

*Remarks on Consumption in relation to Life Assurance.* By T. GLOVER LYON, M.A., M.D., *Assistant Physician to the Victoria Park Chest Hospital, one of the Medical Officers of the Mutual Life Assurance Society.*

[Read before the Institute, 29 February 1892.]

THE subject of consumption in relation to insurance is, perhaps, the one of all others which calls for co-operation between actuary and medical officer, yet up to the present time it has been left in the hands of the medical officer alone. The result has been that when the question of rating-up on account of a family taint of consumption has arisen, it has been decided by certain arbitrary rules founded upon the personal impressions of the medical officer. Such a condition of things, at one time unavoidable, has no justification now, for there is ample material, I am told, in London, if made use of, to settle the question on equitable lines, according to strict actuarial principles.

The President of the Institute of Actuaries some months ago, with much wit and some truth, said, "doctors step in where actuaries fear to tread." But as far as consumption is concerned, if doctors have ventured into the province of the actuary, it has been with great reluctance and under pressure. The actuaries, knowing the doctors could not swim, pushed them into deep water. They have laughed long enough at their clumsy aquatic struggles—it is time they came to the rescue.

A short glance over the general subject of phthisis, so far as it concerns life assurance, may not be amiss here.

Consumption is now clearly made out to be caused by the entrance into the body, and growth there, of a specific germ—a microscopic rod called the tubercle bacillus. The disease germ is frequently found in the expectoration of consumptive patients, and there is little doubt that the disease is disseminated chiefly by means of dust formed by the drying of the expectoration of phthisical patients.

The degree to which persons are subjected to the infection varies according to the circumstances in which they live.

The susceptibility to the disease varies in different persons, and in the same person according to the condition of his health. It would also seem to vary according to his age.

Though disputed by some, there is little doubt that persons specially susceptible to the disease are, as a rule, of delicate constitutions.

The susceptibility to phthisis, as in all zymotic diseases, is largely hereditary.

There is no reason to suppose that the actual disease is transmitted from parent to offspring, and the fact that phthisis is rare in childhood would point to the conclusion that if such transmission does take place, it is only in exceptional cases.

With these considerations in mind, the following method for guarding insurance offices from loss is indicated:

1. Let special classes be formed, according to the different varieties of consumptive family history, and let the extra risk corresponding to these classes be ascertained and charged.
2. In the examination of applicants having a consumptive family history, let great care be taken to accept only those who are robust, and whose occupations do not specially expose them to the infection of the disease.

The first is actuarial, the second medical work.

How far the offices have been protected from loss by consumption generally will be seen by the following comparison of the death-rate from consumption, deduced from the experience of three insurance offices with those recorded of males in the *Registrar-General's Report (Supplement, 1885)*:

Age at Death	INSURANCE OFFICES			REGISTRAR-GENERAL
	Polices at Risk	Deaths from Phthisis	Deaths per Mille per Annum	Deaths per Mille per Annum—Males
20-24	10,253	21	2·05	3·09
25-34	88,294	203	2·29	3·70
35-44	130,721	299	2·28	4·12
45-54	106,988	186	1·93	3·86
55-64	57,412	103	1·79	3·19
20-64	392,668	802	2·06	3·76

From the same supplement, it appears that the percentage of children dying of consumption is very small. The effect of age upon the frequency to contract phthisis is thus referred to in a standard medical text-book published before 1885:—"No age is free from liability to tuberculosis; it is extremely common in young children; but, putting these on one side, the age of greatest liability is from 20 to 30 or 35." I have quoted this to show how erroneous results are apt to be when founded upon medical experience alone.

The following tables give the deaths which have occurred from various causes amongst members of the Mutual Life

Table showing the Causes of Death of Members of the "Mutual" who had a Consumptive Family History.

	1. Fathers only	2. Mothers only	3. Mothers, Childbirth	4. Father and Mother, Consump- tion	5. Father and Brother or Sister	6. Mother and Brother or Sister	7. Mother, Childbirth; Sister, Childbirth	8. Mother, Brother or Sister, Consump- tion	10. Sister, Child- birth	11. One Brother or Sister, Con- sump- tion	12. Two or more Brothers or Sisters	Totals	Ratio to 100 Deaths
Relations who died of Consumption (or Childbirth)													
<b>CLASS I—ZYMOTIC DISEASES.</b>													
Miasmatic . . . . .	..	2	5	..	1	1	..	..	3	2	1	14	5.49
Dietic . . . . .	..	..	..	..	..	..	..	..	..	..	1	1	.39
	..	2	5	..	1	1	..	..	3	2	2	15	5.88
<b>CLASS II—CONSTITUTIONAL.</b>													
Dropsy . . . . .	1	1	..	..	1	1	..	..	..	..	..	2	.78
Cancer . . . . .	..	1	1	..	1	1	..	..	1	4	2	11	4.31
Tumours, &c. . . . .	1	1	1	..	..	1	..	..	..	1	1	6	2.36
Tubercular . . . . .	4	4	11	1	1	1	..	..	2	9	3	36	14.12
	6	7	13	1	2	2	1	..	3	14	6	55	21.57
<b>CLASS III—LOCAL.</b>													
Nervous System . . . . .	4	3	9	2	..	..	..	1	5	18	2	44	17.25
Organs of Circulation . . . . .	2	2	9	..	..	..	..	1	4	16	1	36	13.73
Respiratory Organs . . . . .	3	5	9	..	1	1	..	..	5	8	4	35	13.73
Digestive Organs . . . . .	2	2	10	..	..	4	..	..	4	7	2	31	12.16
Urinary Organs . . . . .	..	..	5	..	..	..	..	..	6	2	3	16	6.27
Organs of Locomotion . . . . .	1	..	..	..	..	..	..	..	..	..	..	1	.39
	12	12	42	2	5	5	2	2	24	51	12	162	63.53
<b>CLASS IV—DEVELOPMENT.</b>													
Old Age . . . . .	1	1	1	..	..	..	..	..	2	3	..	8	3.14
<b>CLASS V &amp; VI.</b>													
Violent and Sudden Deaths	1	..	6	..	1	1	..	..	1	3	2	14	5.49
<b>CLASS VII.</b>													
Causes not classified . . . . .	..	..	1	..	..	..	..	..	..	..	..	1	.39
<b>TOTALS . . . . .</b>	20	22	68	3	2	9	1	2	83	73	22	255	100.00

Table of the Comparative Ratio of Deaths from Various Causes.

	Mutual, One Parent, of Consumption	Mutual, Mother, of Child-birth	Mutual, Collaterals, of Consumption	Scottish Widows' Fund, 1815-1873, General	British Empire Mutual, 1847-1873, General
<b>CLASS I—ZYMOTIC.</b>					
Miasmatic . . . . .	4.76	7.35	3.09	11.89	...
Dietic . . . . .	...	...	1.03	.78	..
Others . . . . .	...	...	..	.02	.
	4.76	7.35	4.12	12.69	6.95
<b>CLASS II—CONSTITUTIONAL.</b>					
Dropsy . . . . .	4.76	...	...	} 5.42	...
Cancer . . . . .	2.38	1.47	6.19		
Tumours, &c. . . . .	4.76	1.47	2.06	} 7.58	17.75
Tubercular . . . . .	19.05	16.18	12.37		
	30.95	19.12	20.62	13.00	17.75
<b>CLASS III—LOCAL.</b>					
Nervous System . . . . .	16.67	13.24	21.65	21.00	16.24
Organs of Circulation . . . . .	9.53	13.23	18.56	14.20	11.04
Respiratory Organs . . . . .	19.05	13.24	12.37	12.91	14.66
Digestive Organs . . . . .	9.52	14.71	9.28	11.50	11.93
Urinary Organs . . . . .	...	7.35	5.15	5.86	4.75
Organs of Locomotion . . . . .	2.38	...	...	.43	1.13
Integumentary System . . . . .	...	...	...	.18	.44
Organs of Generation . . . . .	...	..	...	.14	...
	57.15	61.77	67.01	66.22	60.19
<b>CLASS IV—DEVELOPMENT.</b>					
Old Age . . . . .	4.76	1.47	3.09	4.30	2.89
Childbirth, &c. . . . .	...	...	...	...	.98
	...	.	...	...	3.87
<b>CLASSES V AND VI.</b>					
Violent and Sudden Deaths . . . . .	2.38	8.82	5.16	3.15	4.00
<b>CLASS VII.</b>					
Causes not classified . . . . .	...	1.47		.64	7.24
	100.	100.	100.	100.	100.

Assurance Society with consumptive family history, arranged in the classes which it is usually considered advisable to adopt. In the second of these, comparison is made with the causes of deaths occurring amongst the general body of some other life offices.