

New York," and the "New England Life Insurance Company of Boston." The next were the "State Mutual, of Worcester, Mass.," the "Mutual Benefit, of Newark," and the "New York Life Insurance Company," of New York City, established in 1845, since that date several other companies have been established in different sections of the country.

#### GENERAL PRINCIPLES OF INSURANCE.

Notwithstanding the natural weakness of the human frame, and the obvious insecurity and brevity of life, it is clear that, in the almost boundless resources of the mind of man, Providence has furnished him with a variety of intellectual devices, which, in a very great degree, compensate for those imperfections. By the improvement of the mechanical arts, the feeble strength of individuals is increased to an almost unlimited extent; and the simplification of the sciences has produced a correspondent facility and power in their acquirement. Thus, much more is done and learned, with greater effect, in less time, and with far less labor, than could

formerly have been done or learned by any then-existing means; which economy of time and strength, as it were, lengthens life, by leaving space in it for other, or more profound pursuits. In like manner, the proverbial uncertainty of life, which appears to be altogether beyond the reach of human control, is not without a consolatory remedy, at least, in so much as relates to the prevention of that distress which the destitution of those we leave behind us adds to death, or to the occurrence of a sudden, heavy, or unexpected, calamity. It seems, therefore, highly probable that mankind were subjected to infirmity, shortness of life, and continual mutability, partly for the purpose of inducing the unceasing exertion of the counter-acting powers of ingenuity and prudence; in the diligent improvement of which consists one of the greatest moral benefits of the most highly-cultivated conditions of society.

It is not intended here to enter into any further explanation of the advantages to be derived from this continual improvement, or to enforce any of the ordinary rules of prudence; but only to exhibit the qualities and importance of that

branch of it, which relates to the *securing of a safe termination to an uncertain event*, as far as that object is to be effected by the means of LIFE-INSURANCES. The nature and design of these contracts not being either generally or accurately understood, prevents their very great value being duly appreciated; but it will be found, when the principles upon which they are founded are rightly comprehended, that it is impossible to entertain too high an estimation of their *utility*, or to conceive too wide an extent for their application. Their vital principle is future security; and their chief employment, at present, is to secure a provision for those who depend upon some particular individual for support, whenever their protector shall be removed by death. For though, in a multitude of instances, the first burst of sorrow is far too deep and violent to admit of any other feeling than that of anguish, yet it cannot be doubted that even such distress is soon rendered more acute, when the survivors reflect that they are left in the world destitute as well as friendless; and calamity is always most afflicting, when the dis-

traction of grief is harassed by the anxieties and privations of want.

As the present treatise is intended to afford the fullest information upon the subject in the plainest terms, perhaps the first point to be made clear, is the way in which the issue of an event depending upon the inscrutable will of Providence, *can* be ascertained by a human being, with any probability of being correct in the result. The chance of the duration of life, in single instances, is of very great uncertainty; but as all human knowledge is extremely limited, when it attempts to institute a minuteness of inquiry, the calculation can only be made upon a very wide and general view of the occurrence of such destruction, within a certain time and space. When this view is sufficiently extensive, even those events which are considered and called purely accidental and fortuitous, are discovered to have certain relations and to be governed by certain laws. Thus, the number of births, marriages, and deaths; the relative proportions of the sexes, are, under similar circumstances, found to be nearly equal during equal periods of time: whence it is easy, from

observations made upon them, to determine the amount which an individual should pay for the securing of a certain sum to be paid to his surviving relatives at his death.

#### TABLES OF MORTALITY.

AN estimate of the average duration of human life, at all ages, is formed from observations among large masses of mankind during an extended period of time; such observations constituting the materials, or *data*, necessary for constructing what are technically termed *Tables of Mortality*. A right understanding of the construction and use of these tables constitutes a most important part of an accurate notion of the nature and benefits of life-insurance; a particular explanation of them shall, therefore, now be given, as naturally following the preceding notices of the principles of chances, and as the first elementary point of information connected with the actual subject of these pages.

The first table of mortality, which had any pretensions to accuracy and utility, was deduced from a series of five annual tables of



births and deaths, with the ages and sexes distinguished, kept for the years 1687, 1688, 1689, 1690, and 1691, by Dr. Neumann, in the city of Breslau, in Silesia. These, however, omitted to state the entire number of the population; but the place itself was considered at the time to afford a fair standard of ordinary mortality, on account of the uniformity in numbers and seclusion of the inhabitants, who, being chiefly engaged in the linen manufacture, were visited by few strangers, and remained resident on the same spot for one generation after another. From these registers, Dr. EDMUND HALLEY constructed the first tolerably correct table for ascertaining the true values of life-annuities, which had been previously calculated from hypothetical and uncertain data. He assumed, from his examination, that the advances of birth and death are equal and uniform, which, however, was soon discovered to be erroneous; but his tables and rules will nevertheless be sufficient to make the reader acquainted with a few very simple calculations, illustrating the relative duration of life and its consequent value.

Considerable improvement was made by sev-

eral parties, subsequent to this period, up to the time of the construction of the Northampton Tables, by Dr. Price, in 1769. About the year 1800, a set of Swedish Tables was published, founded on returns, both of the number living and of the deaths in Sweden and Finland for 20 years, ending with 1795.

The Carlisle Table, which is the one now most in use, in England and this country, for the calculation of life-insurance premiums, was constructed by Mr. Joshua Milne, from observations made by Dr. Heysham, at Carlisle, England, during a period of nine years, ending in 1787.

The best actuaries in England and this country, concur in opinion as to the decided superiority of the CARLISLE over the NORTHAMPTON tables of Mortality, and it is generally conceded that these tables more closely exhibit the state of longevity as it exists in the *Northern and Eastern States* than any of the others.

TABLE OF MORTALITY.

TABLES OF MORTALITY, showing the number of persons *living at the end of every year* out of 1000 born at the same time; as calculated by the different authors for the several places already stated.

Age.	Breslau, Dr. Halley.	Northamp- ton. Dr. Price.	Carlisle, Dr. Hey- sham.	Sweden, Dr. War- gentin.	Age.	Breslau, Dr. Halley.	Northamp- ton. Dr. Price.	Carlisle, Dr. Hey- sham.	Sweden, Dr. War- gentin.
0	1000	1000	1000	1000	51	259	238	434	376
1	769	743	846	780	52	250	231	428	367
2	658	625	778	730	53	241	224	421	358
3	614	582	727	695	54	232	217	414	349
4	585	553	700	671	55	224	210	407	340
5	563	536	680	656	56	216	203	400	331
6	546	521	668	644	57	209	196	392	322
7	532	509	659	634	58	201	189	384	312
8	523	499	654	625	59	193	182	375	303
9	515	492	649	618	60	186	175	364	293
10	508	487	646	611	61	178	168	352	282
11	502	483	643	606	62	170	161	340	271
12	497	478	640	602	63	163	154	327	259
13	492	474	637	597	64	155	147	314	247
14	488	470	633	594	65	147	140	302	235
15	483	465	630	590	66	140	133	289	224
16	479	461	626	586	67	132	126	277	212
17	474	457	622	582	68	124	119	265	200
18	470	452	618	578	69	117	113	252	187
19	465	446	613	574	70	109	106	240	175
20	461	441	609	570	71	101	99	228	162
21	456	434	605	565	72	93	92	214	149
22	451	428	600	560	73	84	85	200	135
23	446	421	596	555	74	77	78	184	121
24	441	415	592	551	75	69	71	167	108
25	436	409	588	546	76	61	65	151	96
26	431	402	584	541	77	53	58	136	85
27	426	396	579	535	78	45	52	121	74
28	421	389	575	530	79	38	46	108	65
29	415	383	570	525	80	32	40	95	56
30	409	376	564	519	81	26	35	84	47
31	403	370	558	513	82	22	30	72	38
32	397	364	553	507	83	18	25	62	31
33	391	357	547	501	84	15	20	53	24
34	384	351	542	495	85	12	16	44	19
35	377	344	536	488	86	9	12	37	14
36	370	338	531	482	87	6	9	30	11
37	363	331	525	477	88	4	7	23	8
38	356	325	519	471	89	2	5	16	6
39	349	318	514	465	90	1	4	14	5
40	342	312	507	459	91	0	3	10	3
41	335	305	501	453	92	0	2	7	2
42	328	299	494	445	93	0	1	5	1
43	321	292	487	437	94	0	1	4	0
44	314	285	480	430	95	0	0	3	0
45	307	279	473	422	96	0	0	2	0
46	299	272	466	414	97	0	0	2	0
47	291	265	459	407	98	0	0	1	0
48	283	259	452	400	99	0	0	1	0
49	275	252	446	392	100	0	0	1	0
50	267	245	440	385	101	0	0	1	0
					102	0	0	0	0
					103	0	0	0	0



## COMPARATIVE EXPECTATIONS OF LIFE.

Showing the Expectation or Average duration of life, deduced from Original Tables, prepared under the superintendence of a committee of eminent Actuaries in England, and compared with the Carlisle, Equitable, and Northampton Tables.

Completed Age.	Male Lives-- Town, Country and Irish Expe- rience.	Female Lives-- Town, Country and Irish Expe- rience.	Gene- ral Expe- rience.	Ad- justed Expe- rience.	Car- lisle Expe- rience.	Equi- table Expe- rience.	North- amp- ton. Expe- rience.
20	39.84	35.86	40.97	41.49	41.46	41.06	33.43
21	39.29	36.01	40.45	40.79	40.75	40.33	32.90
22	38.70	36.20	39.92	40.09	40.04	39.60	32.39
23	37.98	35.41	39.18	39.39	39.31	38.88	31.88
24	37.41	34.81	38.54	38.68	38.59	38.16	31.36
25	36.63	34.41	37.84	37.98	37.86	37.44	30.85
26	35.88	33.79	37.13	37.27	37.14	36.73	30.33
27	35.23	33.14	36.42	36.56	36.41	36.02	29.82
28	34.63	33.07	35.76	35.86	35.69	35.33	29.30
29	33.96	32.61	35.06	35.15	35.00	34.65	28.79
30	33.17	31.73	34.25	34.43	34.34	33.98	28.27
31	32.44	31.04	33.50	33.72	33.68	33.30	27.76
32	31.73	30.51	32.75	33.01	33.03	32.64	27.24
33	30.92	29.86	31.98	32.30	32.36	31.98	26.72
34	30.21	29.60	31.27	31.58	31.68	31.32	26.20
35	29.52	29.07	30.55	30.87	31.00	30.66	25.68
36	28.87	28.88	29.90	30.15	30.32	30.01	25.16
37	28.15	28.30	29.20	29.44	29.64	29.35	24.64
38	27.49	27.62	28.51	28.72	28.96	28.70	24.12
39	26.81	27.00	27.79	28.00	28.28	28.05	23.60
40	26.06	26.36	27.07	27.28	27.61	27.40	23.08
41	25.42	25.84	26.41	26.56	26.97	26.74	22.56
42	24.70	25.34	25.68	25.84	26.34	26.07	22.04
43	24.00	24.57	24.98	25.12	25.71	25.40	21.54
44	23.34	23.94	24.26	24.40	25.09	24.75	21.03
45	22.63	23.21	23.55	23.69	24.46	24.10	20.52
46	21.98	22.60	22.85	22.97	23.82	23.44	20.02
47	21.24	21.97	22.12	22.27	23.17	22.78	19.51
48	20.62	21.16	21.41	21.56	22.50	22.12	19.00
49	20.08	20.69	20.79	20.87	21.81	21.47	18.49

## COMPARATIVE EXPECTATIONS OF LIFE.—(CONTINUED.)

Completed Age.	Male Lives—Town, Country and Irish Experience.	Female Lives—Town, Country and Irish Experience.	General Experience.	Adjusted Experience.	Carlisle Experience.	Equitable Experience.	Northampton Experience.
50	19.41	20.05	20.11	20.18	21.11	20.83	17.99
51	18.73	19.46	19.46	19.50	20.39	20.20	17.50
52	18.05	18.80	18.79	18.82	19.68	19.59	17.02
53	17.40	18.31	18.16	18.16	18.97	19.00	16.54
54	16.77	17.58	17.50	17.50	18.28	18.43	16.06
55	16.21	16.78	16.83	16.86	17.58	17.85	15.58
56	15.66	16.07	16.23	16.22	16.89	17.28	15.10
57	15.09	15.39	15.62	15.59	16.21	16.71	14.63
58	14.45	14.79	14.98	14.97	15.55	16.15	14.15
59	13.99	14.28	14.38	14.37	14.92	15.60	13.68
60	13.47	13.78	13.81	13.77	14.34	15.06	13.21
61	12.99	13.10	13.24	13.18	13.82	14.51	12.75
62	12.46	12.41	12.68	12.61	13.31	13.96	12.28
63	11.90	11.87	12.09	12.05	12.81	13.42	11.81
64	11.27	11.09	11.50	11.51	12.30	12.88	11.35
65	10.87	10.60	11.03	10.97	11.79	12.35	10.88
66	10.38	10.00	10.51	10.46	11.27	11.83	10.42
67	9.93	9.56	10.03	9.96	10.75	11.32	9.96
68	9.33	8.85	9.46	9.47	10.23	10.82	9.50
69	8.81	8.38	8.99	9.00	9.70	10.32	9.05
70	8.34	7.93	8.50	8.54	9.18	9.84	8.60
71	6.88	7.31	8.13	8.10	8.65	9.36	8.17
72	7.43	6.63	7.72	7.67	8.16	8.88	7.74
73	6.97	6.19	7.26	7.26	7.72	8.42	7.33
74	6.57	5.72	6.84	6.86	7.33	7.97	6.92
75	6.03	5.37	6.46	6.48	7.01	7.52	6.54
76	5.63	5.45	6.08	6.11	6.69	7.08	6.18
77	5.48	4.78	5.77	5.76	6.40	6.64	5.83
78	5.16	4.56	5.37	5.42	6.12	6.20	5.48
79	4.99	4.80	5.07	5.09	5.80	5.78	5.11
80	4.75	4.75	4.75	4.78	5.51	5.38	4.75