On the medical selection of lives for life assurance : being a lecture given in the post-graduate course at Liverpool University College, May 1888 / by A. Davidson.

ON THE

MEDICAL SELECTION

OF LIVES

FOR LIFE ASSURANCE:

BEING A

LECTURE GIVEN IN THE POST-GRADUATE COURSE AT LIVERPOOL UNIVERSITY COLLEGE, MAY 1888,

BY

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MEDICAL SELECTION FOR LIFE ASSURANCE.

EVERY one has a general idea of the nature and objects of life assurance. We know that insurers, by the payment of a small sum annually, insure the repayment of a much larger sum of money at death, or at a fixed age if agreed upon, and as the payment of this large sum has to be made whenever death occurs, however soon that may be after the insurance is completed, by this means a provision is made against pecuniary loss to family or creditors from premature death.

Now, it is evident to every one that the annual payments or premiums demanded by the company from persons insuring their lives will not be the same in all cases, seeing the probability of length of life is very different in different persons. It differs first by reason of the difference of *age*—young lives pay a smaller premium than old. But the effect of age on the premium is not at all a simple matter. The two figures do not stand in the same relation to one another at various ages. Their true relation is drawn from experience, from actual *tables of mortality*, showing, from an analysis of a large number of deaths, and the ages of these deaths, the exact proportion out of a given number of persons born at the same time, who die successively in each year. The first mortality table of any note was called the Northampton Table. This has been almost entirely superseded. Then came the Carlisle tables, largely employed for many years, and still employed in whole or in part by some companies. The tables which now command the largest confidence are those drawn up by the Institute of Actuaries, from the experience of twenty life insurance offices, and published in 1869. They give the mortality of insured, *i.e.* selected lives, from the actual experience of these offices; and it is interesting to compare them with

the general mortality of the whole population (Farr's Life Tables), from which they differ but slightly, at least in the middle era of life (about 1½ to 2 years). They are called the H^M, H^{M5}, H^F (Healthy Males, Healthy Males after Five Years of Insurance, and Healthy Females).

Table of Expectation of Life at Various Ages (Years).

Age.	H^M	H^F	H^{M5}	General Male Population.
10	50	48	48	47½
15	46	44	44	43½
20	42	40¾	40	39½
25	38½	37	37	35½
30	34½	34½	34	32
35	31	31½	30½	28½
40	27	28	27	25½
45	23½	25	23	22
50	20	21½	20	19
55	17	18	16½	16
60	13¾	14¾	13½	13
65	11	11½	11	10½

From these mortality tables, actuaries have calculated the "expectation of life" or *mean life-time* (not the probable life-time) of the various ages, and from that again, by elaborate algebraic formulæ, the amount of annual premium payable for each age in order to effect an assurance. Into this I do not enter; but I may be asked, If the premiums are mathematically calculated from a table which is in general acceptance, how comes it that the premiums demanded by different offices, using the same mortality tables, vary so much from one another? The reason is that, in addition to the calculated premium, a charge is added by the offices, which is called "loading"—a margin for profit and contingencies. Different offices reckon this loading very differently, partly from the various nature of their respective businesses, and partly the various views they entertain regarding the contingencies, and other points.

Besides the *age* of the proposed insurer, his personal eligibility has also to be considered, and hence the necessity of a medical examination.

The medical examiner investigates the proposer's present state of health and constitution, his past ailments, his habits,

his family history, and any other points which may assist in deciding whether he is likely to live to a fair age or not. He classifies his life as follows:—

1. First class life, eligible at the ordinary premium.

2. Second class—where, owing to defect in the family or personal history, the probability of the life reaching an average length is less, but where the greater risk may be covered by an addition to the yearly premium to be paid. This is usually done by adding three, five, or seven years to the proposer's actual age.[1]

3. Uninsurable life—owing to the proposer being the subject of actual disease, or having such a delicate constitution or unfavourable family history as to make it improbable that he will live to the full expectation.

The Medical Examination.—Perhaps the most convenient way to take up this subject, so as to make it as practical as possible, and bring it into the limits of a single lecture, will be to take a typical form of medical report of one of the offices, and consider the points as they arise in order.

The first half of the form contains a series of questions which are put to the person proposing to insure by the medical examiner, and the answers being written down are signed by him.

In the first question, besides the name, age, residence, &c., the occupation is noted. [By some offices the fact of *marriage* is inquired into; but though marriage has a most important influence on health and longevity in many instances, its bearing on the expectation of life in males is far too variable and uncertain an element to be easily judged of, and hence this question is not often included. In females, on the other hand, it is most[2] material.] The *occupation* is most important.

As proposals for life assurance chiefly come from the middle and upper classes, we are rarely called upon to deal with questions of the healthiness of the ordinary operative trades—what we commonly call the working-man. Some of these trades are notoriously unhealthy: painters, miners, stone-masons (in some

[1] Some cases of risk may be covered by the scale of a limited number of payments, others by an endowment policy payable at a fixed age.

[2] Young widowers under the age of 30, or even 40, experience a very heavy rate of mortality.—*Vide* Farr, p. 440.

parts of the country at least), bakers, brewers-men, railway-men,[1] and cabmen, we may safely say are ineligible for ordinary life assurance. I am disposed myself to go even further than the exclusion of unhealthy trades; I am disposed to think that the working-man, as a rule, is a much less desirable subject for life assurance than the middle-class man, the reason being that from the nature of his work, and his comparative poverty, he is much less able to ward off sickness and accident, and when sickness comes to him, he is much less able to ensure recovery than others. This, however, is a matter of opinion. Passing now from the working-man to the lower and upper *middle classes*, and those above them who are the usual subjects of life insurance, here we find occupation has a most important influence.

We have a table prepared by the Registrar-General of Births, Deaths, and Marriages in England, and published in the Supplement to the *Forty-fifth Annual Report* in 1885, p. xxv.

Comparative Mortality Figures (abridged).

Æt. 25–65. (1880–82.)

Mortality of all Males of same Age being 1000.

Clergyman,	556	Bricklayer, Mason (below average of other years),	969
Lawyer,	842	Plumber, Painter, &c.,	1202
Medical Practitioner,	1122	Cabinetmaker,	963
Teacher,	719	Carpenter (below average),	820
Artist, &c.,	921	Cutler (scissors maker),	1309
Musician,	1314	Do. (file maker),	1667
Farmer,	631	Do. (various),	1273
Cab Driver,	1482	Boilermaker,	994
Commercial Traveller,	948	Blacksmith,	973
Brewer,	1361	Copper, Brass, &c., worker,	992
Publican,	1521	Miner, Coal,	891
Hotel Servant,	2205	Miner, Cornwall,	1839
Commercial Clerk,	996	Chimney-Sweep,	1519
Grocer,	771	Porter,	1565
Draper,	883	Hawker,	1879
General Shopkeeper,	865	General Labourer (London),	2020
Fishmonger,	974		
Butcher,	1170		
Baker,	958	Selected Healthy Occupations—Farmer, Gardener, &c.,	644
Tailor,	1051		
Hairdresser,	1327		
Printer,	1071		
Potter,	1742	Selected Healthy Districts—all Males,	804

The first and most important point in this table is the enormous mortality of those engaged in the drink trade. This

[1] One office admits railway stationmasters at an extra of half a crown per cent., but declines officials of lower rank.

is well known to all experienced in life assurance; so much so that some offices will not accept a proposal at all from a publican, and others will only take him at a very high rate of premium. The manager of one of the principal offices in Liverpool told me that his office always added 10 per cent. to the premium (*i.e.*, even after selecting and satisfying themselves of the proposer's temperance), but they found that this considerable addition did not cover the risk. I believe the ordinary publican ought to be considered an uninsurable[1] life; but this view need not prevent our passing wine merchants, and the superior class of hotel-keepers, when we are perfectly satisfied as to their habits. The subject of temperance, however, will come up again when we come to the question of the habits of the proposer later on.

The occupation of *butcher* is the next to which I would draw attention, and along with him the *fishmonger*. The mortality of the fishmonger in this table is 974, but this is below the average for this trade, the decade 1860–71 showing a much higher figure. It is quite certain that these trades do not dispose to longevity. Different explanations of this have been given. Some say butchers, &c., consume too much animal food; others say they are more exposed to weather, owing to the construction of their shops; others, that they have greater inducements to intemperance; others, that the emanations from decomposing meat are the cause.

Thackrah[2] says:—"Butchers and slaughter-men, their wives, and their errand boys, almost all eat fresh cooked meat at least twice a day. They are plump and rosy. They are generally also cheerful and good-natured; neither does their bloody occupation nor their beef-eating render them savage, as some

[1] Dr Sieveking says as to the practice of entirely excluding publicans from life assurance:—"We regard this as harsh and unnecessary, and scarcely compatible with the philanthropic spirit which underlies insurance business. On the other hand, we consider the ordinary addition of 10 per cent. as far too low for this very hazardous trade, and should consider 25 per cent. as more just." But in my opinion such a great addition to the premium would be accepted only by those members of this trade who knew themselves to be very bad lives, and their mortality after insurance would turn out to be enormous; while the temperate members would decline to take up the policy on such terms.

[2] *The Effects of Trade, &c., on Health and Longevity*, p. 8.

theorists pretend, and even as the English law presumes. They are not subject to such anxieties as the fluctuations of other trades produce; for meat is always in request, and butchers live comfortably in times as well of general distress as of general prosperity. They are subject to few ailments and these the result of plethora. . . . . Butchers live too highly for long life."

Whatever be the cause, undoubtedly butchers and fishmongers are not first-class lives, but they are not necessarily ineligible.

The cases of *musician* and *hairdresser* I am unable fully to explain. The former includes organ-grinders and street musicians. The mortality in the latter is said to be due to phthisis and intemperance. That of *medical practitioner* is a very much more important, because more numerous, class of insurers. The figures in the table are, I am afraid, too true, and are easily understood when we think of the wear and tear of general practice, its anxieties, hardships, and exposure.[1] It may thus become our painful duty at times to decline the lives of our professional brethren who show delicacy of constitution, or other defect, when the nature of their practice is such as to lead to much physical strain or exposure.

These examples will suffice to show the great importance of occupation, and how it must be carefully weighed with other things in judging of the eligibility of every life.[2]

Family History.—The important influence of hereditary tendency in affecting the health and life of individuals is notorious, and all insurance offices make most strict inquiries into the family history of their proposers. The duty of eliciting the facts is almost always laid upon the medical examiner, and

[1] *Ramazzini* speaks very differently on this subject. He says that medical practitioners are comparatively exempt from ordinary diseases in consequence of their good exercise, their hilarity of mind, when they go home with their fees in their pockets—"Dum bene nummati lares suos repetunt." He adds that medical men are never so unwell as when no one else is unwell (Thackrah, p. 91).

[2] Certain occupations involve sea-risks, or residence abroad. For these each office has its own scale of extra charge. Ordinary sea-risk is reckoned usually at one guinea or more per cent. extra. In the case of the Transatlantic steamers, this has been lately reduced to ten shillings. Residence in hot countries requires about thirty or forty shillings per cent. extra, but this is being gradually abolished except in the case of very unhealthy climates.

not merely left to the unchallenged statements of the proposer in the proposal. This is quite right; because the statements made as to the cause of death of parents and other near relatives are often exceedingly vague, and require very close cross-questioning to get at the truth. For example, a father or brother may be stated to have died of congestion of the lungs, or inflammation of the lungs, or bronchitis, but inquiry shows that it was not an acute illness coming on in a previously healthy person, which might be disregarded in estimating the eligibility of the life, but that it lasted several years, in fact it was consumption. Again, a mother or sister may be stated to have died of child-birth, but when it is elicited that the death took place several months after the child-birth, showing that neither hæmorrhage, nor puerperal fever, or other accident was the cause, grounds of suspicion are at once raised in the mind of the examiner that the death may have been due to constitutional delicacy, perhaps *consumption.*

Then the vague word "dropsy" may be given as a cause of death of a parent, and the medical examiner has if possible to elicit from the proposer something more definite—whether it was cardiac dropsy, or was it Bright's disease?

The principal inherited diseases are tubercle, cancer, gout, insanity, epilepsy, and other nervous diseases, and we may add syphilis. Syphilis and gout come to be considered later under the head of diseases of the proposer himself.

Cancer has by the great majority of pathologists been considered a hereditary disease. They believe that a *tendency* to cancer is transmitted, though the actual development of the growth may be due to local causes. Paget found one in four of the subjects of cancer had relatives affected by the same disease.

Dr Snow,[1] however, says that, as a result of inquiries he made of patients at the Cancer Hospital, he found that the non-cancerous patients (cases of strumous glands, dental sinuses, &c.) knew as many cancerous relations as the cancerous patients did; and, therefore, Paget's figures may be explained by the frequency of the disease among *all* families. Two-thirds of

[1] *Brit. Med. Journal*, Oct. 10, 1885.

Paget's cases, however, were taken from private patients, where probably the family history would be much better known than that of hospital patients, whose knowledge of their family, and especially of the collateral branches, is, we all know, exceedingly defective. In 78 cases of healthy medical practitioners Dr Snow found 19 per cent. had a family history of cancer, a percentage exceeding the cancerous patients. Cooke, in his book on this subject, shows that three-eighths of cancerous patients show a hereditary relation to tubercle. Admitting, however, the hereditary character of cancer, its occurrence in the family history need not, I believe, tell against an otherwise unexceptionable life. In some lives, however, it might count, with other things (*e.g.*, dyspepsia), against the life, especially in the case of females, who are much more liable to cancer than males—Cooke says in the proportion of five to two.

A similar conclusion may be arrived at as to the influence of diabetes, rheumatism, heart disease, and Bright's disease occurring in the proposer's family, all of which have a certain amount of hereditary character.

Tubercle, however, stands in a very different position. Here the importance of heredity in affecting the expectation of life is a matter of common belief. I shall only mention one proof of the correctness of this belief. In the 1887 report of the Mutual Life Insurance Company of New York, out of 1031 who died of consumption (*i.e.*, lives which had been selected and assured by them), 18·8 per cent. had a history of family phthisis, while of the same number of persons who died from other diseases only 9·9 per cent. gave such a history (Dovey).

Again, in the United States Insurance Company, the proportion of deaths from consumption among policyholders was 38 per cent. in those having a family history of phthisis; 26·8 per cent. among the policyholders generally.

When I come to speak of lung symptoms in the proposer himself, I shall revert to this subject, and consider how much weight should be given to hereditary phthisis, as a disqualification.

Insanity, Epilepsy, and other Diseases of the Nervous System.—These we class together in considering hereditary

tendency, for one form of nerve disease in the parent may lead to a totally different form in the descendant. Undoubtedly, evidence of a strong tendency to nervous disease in a family history must weigh decidedly against the eligibility of a life; though it would be impossible to lay down precise rules. The death of a parent from apoplexy or paralysis at a considerable age is not included.

We now come to the next series of questions, those relating to the proposer's own health. "For what diseases, since childhood, have you required medical attendance?" and this is followed by questions framed for the purpose of ascertaining if he is conscious of any weakness or tendency to illness for which he may not have consulted any doctor, especially rheumatism, cough, spitting of blood, hernia, fainting, &c.

Now, my own experience has shown me the importance of being exceedingly minute and particular as to the first part of this question:—What medical advice has he taken?

Proposers for life assurance are not always honest, and they sometimes do conceal the truth; and even with regard to such a definite question as—what medical advice they have had, they may avoid telling the whole truth, unless the inquiry is made very searching.

The following instances of concealment have come under my notice during the last few years. A gentleman died of cancer of the throat about a year after being accepted by an insurance office. It was then discovered that previous to his proposing he had consulted a London specialist for premonitory symptoms of throat affection. This he concealed from the medical examiner of the office. Another, who had been the subject of angina pectoris, and had seen several consulting physicians, completely concealed this fact, and was accepted, there being no physical signs of heart disease. He died suddenly six months later. Another withheld the information that he was at the time of examination under treatment for diabetes: he was not accepted. Another kept back the information that a few years previously he had suffered from syphilitic paraplegia; having completely recovered, he said nothing about this illness, and was

accepted. When the truth was accidentally discovered a few months later, the policy was cancelled.

As examples of the previous personal ailments of which we get information from the proposer at this stage, I shall refer to rheumatism, gout, syphilis, piles, and fistula.

Rheumatism is often hereditary (Fuller says in 29 per cent.). A history of rheumatic fever or of severe rheumatism in the individual must always make us look with suspicion on a life even where the heart remains apparently unaffected. If more than one attack has occurred, this would certainly prevent acceptance at ordinary rates.

Gout may be hereditary (Garrod says in 75 per cent. of the cases). In this country it is often acquired at a comparatively early age. In such early cases it is usually due to habits, I do not say of intemperance, but at least of tolerably free living, combined with want of exercise. Gout, especially when acquired at an early age, has a decided tendency to shorten life, chiefly by leading to disease of the heart and kidneys. Moreover, as Garrod points out, gouty people are apt to be cut off by comparatively slight accidents. Usually, in cases of gout, offices require an increased premium, but they vary greatly in their rules. One office adds 11 per cent. to the premium in all cases; another only in gout occurring under a certain age; another adds three years to the age: this I consider quite insufficient. The Scottish Mortality Experience, published in 1869, shows that the mortality on assured lives that had been charged extra premiums for gout greatly exceeds the mortality from any other infirmity.[1] We ought, therefere, to be very cautious about passing those who have had an attack of gout, especially if under the age of 45 or 50.

The effect of *Syphilis* on longevity depends greatly on the constitution of the person, and on the treatment he has received. Mr Berkeley Hill says—"It shortens life to so small a degree that it may be discarded in roughly estimating for assurance the

[1] This cannot include tubercle, which, of course, must be more fatal than gout. But the practice of insurance companies is rarely, if ever, to accept, even with an extra, a person who has had signs of tubercular disease, unless under the most favourable circumstances—hence the higher comparative mortality of gout.

life of a man who has had it in the ordinary superficial forms, and been treated." This is taking a very favourable view, which can only, I think, be justified where there is thorough evidence of a robust constitution and a healthy life. Of course, Mr B. Hill does not apply this favourable judgment to internal (or visceral) syphilis, the subjects of which rarely live long (Dr Moxon found the average age of those dying of visceral syphilis was 37 years).

Piles and Fistula.—When the history shows he has suffered from piles or fistula, provided these are cured, there need be no great difficulty in passing the life; but the most careful investigation is required, especially in the case of fistula.

Our next question is as to the proposer's *habits*. Here, too, concealment of the truth is most frequent; so that the judgment on this point must be assisted by one's own examination, the appearance and manner of the man, the appearance of the tongue and also to a slight extent by the friends' reports.

In all cases where there is any doubt as to the past state of health, or as to the habits, we can refer to the patient's private medical attendant, and obtain from him a confidential report on these matters. Some have said that insurance offices ought in all cases to apply to the proposer's medical attendant, as he is by far the best judge of the patient's health and prospects of long life. This, however, is impracticable for many reasons, into which for want of time I must not enter. It has been said, on the other hand, that it is wrong to apply to a medical practitioner for information about his patient, that it is asking him to betray professional confidence. The application, however, is not usually made, except with the proposer's leave; and while I admit there are some objections to this inquisition, it is an established custom, and on the whole works well.

The proposer having signed his answers to the above inquiries, in the presence of the medical examiner, the latter now proceeds to the medical examination proper.

The Medical Examination.—We first note his general appearance, whether it be that of a healthy robust man—of the age stated. His height and weight are noted; and if these are very

disproportionate, that circumstance alone may prevent his acceptance as a good life.

Tables are given of relative height and weight, and are useful guides. Immoderate height is by no means a sign of health and vigour. It is often attained at the expense of strength, and, as a matter of experience, very tall men are not the longest livers. But a more serious objection is excessive weight —*Corpulence.*

Proportion between Height and Weight of Healthy Men
(Dr Robertson's, abridged).

Height.		Weight.		Weight − $\frac{1}{5}$.		Weight + $\frac{1}{5}$.	
ft.	in.	st.	lbs.	st.	lbs.	st.	lbs.
5	3	8	13	7	2	10	10
5	4	9	5	7	7	11	3
5	5	9	11	7	12	11	10
5	6	10	4	8	3	12	5
5	7	10	10	8	8	12	12
5	8	11	3	9	0	13	6
5	9	11	10	9	5	14	1
5	10	12	4	9	12	14	10
5	11	12	11	10	3	15	5
6	0	13	5	10	10	16	0
6	1	13	13	11	2	16	10
6	2	14	7	11	9	17	5

The weights given in the accompanying table were taken from the average of adults of middle life, about æt. 30, and the variation allowed (one-fifth or 20 per cent.) would cover fairly the lighter weight of younger persons down to æt. 20.

So long as the one-fifth + or − is not exceeded, the variation from the standard weight need not tell against the life; but if the w ight is less than four-fifths of the average, or if it exceeds the average by more than one-fifth, then it may tell against eligibility of the life—each case being judged on its own merits. If in any case the weight is too low, and the family history shows a tendency to consumption, such a life ought not to be accepted as a first-class life; and the same applies to excessive weight, where there is a quick pulse or a weak heart.[1]

[1] In an interesting paper by an American physician (Seavern, *Boston Med. Surg. Jour.*, Oct. 1884), he found that in a beneficiary society, out of 974 deaths between the ages of 21 and 60, 138 were of men, who at the time of admission

The facts we have already ascertained by our questions as to the previous medical history of the proposer will guide us to what we should next direct our attention. If he has *hernia*,[1] we examine that carefully, see its nature, and whether he is properly fitted with a truss. One not unfrequently in these cases finds the hernia is cured—has disappeared, in which case no addition is made to the life; but in all cases of existing hernia, even with a well-fitting truss, hitherto it has been the rule to make an addition to the premium. It is probable, however, that this rule will in future not be strictly adhered to.

I have prepared a small table founded on the published mortality experience of one of the largest British offices during the last seven years. It shows the largest sources of mortality among their assured lives before the age of 60. Out of a total of 3426 deaths during these seven years, 1601 took place before æt. 60, the principal causes being—

Consumption,	265
Bronchitis and Pneumonia,	146
Heart Disease,	164
Apoplexy and Paralysis,	219
Liver Disease,	110
Kidney Disease,	83
Cancer,	83
Violent Deaths,	108
Hernia,	0

We see from this that disease of the lungs is the principal

were 15 per cent. (one-sixth to one-seventh) below standard weight; out of these, 42 were from phthisis, and tubercular disease; adding several allied diseases, the number amounts to nearly 50. The average duration of their membership was 31 months. 122 were 15 per cent. or more over the standard weight; of these, none died of phthisis: the principal cause of death was apoplexy and diseases of the brain (26); disease of the heart (24); disease of the kidneys (16); and zymotic diseases (14). The average duration of membership was 27 months. Nearly two-thirds of this number exceeded the standard weight not merely 15 per cent., but 20 per cent., and more than half of these, again, were 25 per cent. overweight. The general conclusion is that the light-weights are apt to die of chronic constitutional diseases, and that the greatest danger with the heavy-weights is accident, zymotic and acute disease, and also heart disease; but that in the heavy-weights a greater variation from the standard weight is safer than in the case of the light-weights (say one-seventh in the one, and one-fourth in the other).

[1] In the experience of a large British office, extending over fifty-eight years, out of a total of 5633 deaths 11 were from hernia; half of these *after the age of* 80, only 3 of the 11 occurred before æt. 60. The Scottish Mortality Experience (1869), already quoted, shows that the mortality for lives charged extra for hernia is *lighter* than for healthy lives!

source of premature death; then disease of the heart and blood-vessels, either in connection with the heart itself, or in the brain; then the liver and kidneys. It is to these different organs that we ought to direct chief attention in our examination.

The Lungs.—The subject of our examination ought always to be stripped, leaving only the under vest; and that, too, should be removed if there is any suspicion of weakness or disease of lungs.

The development and expansion of the chest is observed, and the usual physical examination made. In evidently healthy men that is very quickly accomplished; but in delicate looking men, and those subject to colds, or who have been laid up with any chest disease, a very thorough examination should be made, not only of the apices in front, but also very specially of the apices behind, for the first physical signs of tubercular disease very often appear at the upper part behind. And we must ascertain not only the *absence* of *abnormal* sounds, &c., but also make sure, especially in the case of persons with a bad family history, that the respiratory sounds are robust, not feeble and poor, and that the chest expands well. Defect in this respect, even without disease, combined with a bad family history, might compel us to decline a life altogether, especially if under the age of 30.

Then tubercular disease is not the only thing to be guarded against. Emphysema is sometimes detected even in the young and the apparently healthy by the prominent chest, muffled breath sounds, and diminished area of cardiac dulness. This is particularly to be watched for when the previous history shows a severe attack of measles, bronchitis, or repeated winter colds. A very difficult question is what value should be given to signs of old, but completely arrested, disease at the apex,—some dulness, and obscured breath sounds, due to pleuritic adhesion. Of course, such a condition in one with a hereditary tendency to phthisis would absolutely exclude him, but where there is no such tendency, and where this is noted in not too young a man in absolutely good health and sound constitution,

it ought not in my judgment to be considered as positive proof of disease or delicacy.

It may be convenient here to sum up the principles that should guide us as to passing cases with a personal or family history of tubercle.[1] First let us remember that the risk of phthisis does not entirely cease even after æt. 40 or 45, though the influence of heredity is much reduced. Hence rules that we would make for lives between 20 and 30 are modified, or even given up, at later ages.

First as to family history alone:—If both parents have died of consumption, or if one parent and several brothers and sisters, a life, however unexceptional the personal history, and however satisfactory the physical examination, could not be accepted at an early age; and even at a later age, an extra premium might be required, at least till æt. 40 or 45. If one parent has died of phthisis, even if it be the mother, offices will still accept the life before æt. 30 with an extra, if the personal history and examination be absolutely satisfactory. So, probably, if two brothers or sisters have died, the life will be accepted with an addition of seven years, unless it be a case of atavism. But in all these cases, if there be the slightest defect in the personal conditions, imperfect development of chest, feeble respiratory sounds, a liability to colds, a past attack of pleurisy or other lung inflammation, no extra would cover the risk. In connection with family history, remember the possibility of atavism. If there is an unmistakable history of previous tubercular disease in the proposer—hæmoptysis, &c., even with no family history of phthisis, and still more if the family history be unsatisfactory, such a life is not eligible; and even after the lapse of years, and continuous good health, it should only be accepted with an extra.

In the case of female lives, a hereditary tendency to tubercle is even more dangerous than in males, owing to the additional risk of phthisis developing in them in connection with child-bearing.

[1] Dr R. E. Thompson's book may be consulted, *Family Phthisis in Relation to Heredity and Life Assurance*, London, 1884.

The Heart.—If any organ of the body is more important than the lungs in a medical insurance examination it is the heart, for we have seen the enormous number of deaths that take place among the assured before æt. 60 from disease of this organ. It is important, also, because serious defect of the heart may exist in those who are to all appearance most healthy. I have little to say as to the way in which this examination must be effected—just the same as in the case of our ordinary patients; the size of the heart must be noted, and the sounds both at the apex and base. Especial care must, of course, be taken where there is a history of rheumatism. In the event of any doubt as to the perfect clearness and healthiness of the sounds, the patient's circulation must be quickened by a little violent exertion. I find the most convenient way to do this is to make him *hop* on one leg round the room.

Any real deviation from a healthy condition of the heart, is, in the opinion of most physicians, quite sufficient to prevent acceptance of the subject for the life assurance. It is quite true that we are accustomed to tell our patients, with heart disease of certain forms, that with care they may live as long as others. We know that mitral regurgitation and aortic obstruction may exist and remain *in statu quo* for many years. Sir A. Clarke has recently drawn the attention of the profession (*Brit. Med. Jour.*, Feb. 1887) to cases of valvular disease of the heart known to have existed over five years without causing serious symptoms (we all know this), and at the end of his paper, he says that if the patient's general health and habits are good, and he does not show any liability to rheumatism or colds, if the valvular lesion has not changed for three years, and is not due to degeneration (as distinguished from inflammation), the ventricles also being in good order, and the arteries not degenerated, and no persistent pulmonary and hepatic congestion, then mitral disease will not shorten life, and a case of mitral regurgitation under these circumstances may be insured with a comparatively small "loading" (he means *extra*).

This certainly has not been the practice of insurance offices; and when we note the large number of insured persons who die

of heart disease before their time (see Table), who had healthy hearts at the time of assurance, is it not likely that those who already have damaged hearts would, if accepted, show a much greater mortality? Moreover, they are much more likely to succumb to the fevers, pneumonias, and accidents which are such a fertile source of premature deaths.

There may be very rare cases, where such persons can be accepted as under-average lives, but we shall not be likely to persuade the directors of life assurance offices to adopt the view which we have just quoted.

We must of course, as in ordinary medical practice, distinguish between organic and non-organic murmurs. The latter may be due to the condition of the blood, or to the pressure of a somewhat contracted chest; in the latter case it usually varies with the respiratory movements. It is best to postpone such cases for re-examination after an interval. If we attempt to examine the heart without removing the shirt, by making the patient draw his shirt upwards, the strained position often causes a systolic bruit to appear. This, however, is inaudible when a proper examination of the chest is made.

Pulse.—Over-frequency of the pulse may be merely the result of nervousness of the proposer, and will probably disappear when the examination is over, or at least there will be other indications of its nervous origin. If, however, the quickness be persistent, we must suspect there is some constitutional or organic cause. Often it is some abnormal condition of the cardiac system, or it may be intemperance. The pulse ought also to be examined for irregularity of action, rigidity, or abnormal tension.

I shall pass over the consideration of the *liver* very briefly. It is especially in the case of those about whose temperance we are doubtful, or who have resided abroad, that we ought to satisfy ourselves that there is no alteration in the size of the liver and spleen. A point to be remembered is that jaundice, unless very extreme, cannot be detected by gas-light, one among several reasons against making insurance examinations in the evening.

Kidneys.—We now come to the examination of the kidneys,

and their secretion, always acknowledged to be of importance, but its importance has been far more insisted on by insurance companies in late years. Most of them now insist on the examination of the urine in all cases.

The practical rules I should recommend are these:—

1. Obtain the urine, if possible, at the time of examination—not that fraud is probable, but at least it is possible. Another advantage is, that as the examination is usually made in the forenoon or midday, you obtain a specimen which has been passed subsequent to taking food and exercise. Now, in cases of slight or of intermittent albuminuria, we are much more likely in this way to obtain evidence of albuminuria, than if we requested the patient to send a specimen, which would most likely be the morning's urine.

There is rarely any difficulty in procuring a specimen of urine at the time of examination (except, of course, in the female lives). You have only to leave the man alone in the room for a couple of minutes, and even the most nervous patients are usually able to pass a small quantity. Not once in fifty times will this fail.

2. Examine both for albumen and sugar, the latter especially in persons above middle age. I do not say it is absolutely necessary to test for sugar in those who are evidently healthy, and not above middle age, particularly if you get the specific gravity of the urine. It is, however, better to do so.

3. If you have any suspicion of a tendency to Bright's disease, either from the patient's appearance, or from tension of the pulse, or from the family history, obtain, if possible, a sample from the total twenty-four hours' urine, and by that means the presence of albumen will not likely escape your testing.

The smallest quantity of sugar or albumen, unless proved to be a mere temporary condition due to some passing cause, has been considered sufficient to disqualify any proposer for life assurance.

Temporary glycosuria may occur from too rapid digestion of sugar or starch after fasting, or from chloroform inhalation. Temporary albuminuria occurs, for example, after eating a large

quantity of eggs. If subsequent examinations showed the continued absence of these abnormal constituents for a month, their previous detection might, as a rule, be disregarded.

Lately, however, it has been suggested that cases of what has been termed "physiological," "cyclic," or "intermittent" albuminuria need not be excluded from the advantages of life assurance. These cases occur in apparently healthy persons, especially lads and young men. The albumen is small in quantity, it is usually intermittent, absent in the morning after rest, present after exercise or full meals; casts are rarely discovered (and only with special precautions). The urine is normal in its specific gravity and other characters. It is said that this so-called physiological albuminuria is present in healthy persons. Leube found 4 per cent. in morning, 16 per cent. post-meridiem, in soldiers. Dr Munro of the United States Life Assurance Company found 11 per cent. of those who came before him for examination had albuminuria![1]

If it was found in a case of this kind that the albumen entirely disappeared after treatment, I believe the case might be considered eligible with an extra. But I agree with Dr George Johnson, writing on this subject in the *Lancet* of this year, that "it is unquestionable that, however apparently free from other symptoms of disordered health the person may be, a frequently recurring albuminuria, if neglected, will almost invariably result, though it may be after many years, in structural disease of the kidney."

Nervous System.—Any serious disease of the nervous system will disqualify a man for life assurance:—a history of *epilepsy*, for example, unless there has been so long an immunity from fits as to prove the cause to have been temporary, in which case possibly, other circumstances being favourable, the life might be placed in the second class. Slight cases of spasmodic *asthma*, where no organic disease exists, may be accepted with an extra.

A previous attack of *insanity*, whether mania or melancholia

[1] A very full and interesting account of intermittent albuminuria is to be found in Professor Grainger Stewart's *Clinical Lectures on Important Symptoms.* I do not, however, agree with his conclusions as to the great frequency (1 in 3) of albuminuria among apparently healthy males.

or general paresis, even if soon recovered from, would as a rule render a life ineligible; and this, in my judgment, would apply also to puerperal insanity.

Serious affections of sight or hearing interfere with the eligibility, for various reasons. Such persons are more liable to accidents. The existence of a chronic discharge from the ear should not be overlooked; and if it be found to arise from the middle ear, the danger of meningitis or suppurative disease of the brain is not to be forgotten.

Female lives are only rarely proposed for assurance; most frequently widows. In addition to the ordinary health, special inquiries have to be made as to the health of the generative organs. Offices charge an extra premium on all women, married or unmarried, until they have passed the age of child-bearing.

I conclude by quoting the *results* which several offices have published of their experience with second and third class lives, proving the value of medical selection.

The Gresham experience of English lives with extra premium was as follows:—

Out of 1000 deaths	206	were of those with extra;
Of these 206	35	died of tubercular disease,
„	36	„ brain disease,
„	41	„ respiratory disease,
„	114	died before æt. 50,
„	154	„ „ 60,

The experience collected by Institute of Actuaries (1869) was of 11,000 cases. It shows that the mortality among diseased lives at all ages under 65, exceeds that of healthy lives by 30 per cent., and at the younger ages nearly 70 per cent. So the later experience tables show the same result, that the mortality among "diseased lives" is very great,—not at first only, but also later on, there being no compensation for the early losses.

The Scottish Mortality Experience shows that the mortality of lives charged extra for defective personal health greatly exceeds that where the extra was for family history. The mortality of lives charged extra for gout greatly exceeds that for any other infirmity.

P. M. Dove reports (Royal Insurance Co., 1865) that they were able to trace the after-history of nearly 2000 *declined* lives, being about four-fifths of the total number declined in that period. Comparing these with the *accepted* lives, it was found that "at age 35, 1 out of 121 of accepted insurers died, while 1 out of 47 of the rejected died. In the same way at age 40, 1 out of 36 of the latter, and only 1 out of 143 of the former, died."

REFERENCE INDEX.

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