percentage of our Assured Members have hitherto died from what is approximately a natural sequence of old age.

These views will be fully borne out by the annexed Tables Nos. I and II. The first table gives the deaths under a general classification and also the intensity of the mortality from each general cause at groups of ages, while the second shews the deaths from each specific disease. The next point to which attention should be drawn is the incidence of death in the twelve recognized classes of disease. The

greatest number of deaths recorded occur from nervous diseases and amount to 466 of which 255, or more than one half, were at ages over 60. The cause of death following next in order depends most naturally upon the respiratory and circulatory organs, which stand respectively at 382 and 315 deaths. Next to these stands the somewhat vague and diffuse class of diseases of the digestive system which accounts for 217 deaths.

It is very remarkable that urinary diseases, including that extremely common complaint known as Bright's disease, and marked by albuminuria, should stand so low in the list, namely 184 deaths. There can be very little doubt that this low mortality is due to the exclusion of doubtful lives. Diseases of uncertain seat stand at 167. Very close upon these comes natural decay with 133 deaths at ages chiefly between 70 and 90.

Bronchitis heads the list in class IV but even this amounts to a very insignificant total, namely 134 out of 2119 deaths and second to this comes phthisis with the extraordinary small record of 112 deaths, the former disease occurred chiefly at late periods of life, the phthisis however developed chiefly between the ages of 30 and 49. It is probable however that this figure ought to be raised by the addition of the hæmoptysis and hæmorrhage cases included in the table. Even then the total is for over half a century's experience really insignificant; and it may be hoped that the recent researches of Dr. Koch will materially diminish this hitherto over-dreaded hereditary cause of disease.

In diseases of the circulatory system the general denomination of "heart disease" stands prominently, but as a great part of the deaths occurred at ages over 60 they can hardly be regarded as an exceptional feature in the statistics. The vague term "angina pectoris," now discarded by scientific auscultators accounts for 34 deaths, and may be disregarded equally with all the other sub-divisions in this section of the table.

In the next class, that of diseases of the liver and other digestive organs, the table shows a very low mortality throughout, and in the

most important namely hepatitis agrees almost exactly with that of the Scottish Widows' Fund Society resting upon a basis of about one-third larger than that of the present report.

The first disease in the next class No. VII is diabetes and this stands, relatively to other causes of death and considering the comparative rarity of the disease, at a somewhat high figure, but almost all of these cases occurred in the later period of life, namely between 50 and 69.

The three next classes comprise so very few deaths that they hardly offer any opportunity for remark, with one exception that carbuncle represents 13 deaths, almost all in the period between 50 and 69.

The eleventh group on the other hand for a Society insuring the lives of men of regular habits and living in a tranquil condition cannot be regarded otherwise than exceptionally heavy, there being no less than 29 deaths by accident, 10 by drowning, 2 murdered and 17 by acknowledged suicide.

The twelfth class of natural decay and a few returned as unknown offer no ground for explanation.

Table III furnishes an interesting comparison between the Society's experience and that of some other societies, which have published their medical history. The table calls for no comment as the results can be ascertained by inspection. Epidemics stand very low indeed in the list and include only 128 deaths, a number proportionately much lower than the experience of the community at large. It should, however, be noted that violent deaths including suicide and accident represent a relatively high figure, namely 64.

It is now my duty to examine more minutely the different diseases named under the general headings given above.

In the first class, that of Epidemic and Infectious, the most remarkable point to be noticed is that with the exception of pyæmia the number of deaths under each title is utterly insignificant. Typhoid or enteric fever for example is represented by only 24 deaths. The only explanation of this astonishing deficiency in the number of deaths

from this disease is that it is a disease of youth more than old age, and that a large proportion of the Assured Members of the Society enter at an age at which much of this risk has been eliminated.

As regards the one exception, pyæmia, it is reasonable to suppose that in the certificates upon which this class was founded the proximate and final cause of death alone was given, but that the pyæmic condition rested ultimately upon some organic disease not stated in the documents to which I had access.

The remarks made upon class I apply with exactly the same force to class II, the numbers being all extremely small with the exception of the somewhat vague designation of "cancer" to which 102 deaths were attributed.

It has been as I believe erroneously stated that diseases included under the head of cancer are increasing. This statement as Medical Officer to a large Hospital I beg leave on my personal responsibility distinctly to contradict. In the 600 beds of St. Thomas's Hospital within the last 20 years cases of cancerous disease have not increased but on the whole perhaps somewhat diminished, and there is reasonable ground to hope from recent researches that the mortality from this somewhat rare but deadly disease may be materially diminished.

Taking now section III there is still little to be noted beyond the exiguity of the totals. Enough has been already said about apoplexy and hemiplegia under the general head of nervous diseases. The only comment which seems necessary is that no more than 12 deaths occurred from general paralysis, a disease to which much attention has been drawn of late years.

The next Table No. 4 has been constructed in order to shew the number of deaths in each class in relation to the duration of the assurances. What it shews is, that the age at death is only one factor in the consideration of the character of the recorded experience, and that the duration of assurance is in some respects more important. The second part of the table shews the rate of mortality per cent. in each class of disease in successive groups of years of assurance, comprising five years in each class. The rate of mortality would naturally

increase with the increased duration of assurance as the average age attained continuously increases, but it will not fail to be observed that in certain classes, notably classes III IV and V, the increase is more rapid than in others. As there are few deaths from epidemics recorded at the higher ages the rate of mortality reaches a maximum and subsequently declines.

Tables I to IV deal exclusively with "healthy" lives, Clergy, Lay, and Female, accepted at the ordinary rate of premium. Table No. V is added shewing the deaths in each class of disease among the lives accepted by the Society at an increased rate of premium, and which for the purpose of distinction have been called "unhealthy" lives. The numbers are so small as to hardly afford a basis for detailed comment.

I have to offer my sincere thanks to the Directors and through them to the general body of Assured Members for giving me the opportunity of completing a record of medical statistics commenced by me nearly twenty years ago.

I have the honour to be, Gentlemen,

Your obedient Servant,

WILLIAM H. STONE, F.R.C.P.

CLERGY MUTUAL ASSURANCE SOCIETY,

2 & 3, THE SANCTUARY, WESTMINSTER, S.W.

9th December, 1890.

TABLES.

TABLE I.

SHEWING THE NUMBERS EXPOSED TO RISK AND THE NUMBER
IN CLASSES; AND THE MORTALITY PER CENT

CAUSE OF DEATH	NUMBER							
	148,453		5875		10,313		34,81	
	ALL AGES		UNDER 20		AGES 20-29		AGES	
	Deaths	Mortality per cent	Deaths	Mortality per cent	Deaths	Mortality per cent	Deaths	Mortality per cent
I. Epidemic & Infectious Diseases	128	·086	1	·170	8	·078	22	·063
II. Diseases of uncertain seat .	167	·112	...	...	...	...	5	·014
III. „ nervous system .	466	·314	...	...	6	·058	34	·097
IV. „ respiratory organs .	382	·257	...	...	17	·165	51	·147
V. „ organs of circulation	315	·212	...	...	...	...	9	·026
VI. „ digestive organs .	217	·146	...	...	4	·039	21	·060
VII. „ urinary organs .	184	·124	...	...	2	·019	6	·017
VIII. „ organs of generation	5	·003	...	...	1	·010	1	·003
IX. „ organs of locomotion	18	·012	...	...	...	...	1	·003
X. „ integumentary system	13	·009	...	...	...	...	2	·006
XI. Violent deaths and accidents .	64	·043	...	...	5	·048	9	·026
XII. Natural decay, old age, and causes unknown)	160	·109	...	...	2	·019	3	·009
	2,119	1·427	1	·170	45	·436	164	·479

TABLE I.

HS IN DECENNIAL GROUPS OF AGES; THE CAUSES OF DEATH
CLASS OF DISEASE AT EACH GROUP OF AGES.

AT RISK										
16.5	33,859		19,062		6,634		882.5		17	
40-49	AGES 50-59		AGES 60-69		AGES 70-79		AGES 80-89		AGES 90 & OVER	
Mortality per cent	Deaths	Mortality per cent	Deaths	Mortality per cent	Deaths	Mortality per cent	Deaths	Mortality per cent	Deaths	Mortality per cent
.054	41	.121	23	.121	8	.121	1	.113	1	5.882
.054	31	.092	63	.330	40	.603	5	.567	...	...
.135	114	.337	134	.703	102	1.538	19	2.153	...	...
.159	84	.248	70	.367	70	1.055	22	2.493	1	5.882
.062	73	.216	109	.572	80	1.206	18	2.040	...	...
.066	53	.157	61	.320	47	.708	3	.340	...	...
.043	45	.133	62	.325	35	.528	15	1.700	1	5.882
.005	1	.003	...	...	...	...	...	...	...	...
.007	5	.015	7	.037	1	.015	1	.113	...	...
.002	6	.018	3	.016	1	.015	...	...	...	...
.043	17	.050	13	.068	1	.015	1	.113	...	...
.014	8	.022	17	.089	59	.889	62	7.025	3	17.648
.644	478	1.412	562	2.948	444	6.693	147	16.657	6	35.294

TABLE II.

SHEWING THE DISEASES OF WHICH PERSONS ASSURED BY THE SOCIETY HAVE DIED, AND THE AGE, BY DECENNIAL PERIODS, AT WHICH DEATH OCCURRED.

CAUSES OF DEATH	Total Deaths	AGE AT DEATH								
		Under 20	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90 & ove
I. EPIDEMIC AND INFECTIOUS.										
Cholera	2	...	...	1	...	...	1	...	...	...
Diarrhoea	13	...	1	...	1	4	4	3	...	...
Diphtheria	7	1	1	2	2	1	...	...	...	...
Dysentery	5	...	...	1	1	2	1	...	...	...
Erysipelas.	15	...	...	1	2	8	2	1	1	...
Fevers:—										
Ague and remittent	9	...	...	4	...	5	...	...	...	...
Enteric	24	...	2	2	6	7	5	2	...	...
Rheumatic	2	...	...	1	1	...	...	...	...	...
Typhus	10	...	1	4	...	4	1	...	...	...
Yellow	1	...	1	...	...	...	...	...	...	...
Not described	16	...	2	3	2	6	1	2	...	...
Influenza	4	...	...	...	...	...	3	...	...	1
Pyæmia	12	...	...	...	4	3	5	...	...	...
Scarlatina	6	...	...	3	3	...	...	...	...	...
Small-pox.	2	...	...	...	1	1	...	...	...	...
	128	1	8	22	23	41	23	8	1	1
II. UNCERTAIN SEAT.										
Abscess	3	...	...	...	...	...	2	1	...	...
Anæmia	4	...	...	...	...	1	3	...	...	...
do. perniciosa	2	...	...	...	...	...	1	1	...	...
Atrophy	5	...	...	...	...	...	5	...	...	...
do. progressive muscular	2	...	...	...	...	...	1	1	...	...
Cancer	102	...	...	4	17	25	33	21	2	...
Dropsy	5	...	...	...	2	...	2	1	...	...
Gangrene	15	...	...	...	...	3	5	6	1	...
Gout	15	...	...	...	...	1	6	6	2	...
Leucocythæmia	1	...	...	...	...	...	1	...	...	...
Lymphadenoma	2	...	...	...	1	...	1	...	...	...
Phagedæna	1	...	...	...	...	...	1	...	...	...
Purpura	4	...	...	1	1	...	1	1	...	...
Tuberculosis	1	...	...	...	...	...	1	...	...	...
Tumour	5	...	...	...	2	1	...	2	...	...
	167	...	...	5	23	31	63	40	5	...

TABLE II.—Continued.

CAUSES OF DEATH	Total Deaths	AGE AT DEATH								
		Under 20	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90 & over
I. NERVOUS SYSTEM.										
Apoplexy	155	...	1	6	14	47	50	28	9	...
Do. serous	11	...	...	1	1	2	2	5	...	...
Cerebral Aneurism	1	...	...	...	...	1	...	...	...	...
Delirium Tremens	1	...	...	1	...	...	...	...	...	...
Disease of Brain, Softening, &c.	138	...	4	13	24	30	31	32	4	...
Epilepsy	13	...	...	3	3	2	2	2	1	...
Insanity	5	...	...	2	1	...	...	2	...	...
Locomotor ataxy	6	...	...	...	...	3	3	...	...	...
Mania	4	...	...	...	1	2	1	...	...	...
Meningitis	3	...	1	2	...	...	...	...	...	...
Paralysis	86	...	...	2	6	14	36	25	3	...
(a) General paralysis	12	...	...	2	5	4	...	1	...	...
(b) Hemiplegia	20	...	...	...	1	6	7	5	1	...
(c) Paraplegia	11	...	...	2	1	3	2	2	1	...
	466	...	6	34	57	114	134	102	19	...
II. RESPIRATORY ORGANS.										
Asthma	3	...	...	...	...	...	2	1	...	...
Bronchitis	134	...	...	3	9	27	30	49	16	...
Emphysema	5	...	...	...	...	...	2	3	...	...
Hæmoptysis	14	...	1	4	4	4	1	...	...	...
Hæmorrhage	3	...	...	1	...	...	1	1	...	...
Laryngitis and quinsy	9	...	...	2	1	1	3	1	1	...
Phthisis	112	...	12	32	32	27	7	2	...	...
Pleurisy and hydrothorax	10	...	2	...	2	1	2	2	1	...
Pneumonia	90	...	2	9	19	24	21	10	4	1
Pneumo-thorax	1	...	...	...	...	...	...	1	...	...
Thoracic tumour	1	...	...	...	...	...	1	...	...	...
	382	...	17	51	67	84	70	70	22	1
III. ORGANS OF CIRCULATION.										
Aneurism	10	...	...	1	4	3	1	1	...	...
Angina	34	...	...	...	3	11	13	6	1	...
Atheroma	1	...	...	...	...	...	...	1	...	...
Disease of heart	245	...	...	6	19	54	85	64	17	...
Embolism	5	...	...	1	...	...	1	3	...	...
Endocarditis	2	...	...	...	...	1	...	1	...	...
Fatty degeneration of heart	16	...	...	1	...	3	9	3	...	...
Pericarditis	1	...	...	...	...	1	...	...	...	...
Phlebitis	1	...	...	...	...	...	...	1	...	...
	315	...	...	9	26	73	109	80	18	..

TABLE II.—*Continued.*

CAUSES OF DEATH	Total Deaths	AGE AT DEATH								
		Under 20	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90 & over
VI. DIGESTIVE ORGANS.										
Ascites	12	...	...	...	...	2	4	6	...	...
Cirrhosis	15	...	...	2	1	5	2	5	...	...
Disease of liver	16	...	...	2	4	3	4	3	...	...
Disease of stomach and bowels .	40	...	...	8	7	7	13	5	...	...
Dyspepsia	3	...	...	...	...	1	1	1	...	...
Enteritis	7	...	2	1	...	...	...	3	1	...
Fistula	1	...	...	...	...	1	...	...	...	...
Hepatic abscess	4	...	...	1	1	1	1	...	...	...
Hepatitis	38	...	2	2	8	11	13	2	...	...
Hernia	2	...	...	...	...	...	1	1	...	...
Hæmatemesis	15	...	...	1	1	3	6	2	2	...
Jaundice and gall-stones	18	...	...	...	2	3	4	9	...	...
Obstruction of bowels	32	...	...	1	2	8	11	10	...	...
Peritonitis	11	...	...	3	1	7	...	...	...	...
Pharyngitis	1	...	...	...	...	...	1	...	...	...
Splenic	2	...	...	...	1	1	...	...	...	...
	217	...	4	21	28	53	61	47	3	...
VII. URINARY ORGANS.										
Diabetes	33	...	...	3	3	13	11	3	...	...
Disease of bladder	30	...	...	...	...	1	15	10	4	...
Disease of testicle	1	...	...	...	1	...	...	...	...	...
Hæmaturia	3	...	...	...	1	...	1	1	...	...
Prostatic	26	...	...	...	...	2	7	8	8	1
Pyelitis	1	...	...	1	...	...	...	...	...	...
Renal	81	...	2	1	12	28	25	11	2	...
Supra-renal	3	...	...	1	...	1	...	1	...	...
Suppression of urine	3	...	...	...	1	...	1	...	1	...
Stone	3	...	...	...	...	...	2	1	...	...
	184	...	2	6	18	45	62	35	15	1
VIII. ORGANS OF GENERATION.										
Childbirth	3	...	1	1	1	...	...	...	...	...
Ovarian	2	...	...	...	1	1	...	...	...	...
	5	...	1	1	2	1	...	...	...	...

TABLE II.—Continued.

CAUSES OF DEATH	Total Deaths	AGE AT DEATH								
		Under 20	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90 & over
K. ORGANS OF LOCOMOTION.										
Hip disease	I	...	...	I	...	...	...	...	...	...
Lumbar abscess	I	...	...	...	...	I	...	...	...	...
Rheumatism	5	...	...	...	2	...	I	I	I	...
Spinal	II	...	...	...	I	4	6	...	...	...
	18	...	...	I	3	5	7	I	I	...
L. INTEGUMENTARY SYSTEM.										
Carbuncle	13	...	...	2	I	6	3	I	...	...
I. VIOLENT DEATHS & ACCIDENTS.										
Accident	29	...	2	6	7	6	7	...	I	...
Drowned	10	...	2	...	4	2	2	...	...	...
Killed in war	I	...	...	...	I	...	...	...	...	...
Murdered	2	...	I	I	...	...	...	...	...	...
Sudden	5	...	...	...	I	3	I	...	...	...
Suicide	17	...	...	2	5	6	3	I	...	...
	64	...	5	9	18	17	13	I	I	...
II. NATURAL DECAY, OLD AGE, AND UNKNOWN.										
Old age and debility	133	...	...	...	...	2	10	57	61	3
Unknown	27	...	2	3	6	6	7	2	I	...
	160	...	2	3	6	8	17	59	62	3
SUMMARY.										
Class I.	128	I	8	22	23	41	23	8	I	I
" II.	167	...	...	5	23	31	63	40	5	...
" III.	466	...	6	34	57	114	134	102	19	...
" IV.	382	...	17	51	67	84	70	70	22	I
" V.	315	...	...	9	26	73	109	80	18	...
" VI.	217	...	4	21	28	53	61	47	3	...
" VII.	184	...	2	6	18	45	62	35	15	I
" VIII.	5	...	I	I	2	I	...	...	...	...
" IX.	18	...	...	I	3	5	7	I	I	...
" X.	13	...	...	2	I	6	3	I	...	...
" XI.	64	...	5	9	18	17	13	I	I	...
" XII.	160	...	2	3	6	8	17	59	62	3
	2,119	I	45	164	272	478	562	444	147	6

TABLE III.

PROPORTIONAL NUMBER OF DEATHS IN EACH CLASS OF DISEASE TO
1,000 DEATHS FROM ALL CAUSES.

COMPARATIVE EXPERIENCE OF CERTAIN LIFE OFFICES.

CAUSES OF DEATH.	Clergy Mutual 1829-87. 2,119 deaths	Scottish Widows' Fund 1881-7. 3,246 deaths	Scottish Widows' Fund 1815-59. 2,307 deaths	Metropolitan 1835-64. 671 deaths	Standard 1825-60. 1,515 deaths	North British and Mercantile 1823-60. 1,303 deaths
I. Epidemics, &c. . . .	60	55	143	95	133	143
II. Uncertain seat	79	75	65	76	45	106
III. Nervous system	220	205	223	224	197	198
IV. Respiratory organs	180	229	207	244	237	211
V. Organs of circulation	149	146	111	107	98	94
VI. Digestive organs	102	97	125	121	143	104
VII. Urinary organs	87	79	46	52	44	32
VIII. Organs of generation	2	2	5	2	3	4
IX. Organs of locomotion	9	5	9	6	5	2
X. Integumentary system	6	2	1	6	2	2
XI. Violent deaths and accidents	30	44	28	30	47	35
XII. Natural decay, old age, and causes unknown	76	61	37	37	46	69
	1,000	1,000	1,000	1,000	1,000	1,000

TABLE IV.

SHOWING THE NUMBER OF DEATHS IN EACH CLASS OF DISEASE, ARRANGED ACCORDING TO GROUPS OF YEARS OF ASSURANCE, AND THE MORTALITY PER CENT IN EACH SUB-DIVISION.

Year of Assurance	Exposed to Risk as in Mr. Wyatt's Table No. VII	DEATHS IN EACH CLASS										Total Deaths
		I	II	III	IV	V	VI	VII	VIII, IX, X	XI	XII	
I	4,684	3	...	3	8	I	...	I	...	...	I	17
2	8,995	4	3	6	3	5	4	2	2	6	...	35
3	8,556.5	4	I	11	14	I	5	2	...	3	I	42
4	8,042.5	6	I	9	9	4	7	2	2	2	...	42
5	7,640.5	5	4	9	12	4	5	I	I	7	...	48
I-5	37,918.5	22	9	38	46	15	21	8	5	18	2	184
6-10	32,972	23	26	54	61	34	31	21	6	11	7	274
11-15	25,038	27	21	57	60	36	31	19	4	9	10	274
16-20	18,346.5	17	18	72	48	36	31	15	7	12	10	266
21-25	13,382.5	19	16	67	47	47	23	31	4	3	19	276
26-30	9,458.5	13	18	54	40	44	28	33	4	5	22	261
31-35	6,067	4	33	57	35	45	26	26	3	3	27	259
36-40	3,315	3	15	41	24	33	14	14	I	2	25	172
41 & over	1,955	...	11	26	21	25	12	17	2	I	38	153
	148,453	128	167	466	382	315	217	184	36	64	160	2,119

Year of Assurance	RATE OF MORTALITY PER CENT IN EACH CLASS										Total Rate of Mortality
	I	II	III	IV	V	VI	VII	VIII, IX, X	XI	XII	
I-5	.058	.024	.100	.121	.040	.055	.022	.013	.047	.005	.485
6-10	.070	.079	.164	.185	.103	.094	.064	.018	.033	.021	.831
11-15	.108	.084	.227	.240	.143	.124	.076	.016	.036	.040	1.094
16-20	.093	.098	.392	.262	.196	.169	.082	.038	.065	.055	1.450
21-25	.142	.120	.501	.351	.351	.172	.232	.030	.022	.141	2.062
26-30	.137	.190	.571	.423	.465	.296	.349	.042	.053	.233	2.759
31-35	.066	.544	.940	.577	.742	.429	.429	.049	.049	.444	4.269
36-40	.090	.452	1.237	.724	.995	.422	.422	.030	.060	.757	5.189
41 & over	...	.563	1.330	1.074	1.279	.614	.870	.102	.051	1.943	7.826

TABLE V.

SHEWING THE DISEASES OF WHICH PERSONS ASSURED AS
 "UNHEALTHY LIVES" BY THE SOCIETY HAVE DIED, AND THE
 AGE, BY DECENNIAL PERIODS, AT WHICH DEATH OCCURRED.

CAUSE OF DEATH	Total	AGE AT DEATH						
		20-29	30-39	40-49	50-59	60-69	70-79	80-89
I. EPIDEMIC AND INFECTIOUS.								
Dysentery	1	...	...	...	1	...	...	...
Rheumatic fever	2	...	...	2	...	...	...	...
Fever not described	1	...	1	...	...	...	...	...
	4	...	1	2	1	...	...	...
II. UNCERTAIN SEAT.								
Cancer	2	...	...	...	2	...	...	...
Gout	1	...	...	...	...	1	...	...
Tuberculosis	1	1	...	...	...	...	...	...
Tumour	1	...	...	...	...	...	1	...
	5	1	...	...	2	1	1	...
III. NERVOUS SYSTEM.								
Apoplexy	8	...	...	...	3	1	4	...
Disease of Brain, Softening, &c.	5	...	...	1	4	...	...	...
Paralysis	4	...	...	...	2	...	2	...
(b) Hemiplegia	1	...	...	...	1	...	...	...
	18	...	...	1	10	1	6	...
IV. RESPIRATORY ORGANS.								
Asthma	1	...	...	1	...	...	...	...
Bronchitis	10	...	...	1	3	5	...	1
Phthisis	7	...	1	1	4	...	1	...
Pneumonia	1	...	1	...	...	...	...	...
	19	...	2	3	7	5	1	1
V. ORGANS OF CIRCULATION.								
Angina	2	...	...	...	1	...	1	...
Disease of Heart	9	...	...	3	2	3	1	...
	11	...	...	3	3	3	2	...
VI. DIGESTIVE ORGANS.								
Disease of Stomach and Bowels	1	...	...	...	1	...	...	...
Hepatitis	1	...	1	...	...	...	...	...
Hæmatemesis	1	...	...	1	...	...	...	...
Peritonitis	1	...	...	...	1	...	...	...
	4	...	1	1	2	...	...	...
VII. URINARY ORGANS								
Diabetes	3	...	...	...	2	1	...	...
Prostatic	1	...	...	...	...	1	...	...
Renal	4	...	...	1	1	2	...	...
	8	...	...	1	3	4	...	...
X. INTEGUMENTARY SYSTEM								
Carbuncle	1	...	...	...	1	...	...	...
XI. VIOLENT DEATHS.								
Suicide	1	...	...	...	1	...	...	...
	71	1	4	11	30	14	10	1