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The  
**Relation of Cancer to  
Life Insurance.**

BY WILLIAM THORBURN, F.R.C.S.

A Paper read before the Members of the Insurance  
Association of Manchester, Thursday, February 18th, 1897.



MANCHESTER:  
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# THE Relation of Cancer to Life Insurance.

By WILLIAM THORBURN, F.R.C.S.

MR. PRESIDENT AND GENTLEMEN,—You are all doubtless aware that it has been recognised by the laity as well as by the medical profession that, in the course of the last few years, or even of a longer period of time, the death-rate from cancer in this country has been increasing very considerably. The table which I here present to you, and which is taken from the statistics issued by the Registrar General, places this increasing cancer death-rate in a clear light, and shows you at a glance that, although during the last fifty years the total death-rate of the community has diminished, that from cancer has increased nearly four-fold;

TABLE I.

PREVALENCE OF CANCER IN ENGLAND AND WALES.  
(Registrar General).

Year.	Total Population (in Thousands).	Total Deaths (in Thousands).	Total Deaths from Cancer.	Cancer Death- rate per Million Living.	Proportion of Cancer Deaths to Total Deaths.
1840	15,730	359	2,786	177	1 in 129
1850	17,773	368	4,966	279	1 „ 74
1855	18,829	425	6,016	319	1 „ 70
1860	19,902	422	6,827	343	1 „ 62
1865	21,145	490	7,922	372	1 „ 62
1870	22,501	515	9,530	424	1 „ 54
1875	24,045	546	11,336	470	1 „ 48
1880	25,714	528	13,210	511	1 „ 40
1881	26,046	491	13,542	520	1 „ 36
1882	26,334	516	14,057	534	1 „ 36
1883	26,626	522	14,614	549	1 „ 35
1884	26,922	530	15,198	563	1 „ 35
1885	27,220	522	15,560	572	1 „ 33
1886	27,522	537	16,243	590	1 „ 33
1887	27,827	530	17,113	615	1 „ 31
1888	28,136	510	17,506	621	1 „ 29
1889	28,448	518	18,654	656	1 „ 27
1890	28,763	562	19,433	676	1 „ 28
1891	29,082	587	20,117	692	1 „ 29
1892	29,405	559	20,353	690	1 „ 27
1893	29,731	569	21,135	711	1 „ 26
1894	30,060	498	21,422	713	1 „ 23

and similar statistics are to be obtained from the tables published by the Registrar General for Scotland, as indeed from those of most European countries.



Now, if this increasing death-rate from cancer be actually established, our insurance offices should particularly feel the results of the raised mortality—first because it is especially among males that this increase is to be noted; secondly, because cancer, as you know, is a disease of later life, and, therefore, one which comes on after the age at which insurance is usually effected; and thirdly, because the increase in the disease can also be shown to fall most heavily on those of good social position, who are likely to insure their lives.

As a matter of fact, the tables published by the Scottish Widows Fund Life Office do clearly show that since the year 1860 there has been a marked rise in the death-rate from cancer *during insurable periods*. *little than a general pop*

TABLE II.

DEATHS FROM CANCER OF SCOTTISH WIDOWS FUND LIFE OFFICE, MODIFIED FROM KING AND NEWSHOLME.

Period.	Population at Risk.	Deaths from Cancer.	Cancer Death-rate per Million.
1860—66 .....	70,436	42	596
1867—73 .....	105,937	88	830
1874—80 .....	154,392	116	751
1881—87 .....	199,980	170	850
1888—91 .....	133,894	129	963

The records of the Lancashire Insurance Company—for which I am indebted to the courtesy of the officials of that Office—dating back, as they do, to the year 1853, also emphasize the increasing frequency of cancer; although, in the earlier years of the business of that Office (for reasons upon which we need not now enter), the usual relationship of this disease to the general death rate is not apparent. (See Table V.) *what nice good people this!*

The questions, then, gentlemen, which I propose to bring before you to-night are principally the following:—

First: Is the death rate from cancer really rising, or are these apparently striking figures merely misleading?

Secondly: Why is this death rate rising?

And thirdly: Can insurance offices protect themselves against the increasing mortality which thus falls upon their clients? The latter question, of course, involves perhaps the most important one: What are the preceding conditions and causes of cancer?

But before going further I may say that I shall not confine myself entirely to the insurance aspect of the question, but shall venture occasionally to bring before your notice a few other points which I think may interest you; and further, may I protect myself against the criticism of any of my medical friends who may be present by saying that under the common designation of "cancer" I include also those malignant growths which we call technically sarcoma—growths which, in any statistical inquiry, cannot be distinguished from true cancers.

Let us turn first, then, to the question of the reality of this increase of cancer—a reality which has frequently been questioned, and especially and



most ably in a paper by Mr. King and Dr. Newsholme, to which I have already had occasion to refer.

The following are the principal grounds upon which the reality in this rise in death rate has been challenged. First, it is noted that only since the year 1874 has a medical certificate of the cause of death been insisted upon, and that since that date, therefore, certification has been much more accurate than it previously was; but you will notice at once that no marked increase in the cancer death rate occurred at or about that period. Secondly, and with very much more emphasis, it has been pointed out that our diagnosis of disease and our care in the certification of the cause of death have very greatly improved during the last half-century, and that many conditions formerly vaguely classified are now clearly recognised as cancerous. That there is much truth in this contention I cannot doubt. That it explains the whole of the apparent rise in the mortality from cancer I do not for one moment believe. Emphasis is laid, by those who insist that this increase in cancer is due to an increased care on the part of the profession, upon the fact that where a distinction is drawn by the Registrar as to the seat of the cancer, it is to be observed that the so-called increase is almost restricted to those regions of the body in which diagnosis is most difficult. This point is not illustrated by our English tables of mortality, but the following, taken from the very elaborate tables published at Frankfort-on-Maine, shows you that if we divide all cancers into those which, being readily visible, may be called accessible, and those which, being deeply seated, may be called inaccessible, then the increased mortality is practically confined to the latter group :—

TABLE III.

REGIONAL CLASSIFICATION OF DEATHS FROM CANCER IN FRANKFORT-ON-MAINE.  
(King and Newsholme).

Year.	Region Accessible.		Region Inaccessible.		Region not stated.	
	Males.	Females.	Males.	Females.	Males.	Females.
1860—66	10	115	97	121	33	28
1867—73	9	143	132	164	17	27
1874—80	1	186	220	214	39	20
1881—87	7	206	269	318	54	53

Again, it is a noteworthy fact that, in Ireland, cancer does not appear to increase as it has done in Great Britain—a fact ~~that~~ those who deny the reality of the increase ascribe to a less perfect diagnosis and certification in that comparatively poor and scantily populated country. And, lastly, it is also pointed out that the increase of cancer shown by the tables of the Scottish Widows Office is less striking than that shown by the Registrar General, the reason assigned being that as the Scottish Widows death rate refers to people in reasonably good social position, the medical care devoted to such



people has risen to a less degree than has that bestowed upon the population as a whole.

Although, as I have already said, I am willing to admit that to some extent the increase of cancer to which we have referred may be fictitious, I cannot avoid the conclusion that to a large extent it is real. First, because speaking as a medical man I do not believe that our diagnosis has improved to the extent that would be indicated by these figures, and secondly, because there is another reason why we should expect a true rise in the death rate from cancer—the reason here referred to involving the answer to the second of the questions which I proposed for to-night: “Why has the death rate from cancer increased?”

You will notice at once that the Registrar General's tables show that during this half century, while the cancer death rate has been rising, the total death rate has been falling. This fall in the general death rate is due, of course, to the advances made during the last half century in Hygiene, to improvements in general comfort and to the raising of the conditions of life of the whole population, as well as to improvements in the arts of medicine and surgery. It means that we have eliminated many deaths which would otherwise have occurred from diseases now recognised as curable or preventable. But, despite the conditions under which we now live, the fact remains that ultimately we must all die, and hence there must be a correlative rise in the death rate from those diseases which are neither curable nor preventable. The more people we save from one cause of death the more we ultimately reserve for another, and among those diseases which, being neither curable nor preventable, must increase in their frequency cancer takes a foremost place.

So far we have done little or nothing to save our population from this disease, and as it attacks those of later life it will have a wider field for its ravages, the greater the number of middle-aged people we retain. In this connection I would especially ask you to compare the two following tables which present to you the death rate ~~&~~ both cancer and tuberculosis according to the statistics of the Registrar General and of the Lancashire Insurance Company:—

TABLE IV.

ANNUAL MORTALITY FOR MILLION LIVING FROM CANCER AND TUBERCULOSIS (REGISTRAR GENERAL).\*

Period.	Cancer.	Tubercular Diseases (including Phthisis).		Cancer and Tubercular Diseases	
1861—65.....	376	....	3,310	....	3,686
1866—70.....	403	....	3,199	....	3,602
1871—75.....	415	....	2,940	....	3,355
1875—80.....	492	....	2,815	....	3,307
1881—85.....	544	....	2,526	....	3,070
1886—90.....	631	....	2,321	....	2,952
1891—94.....	701	....	2,187	....	2,888

\* The arrangement of this and of some of the other tables is suggested by the valuable work of Mr. Roger Williams.



TABLE V.

ANALYSIS OF THE CAUSES OF DEATH OF 3,203 INSURED PERSONS.  
LANCASHIRE INSURANCE COMPANY.

Period.	Total Deaths from				Ratio per 100 Deaths from		
	All Causes.	Cancer.	Phthisis	Cancer and Phthisis.	Cancer.	Phthisis	Cancer and Phthisis.
1853—62	132	3	25	28	2.27	18.94	21.21
1863—72	423	4	80	84	0.94	18.91	19.85
1873—82	820	17	105	122	2.07	12.80	14.87
1883—92	1,303	46	147	193	3.53	11.28	14.81
1893—96	525	22	43	65	4.19	8.19	12.38
Whole Period	3,203	92	400	492	2.87	12.48	15.35

In the first I have placed together the death rates (in quinquennial periods) from cancer and from all tubercular diseases, including phthisis; in the second I have placed in decennial periods the total number of deaths from cancer and from phthisis, as well as the percentage ratio of these deaths to the total number of deaths occurring during the same period. In both you will see that while the death rate from cancer has markedly risen, that from tuberculosis or from phthisis has still more markedly fallen, so that if we add the two together we arrive at a figure that tends to diminish rather than to increase. Tuberculosis in one or other of its forms has been and still is one of the most wide-spread of fatal diseases, and its partial elimination is alone sufficient to account for the whole of the population now reserved to die of cancer.

On such grounds I think you will agree with me that the recorded increase in cancer is real and not fictitious, and that the cause of this increase is the fall in the death rate from other causes; or, we might put it paradoxically thus: A high death rate from cancer is the necessary concomitant of a low general death rate, that is, of greater social comfort and well-being.

Thus also we can explain why the cancer death rate rises less rapidly among the insured than among the total population. The well-being of the insured has risen less markedly than that of the poorer classes.

Thus also we can explain why in Ireland, where poverty is much more marked than in England, the cancer death rate has not risen. And thus, as we shall see hereafter, many other facts to which I shall have to call your attention are most readily explicable.

It has previously been noticed by various writers that the statistics of cancer indicate that it is most common among the wealthy, leisured, and well-fed classes, and the somewhat hasty conclusion has been drawn that good food and leisure were a direct cause of the disease. But I hold that this is not so; that they are only an indirect cause of the disease in so far



as they are a direct cause of the elimination of other diseases and especially of tuberculosis.

Let us now turn to the third question which I wish to bring before you to-night, and consider for a few minutes what we know of those conditions which precede or cause cancer. And first, let us consider the question of *age*. It is, of course, popular knowledge that cancer is a disease of middle and later life. To be more precise, the death rate from this disease is very low until we reach the age of 35: it then rises (especially after the 55th year), and, in proportion to the population living, the cancer death rate increases up to the extreme limits of human life. In the 92 cases collected from the Lancashire Insurance Company I find that of 77 males dying from cancer, the average age at death was 58, whereas of 15 females the average age was 55.

It was in calculating this average that I was led to notice a somewhat interesting point to which, I believe, attention has not been previously called. My cases were arranged in chronological order from the year 1853 to 1896, and I found that the average age at death of the first half of the male cases was 56.1, whereas that of the second half was 61.0, showing a rise of five years in the average; and further, among females I found the corresponding figures to be 51.4 and 58.1, giving us a rise of six and a-half years in the average age at death. These figures being too small to establish a general proposition, I then calculated the average age at death from the far larger statistics of the Registrar General, taking two periods of five years each—first, that from 1865 to 1869, and second, that from 1890 to 1894. The average age at death during the first period was, for males, 59.7 and for females 56.2; during the second period, for males, 66.4, and for females 58.2; showing then that in the course of 25 years the average age at death of males dying from cancer has increased by five years, while that of females has increased by two years. These figures appear to me very striking, and they almost prove in themselves that the increase in the cancer death rate is due to a larger residuum of those other persons who are most liable to the disease. If it were due to the increasing virulence of cancer the average age at death should fall rather than rise; or if the apparent increase were due solely to advances in medical science there is no reason why the average age at death should undergo any alteration whatever.

Secondly, we may consider the question of *sex*. As you all know, cancer is commoner in the female than in the male; but, as the following table shows you

TABLE VI.

DEATH RATE FROM CANCER PER MILLION LIVING IN EACH SEX.  
(Registrar General.)

Year.		Males.		Females.		Proportion of Males to Females.
1851-60	....	195	....	434	....	1 : 2.2
1861-70	....	244	....	523	....	1 : 2.1
1871-80	....	315	....	622	....	1 : 1.9
1881-90	....	430	....	740	....	1 : 1.7
1891-94	....	527	....	855	....	1 : 1.6



the increase in the disease to which we have been referring bears far more heavily upon the latter sex, and the relative proportions of the two are tending regularly and rapidly to become equal. It is true that in the male cancer is more liable to affect inaccessible or deeply seated organs than it is in the female, and that the improved-diagnosis theory would thus explain away its special increase in the male sex. But of 7,874 cases treated in London (where presumably diagnosis and registration reach their high-water mark) 2,861 were males and 5,013 females, giving us a proportion of one to two, which probably represents a fair average. (Roger Williams.)

Before leaving this question of sex, I may also call your attention in passing to the fact that in the female, cancer attacks, in an overwhelming proportion, the genital organs and the breast, whereas in the male it specially selects the alimentary canal. The reason of this selection is tolerably obvious. Granted a tendency to cancer, that disease will probably fall upon a part which is continually irritated or inflamed. The processes of reproduction inflict an enormous strain upon the genital and mammary organs of the woman, whereas the alimentary canal of the male is almost equally subjected to an irritation which perhaps falls (in many cases) less absolutely within the scheme of nature's intentions.

Thirdly, the *geographical distribution*, or local distribution, of cancer is of great interest. The disease is universal, although much rarer in Africa than in other quarters of the globe. Throughout Europe its frequency is much the same as in England. In the United States the cancer death rate is low, but I am not aware how far this fact may be due to the presence there of a large negro element, the black races being much less susceptible to the disease than are the white. In Ireland, as I have already hinted, the death rate is lower than in most other parts of Europe. But, in England alone, marked local differences exist in the distribution of the disease. In London the cancer death rate is far higher than in any other part of the Kingdom, a fact which may be partly due to the existence there of large hospitals, which attract those suffering from a chronic and fatal disease, those who, seeking relief, remain to swell the numbers of the death roll of the great city to which their condition has caused them to gravitate.

It would take too long to deal with the distribution of cancer throughout the whole of England, and I must refer you to the most interesting map published by Dr. Haviland, which shows us that, speaking broadly, far more people die from cancer in the south and east than in north and west of England, and also that the disease has a general tendency to fall most heavily upon low-lying districts and the basins of great rivers. Lancashire, I may say in parenthesis, is strikingly free from cancer. The explanation of this geographical distribution of the disease is not altogether easy. Haviland's view was that it attacked especially low-lying lands and those which tend to be flooded, or, as he himself says, "those where the drift of ages has accumulated." A glance at his map, however, will show that this is hardly a proposition of universal application. A collective investigation



carried on some few years ago by the British Medical Association into the habitat of cases of cancer of the breast tends, broadly speaking, to confirm Haviland's facts. Mr. Roger Williams, perhaps, comes nearer to the truth when he suggests that cancer attacks especially the Thames valley and, in greatest proportion, its focus London; that is, *par excellence*, the district of England in which social conditions are on a high level, and if you will accept the proposition which I have already laid before you, that a high death rate from cancer means a low death rate from other causes, you will, I think, explain most of the facts with which we meet. Lancashire, for example, is generally a wealthy district, inhabited by well-fed people; but Lancashire is by no means a healthy district, and tuberculosis is here very prevalent. Hence then, cancer is here less prevalent. If we omit the minute classification shown on Haviland's large maps and look at two smaller sketch-maps which he supplies in the text of his valuable monograph, we shall find that in the different registration divisions of England the death rate from cancer stands in an almost inverse ratio to the death rate from phthisis, and I think we may safely conclude that it is to the general healthiness of certain districts that they owe their high cancer death rate. Possibly, however, as we shall see shortly, certain special circumstances may tend to increase the prevalence of the disease in river basins.

The localisation of cancer is, however, not even limited by such small districts as those of the Registrar General. It is well known that even certain villages are so prone to the disease that it there acquires the characters of an endemic, and even houses have obtained an unenviable reputation for their liability to association with cancer. Of such I may perhaps bring before you one or two instances. Mr. Shattock mentions in Shropshire, in a small group of cottages, nine houses in each of which one or more cases of cancer occurred during twenty-five years. Near to these houses were two other houses, both under the same roof, which we will call A and B. In house A a man died of cancer of the rectum. The next occupiers were a man and his wife; the former died of cancer of the stomach, the latter of cancer of the rectum. In house B a woman then died of cancer of the breast. Lastly, house A was again taken by three women, of whom one died from cancer of the womb, and another from cancer of the stomach. D'Arcy Power also records, among other cases, one in which the three successive female occupants of the same bedroom, who were housekeepers in a home for barmaids, all died of cancer; and Scott mentions an almost exactly similar instance in which three men succeeding to the same house and the same occupation died of this disease; and, again, D'Arcy Power quotes from Fabre an instance in which within ten years four occupants of a large house died of cancer, there being no other death in the house during the same period. Such circumstances, of which many are now reported, can hardly be regarded as mere coincidences, and they lead us to our fourth consideration, that of the infectiousness of cancer.



During late years the view that cancer is an *infectious disease* has been rapidly gaining ground, at any rate in the medical profession; and the adoption of this view explains many facts which were hitherto difficult of comprehension. And first, gentlemen, I must ask you clearly to realise that cancer is, at its outset, a local disease affecting some small region of the body, and not a general disease affecting the whole system. In its later stages it may be so wide-spread that we may say the system is affected, or, the disease has become general; but this is not the method of its commencement. Hence, then, it begins locally, generally in a region which has been long subject to irritation, and it spreads therefrom by a process of infection to other regions of the body. Further, cancer can be implanted or grafted artificially from one part of the body to another, or even from one animal to another animal of the same species. There is thus, then, a *prima facie* probability that the disease may be acquired by infection. Of late years many pathologists have sought diligently for a germ or micro-organism that might prove to be the source of this infection, and although nothing certain has, as yet, been proved, it is by no means improbable that this germ is a minute animal parasite closely akin to that which causes malaria. Into this question, however, I cannot attempt to enter to-night. If we allow that cancer is an infectious disease we explain at once many of the peculiarities of its geographical distribution, and especially the existence of "cancer houses." You may say that common experience is sufficient to disprove the infectiousness of cancer; but twenty years ago you would have said that common experience disproved the infectiousness of phthisis, although to-day we are as certain that phthisis is conveyed by infection as we are that scarlet fever spreads in a similar manner. I have little doubt, personally, that it will be proved ere long that cancer is an infectious disease, not contagious, like most fevers, but conveyed in some manner from the sick to the healthy, under conditions as yet unknown to us, and generally attacking only regions which have been subject to long-standing inflammations.

And now I come to the question of the *heredity* of cancer. In the popular view heredity looms most largely as a ~~course~~ of cancer; but there is little real evidence that the disease is conveyed from parent to child. The family histories which are generally supplied to us prove nothing, because it is useless to say that of our hospital patients one in six has a family history of cancer, or of our private patients one in three has a family history of cancer, unless we know what we may call the normal family histories of other people of the same social position and in the same surroundings who do not suffer from cancer. Some years ago, when surgical registrar at the Manchester Infirmary, I attempted to clear up this point by taking down the family history of every case of cancer admitted to the wards. I then went to the nearest patient of approximately the same age and, of course, of the same sex and took his or her family history. In this way I obtained two series of observations—first, the family histories of cancerous



patients, and second, the family histories of an equal number of non-cancerous people of the same age, sex and social position. Unfortunately I handed my records, which were by no means uninteresting, to my successor who failed to carry on the investigation and by whom my papers were lost, and I cannot give you the details of my results; but I was struck by two facts which were apparent at an early stage of this investigation, namely, that cancerous people had no marked history of cancer, whereas, on the other hand, they did present a strikingly marked history of consumption. I was driven to the conclusion, with which I think most medical men will agree, that the importance of the hereditary element in the production of cancer is very greatly over estimated. On the other hand there can be no question that family history does, in many cases, show an apparent heredity of the disease. Thus of 174 cases of cancer of the breast in women, collected by the British Medical Association, one-third referred to cancer in some relative, one-fifth traced the disease in the direct line of descent, 16·84% had a father or mother who had suffered from cancer. Similar figures are given by the careful statistical inquiry of Roger Williams, and we may conclude that cancer certainly does to some extent extend through families, and that such heredity is especially marked in the female sex. We must, however, in considering this question make certain distinctions. The term "heredity" is somewhat vaguely used, and covers several quite different phenomena. Thus we find what I may call essential heredity—a hereditary transmission of certain characteristics from generation to generation, by a natural process not modified by environment. In this way, for example, features and the colour of the hair pass from father to son; and certain diseases, of which gout and hæmophilia are probably the best examples, appear to be thus transmitted. Then, again, there are conditions of heredity which we describe as direct but not essential, such as syphilis, which are transmitted from parent to child, but do not acquire the dignity of a racial trait. And, in the third place, we have an enormous number of conditions which I would call accidental heredity. I can offer no better example than the sovereignty of these islands. The Royal Family derives its hereditary position not from any strictly natural process, but from the purely accidental condition of the law of England. In the same way we may see special avocations adopted by certain families. Probably you all know examples in which the capacity for playing cricket appears to be hereditary. The Cecil family is an example of the hereditary transmission of political activity. And to take another example, a similarity in hand-writing is often traceable through several generations. To some extent, no doubt, these conditions are due to an essential heredity—to hereditary transmission of good muscles or a quick eye or a highly developed brain; but to a still greater extent they are due to what we may call mere accident, or rather to the environment of the children and the grandchildren, to conscious or unconscious imitation of the parent or to the fact that circumstances lead the child to follow in its



father's footsteps. Somewhat similarly a disease which appears to be hereditary may really owe its incidence in a given family to conditions of environment; those who live from generation to generation in a malarious district will suffer from malaria, although that disease presents none of the characters of essential heredity. Phthisis also, as is now well recognised, is probably far less often hereditary in the true sense than infectious—the parent infects the child, or the brother the sister, often very many years before the disease makes itself obvious, and the coincidence of environment gives a mistaken impression of heredity. I would suggest to you that the same is true of cancer, and that the apparent heredity of cancer is really due to its infectiousness. Thus those who live in the same houses, under the same conditions and in close association are, naturally, rendered liable to the same infectious disease; and in this way I would explain ~~why~~ the heredity of cancer appears to be more marked in the female sex. Women wander less from their homes than do men, they are more apt to remain in their original villages, they associate more closely with the family life, they remain indoors far more than do their brothers, and hence they are far more exposed to the infection of cancer. Another point to which I would refer in connection with the family history of cancer is the connection between that disease and phthisis. I have already mentioned to you that the cases which I collected in the Infirmary showed a preponderant family history of that disease. Roger Williams' elaborate statistics show also that a family history of phthisis is much more common than a family history of cancer in cancerous patients. Thus, of women affected with cancer of the breast 55% per cent. had a family history of phthisis, which contrasts remarkably with women dying of phthisis, of whom only 58% had a family history of that disease. Williams found also that 12·5% of *post mortems* made upon cancer patients showed evidence of healed tuberculosis, which contrasts with 4·7%, the proportion found in all *post mortems*. I have very carefully examined the cancer cases of the Lancashire Insurance Company from this point of view, and I present them to you in these two tables.

TABLE VII.

## FAMILY HISTORY OF 92 CASES OF CANCER.

## LANCASHIRE INSURANCE COMPANY.

*Fathers—*

Dead .....	61	Average age	61·7
Living .....	29	„ „	65·7
Not mentioned .....	2		
Dead from cancer .....	2		
Dead from phthisis .....	3		

*Mothers—*

Dead .....	52	Average age	56·2
Living .....	38	„ „	65·5
Not mentioned .....	2		
Dead from cancer .....	5		
Dead from phthisis .....	1		
Dead from "confinement" ..	8		



<i>Brothers—</i>	Dead from cancer .....	0
	Dead from probable tubercu- losis.....	11
<i>Sisters—</i>	Dead from cancer .....	0
	Dead from probable tubercu- losis.....	12
	Dead from "confinement" ..	5
<i>All Relations—</i>	Dead from cancer .....	7
	Dead from tuberculosis ....	27
	Dead from "confinement" ..	13

TABLE VIII.

FAMILY HISTORY OF 92 CASES OTHER THAN CANCER.

## LANCASHIRE INSURANCE COMPANY.

<i>Fathers—</i>	Dead .....	63	Average age 63.3
	Living .....	28	
	Not mentioned .....	1	,, ,, 66.1
	Dead from cancer .....	0	
	Dead from phthisis .....	4	
<i>Mothers—</i>	Dead .....	61	Average age 59.2
	Living .....	30	
	Not mentioned .....	1	,, ,, 62.9
	Dead from cancer .....	3	
	Dead from phthisis .....	3	
	Dead from "confinement" ..	5	
<i>Brothers—</i>	Dead from cancer .....	1	
	Dead from probable tubercu- losis.....	8	
<i>Sisters—</i>	Dead from cancer .....	3	
	Dead from probable tubercu- losis.....	11	
	Dead from "confinement" ..	10	
<i>All Relations—</i>	Dead from cancer .....	7	
	Dead from tuberculosis ....	26	
	Dead from "confinement" ..	15	

The first gives us the family history of 92 cases of cancer. The second gives us the family history of 92 other cases, not cancerous, but taken indiscriminately, and including a fair proportion of phthisis, selected only on the ground that the people were of the same age and sex as the cancer cases. It must be admitted, however, that these tables are singularly colourless. All these lives were, of course, selected in the first place by the medical officers of the Company, and, naturally, those with a bad family history were excluded at the outset; but still they indicate generally that the family history of cancer is not specially predominant in cancerous cases. Perhaps, before leaving this subject, a concrete case will



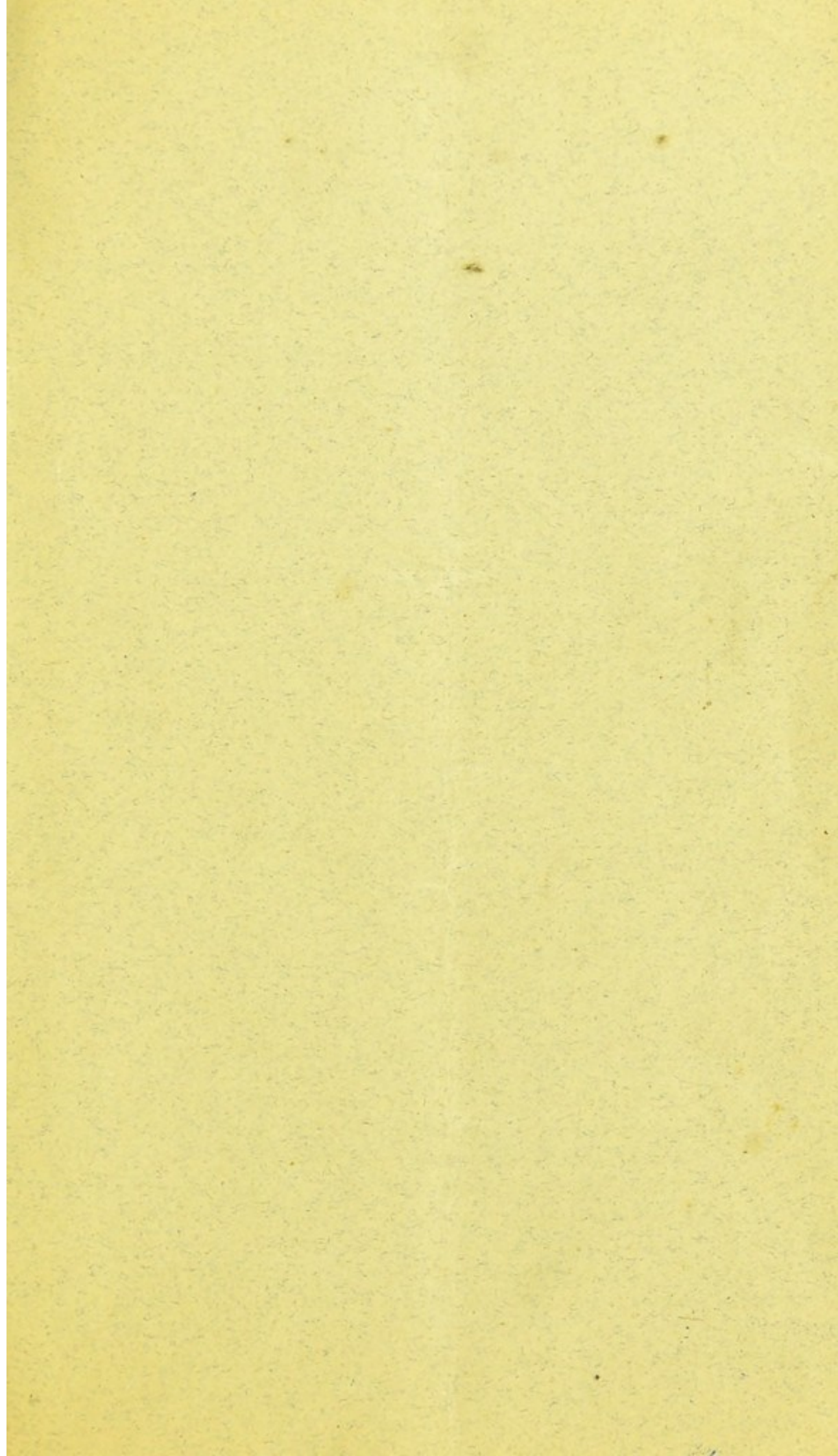
bring before your minds more clearly than any general statistics this remarkable association of cancer and phthisis. O'Connell mentions a family in which the father died of cancer of the stomach and the mother of cancer of the womb. Of their seven children, three died of phthisis, and four, who were alive at the time of the report, were all described as "weak-chested." This remarkable association in families of cancer and tuberculosis throws a side-light upon the relative death-rates from these conditions, to which I have referred in an earlier part of my address.

And now, gentlemen, in conclusion I would submit to you the following propositions:—First, that the death-rate from cancer is increasing rapidly, and especially in the class of people who insure their lives; second, that this increase is due to a fall in the general death-rate, and especially, perhaps, to a fall in the death-rate from phthisis; third, that the heredity of cancer, in the true sense of that term, is doubtful; and fourth, that cancer is probably an infectious disease, and that to infection is probably to be traced its apparent heredity.

Looking at the question from the point of view of an insurance office, you may say that death from cancer occurs so late in life that, in most instances, the policy of the dead will have already proved remunerative to the office; but I am sure you will agree that, even making allowance for the age at which cancerous patients die, it is our business, as medical advisers, to still further improve your financial position by endeavouring to eliminate even those who are to die of cancer; and, doubtless, you will prefer to retain only those who will reach the allotted span of human life. Unfortunately, I cannot give you any definite rules for such elimination; could I do so I should be leading you across the threshold of one of the darkest chambers of disease, because I should be making clear the whole of the causes of cancer. One point, however, stands abruptly forward—that you must beware of those persons who present a marked family history of phthisis. This, doubtless, you already do for other reasons; but if I am right in the view which I have taken of the so-called heredity of cancer and of phthisis, you must, if you will be just, regard such family histories with some discrimination. Those who have left their homes early and been long cut off from their original associations will, on this view, be infinitely less liable to develop either phthisis or cancer than those who have remained in a presumably infected environment. And again, I may call your attention to the fact that there are certain conditions known to the medical profession as pre-cancerous conditions—conditions which are liable to be followed by the development of malignant disease. Such are chronic inflammations of the tongue in males, chronic eruptions about the nipple in the female breast, chronic dyspepsia in males of advancing life, and long-standing ulcers due to any cause. It may prove advisable, in the case of those who insure at or beyond middle life, to specifically ask your medical advisers whether they have looked for and satisfied themselves of the absence of any such pre-cancerous conditions.

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