

cannot conceive what could have induced Mr. Chisholm to frame D and N columns with reference to this question, when the whole difference arises from an addition made to the sum assured.

MEDICAL STATISTICS OF LIFE ASSURANCE COMPANIES.

To the Editor of the Assurance Magazine.

SIR—I have recently (through the courtesy of the managers of the respective Companies) had an opportunity of perusing two reports,* the one by Dr. Christison, of the Standard Assurance Company, and the other by Dr. Begbie, of the Scottish Widows' Fund, on the subject of the mortality experienced in these two Offices.

As I believe these papers are not in general circulation, having been published originally in the *Monthly Journal of Medical Science*, and subsequently printed only for the private information of the members of the two Companies, probably some remarks upon them may not be unacceptable to your readers.

The papers in question are prepared by the medical officers of the two Companies, and form a valuable contribution to life assurance statistics.

With the exception of an account given by one of the present writers, Dr. Begbie, in the year 1847, of the experience in respect of mortality of the Scottish Widows' Fund, little or nothing of the kind now under consideration seems to have been published up to the present time. The reason given for this is, that very few Companies of sufficient standing can afford data on which such investigations could be satisfactorily based, owing to the meagre nature of the documents on which, until lately, Assurance Companies have been contented to accept their risks; and probably the documentary evidence adduced in proof of death has not been, prior to the organization of the Registrar General's department in the year 1837, of a more satisfactory nature.

There can be no doubt, I think, that the formation of the Institute of Actuaries is likely to give a great impetus to scientific inquiries of this nature. Their extreme importance to Assurance Companies is manifest; and the directors of these Societies, however unaware at present they may be of the fact, are in many ways reaping the fruits of an institution of the very existence of which they may not perhaps even be cognizant. It is from such inquiries as these, however, that the real practical use of the Institute will become apparent to them; for both the papers under discussion show, *inter alia*, how very important a careful selection of lives becomes: and this is particularly the province of the directors, of course under the advice of their physician.

The Standard Life Assurance Company was founded in the year 1825, and the Scottish Widows' Fund ten years previously.

I find, from a table given in the 2nd volume of the *Assurance Magazine*, page 360, that the total annual income of the first mentioned Company is about £180,000; and, from the same source, that the income of the latter Company is as much as £306,500 annually. I mention this to show the important character of these two Societies; and that, from the

* Noticed in No. XIII. of this *Journal* (see page 76).—ED. A. M.

extent of their operations, their experience in respect of mortality must be quite adequate to the deduction of valuable results.

I should have been glad to have been enabled to furnish a comparative table of the results of these two investigations; but after taking some trouble in the matter, I found that, for several reasons, this could not be satisfactorily done—one great disturbing cause, after the reconciliation of other anomalies, being, that the mortality experienced in each year under observation differs so very materially, the whole period embraced being only the short space of seven years; it being explained that the returns for the years antecedent to the last seven are of a nature not sufficiently perfect to warrant the deduction from them of results which could be depended upon, and the periods chosen by the two Companies not being identical.

There are other disturbing causes likewise, which I shall now proceed to enumerate, with respect to the classification of the causes of death. I shall follow the nomenclature of the Registrar General, and preserve the same order as that adopted in his returns.

1. *Diarrhœa and Dysentery*.—In the return of the Standard, these two diseases are classed together. Severe diarrhœa so often assumes the form of dysentery, that the line of demarcation between the two complaints is difficult to draw, and the deaths from these causes are accordingly often erroneously returned.

2. *Diarrhœa and Cholera*.—The same remark applies to these diseases; and in these cases, the desire on the part of some medical men, particularly in time of alarm, to allay the fears of the public, induces them to make light of so dreaded a disease as cholera, and thus conduces to erroneous returns; on the other hand, medical men of an opposite disposition may similarly magnify the number of cases; and this from no desire on the part of either class to give an erroneous impression, but simply from the bias of the individual, depending upon his peculiar idiosyncrasy: and diarrhœa so often simulates cholera so much as to afford great scope for this description of error.

3. *Erysipelas*.—This complaint is not generally a primary disease, but frequently supervenes after accidents and operations, and is accordingly only a secondary cause of death.

4. *Hæmorrhage*.—This is a very vague term. Hæmorrhage may be produced by internal disease or by external causes.

5. *Dropsy*.—This too is not usually a primary disease, but arises in certain stages of other complaints.

6. *Cancer*.—There are many parts of the body that this fearful disease selects for its attacks.

I imagine, from the smallness of the numbers returned under this head by both Companies, that this complaint has been returned as a disease of the part affected—that is, for example, that *carcinoma pylori* has been returned as disease of the stomach, *carcinoma uteri* as disease of the womb, and so on.

7. *Phthisis*.—Under this head the same remark applies, many cases of this disease being included under the head “diseases of the lungs.”

The difficulty of obtaining correct returns as to this complaint is very great. Take a very common case. A man is seized with pneumonia; he recovers, but his cure is more apparent than real, as some organic lesion has taken place. He ruptures a bloodvessel in the lungs, and shortly

phthisis supervenes, and he dies of a rapid decline in the course of a few weeks. This death may be reported in three different ways—1, under the head “pneumonia,” the primary cause of the mischief; 2, under the head “hæmorrhage”; 3, under that of “phthisis”; and it is often difficult to say positively which is right: for, on the one hand, the tendency to phthisis may have led to the fatal result from pneumonia; and, on the other, the pneumonia, which may have arisen from purely local and accidental causes, may have created organic injury in a subject not in any way predisposed to pulmonary disease.

8. *Apoplexy*.—In cases of death from this disease, which is generally quite sudden, the true cause of death is in many cases not arrived at. Of course when a *post mortem* examination is made, the autopsy will show whether the brain or the heart was at fault; but in how many cases out of the immense numbers that fall victims to this disease is a *post mortem* examination performed?

9. *Paralysis*.—This disease, too, is often a secondary stage of other primary complaints.

10. *Delirium Tremens and Drunkenness*.—Deaths under these heads are mostly from the same cause.

11. *Mania and Epilepsy, Insanity, and Suicide*.—The returns under these heads are very likely to be confounded. Lunatics often die of epilepsy; most suicides are committed by persons when in an unsound state of mind.

From these considerations, then, I am reluctant to draw any comparison between the two Companies which might prove invidious to either, and might warrant the assumption that one Company had been less cautious in the selection of lives than its compeer.

In perusing these papers, the most cursory reader could not fail to be struck by the great predominance of deaths at the young ages from phthisis and other pulmonary diseases, at the older ages from apoplexy, and at all ages from fever.

Now with respect to the first of these diseases, phthisis, it is unhappily too well known that, so sudden and so capricious are the ravages of this complaint, selecting as it does certain members of a family for its attacks and passing over others, without any apparent cause, that the utmost care in the examination of lives proposed for assurance is not sufficient to protect the Company. It would seem that, from the fact of this disease being in its nature so likely to be hereditary, that what they have principally to trust to is the careful inquiry into the family history of the applicant. Assurance Companies are now on their guard in this respect, and some Companies make a point of declining, as a rule, all young lives—say, lives under 40—in which there has been even one case of consumption among the immediate relations of the life proposed. There are, of course, cases where a brother or sister may have died of this disease, in which the exciting cause may be clearly traced, and in which there may be no hereditary taint; but even in these cases the utmost caution is necessary, for there is a peculiar anxiety evinced (all interested motives apart) to find a reason, an excuse, for the death of a near relative from this dreaded hereditary disease.

That Assurance Companies are now fully aware how much they are dependent upon full information as to the family history of the lives pro-

posed, the nature of the documentary evidence now required to be furnished very clearly shows.

I must here remark, that Dr. Christison asks, rather unfairly, "whether the older Assurance Companies are right in still adhering, as many" he says "do, to the old form of inquiry, according to which the certificates convey only the most imperfect medical history of the proposer himself, and next to nothing as to that of his immediate relatives."

I have been familiar for several years past with the forms in use by most of the older Assurance Companies, and it has been within my own personal observation that their forms have been from time to time modified and improved, as circumstances required and experience suggested, until I should think there was but little scope for improvement; the amendment to which I allude, moreover, tends precisely in the direction pointed out by the pamphleteer.

It is satisfactory to find that the deaths from diseases of the respiratory organs among the members of the Scottish Widows' Fund, in the present investigation, amount to only $18\frac{3}{4}$ per cent. of the total mortality; while in the preceding investigation, in 1847, the ratio was $23\frac{3}{4}$ per cent.; the difference arising, it is stated, from the diminished mortality from consumption, which result no doubt was produced by the care taken in the selection of lives, having reference especially to minute inquiry into the family history of the applicants. Nor must it be considered that this diminution has arisen from deaths from this cause having been registered under other heads, such as "disease of the lungs," &c.; for it appears that the number of deaths from diseases of the lungs, not of a tubercular origin, has been smaller during the quinquennial period under consideration than in the preceding.

Dr. Begbie sums up a very interesting and highly important inquiry into the circumstances connected with the acceptance of the cases which eventually proved consumptive, with the expression of a hope that the consideration of these cases will lead the Board of the Scottish Widows' Fund in no degree to relax the rule under which they have acted for many years past, of rejecting all applicants in whose immediate family more than one case of tubercular consumption has manifested itself; the more so if the proponent be under 45 years of age. "The daily experience of the Society," he adds, "will lead the Board to view with increasing suspicion the proposals of those who, though sound in themselves, are called to acknowledge that a father, and particularly a mother, a brother, or a sister, have been affected with or carried off by this fatal disease."

The returns of the Standard Company do not so readily admit of a comparison of the relative per centages of diminution of this disease in the present quinquennium; but it is clear that, though a considerable number of lives have been prematurely cut off by phthisis, very many of this number would not have been admitted under the system now followed. Like the Scottish Widows' Fund the Standard Company do not consider that a single death from consumption in the family of the proposed life is in itself a sufficient reason for rejection, but their experience tends to show the necessity for extreme caution, even in these cases.

It does not appear, from these investigations, whether in doubtful cases the Companies in question accept the assurances at an increased rate of premium. I should think, however, from the absence of any information on this point, that they do not.

It is quite clear that in these cases, when say one death has occurred in the family from pulmonary disease, if the life be taken and does succumb to this disease, the death happens in most cases so very long before the due expectation at the age that no small extra premium, such as some Companies are in the habit of accepting in these cases, would be the least protection against loss; such extra charge, if made at all, should be extremely high—so high, in fact, as almost to preclude the idea that the proposer would complete the assurance. The practice, I believe, of most of the Offices of standing in London, is either to accept or decline in these cases, rarely requiring an extra premium.

The same mastery that consumption has over young lives, apoplexy and its cognate diseases maintain over those more advanced in years.

The deaths from this class of diseases form a large proportion of the total mortality of the two Companies under review.

Though we have not in apoplexy a disease so decidedly hereditary as consumption, and are accordingly deprived of the aid to our judgment which an inquiry into the family history might afford, still there are certain indications, well known to medical men (but which it would not fall within the scope of this letter to discuss), to assist in influencing the selection of lives; and though the mortality from this class of disease has been very great, yet there is every reason to suppose that, under the present system adopted by the two Companies, many policies which prematurely became claims would not have been issued.

The space I am consuming reminds me that I must proceed to the third large class of diseases, previously referred to, which tells so much upon the mortality of Assurance Companies, and which affects lives of all ages—I mean, fever.

This disease is unquestionably very much in our own hands. In a paper I had the honour of reading before the Institute of Actuaries in November last, I alluded to the almost entire check that has been given to this disease by the exertions of the Metropolitan Association for the Improvement of the Dwellings of the Industrious Classes, so far as refers to the districts under their control. A public meeting of this Association took place on the 25th of February last, with the view to consider the best method of extending the operations of the Society. Mr. Hubbard, the Governor of the Bank of England, in the course of an address to the meeting, after speaking of what had been done for the social and intellectual advantages of the labouring classes, by the building of churches and the establishment of schools, stated his opinion that these would be in vain if their influence was to be counteracted by that of the wretched abodes where filth and disease ever prevailed. The Society, he added, would lead the way in improving the dwellings of all classes. Lord Stanley, also, speaking of the wretched condition of the labouring classes in the metropolis, mentioned that it had been stated, that in a small lane near Oxford Street, 12 houses contained no less than 461 persons, and that the quantity of air enjoyed by each was only one seventh or one eighth of the quantity requisite for one individual.

Now, in the face of such facts as these, can anyone be astonished at the spread of contagious disease? And does it not seem probable that, even in a pecuniary point of view alone, it would be worth while for Assurance Companies to take their share in these philanthropic undertakings? By the extension of sanitary improvements, disease may be very much prevented;

and Assurance Companies would not only obtain a profitable rate of interest for their investments, but would be undoubted gainers in process of time by the diminution of their mortality.

That these will be *paying* institutions there can be no reason to doubt. The Society of which I am now speaking has a capital of £100,000, with power under their charter to increase the amount, if necessary; and a dividend of 5 per cent. is confidently looked forward to. As an evidence of the satisfactory state of the Institution, I may mention that it appears that, since the commencement of operations, the receipts have been £15,000, and the bad debts have not amounted to £40.

The necessarily restricted space of the *Magazine* will not admit of a further pursuit of this subject.

The pamphlets under consideration suggest many interesting points of inquiry, which I have not been able to touch upon—as, for instance, the connection between diseases of an unimportant character primarily, and those of a deadly nature—between rheumatism and disease of the heart, between the latter and dropsy; and so on. With respect to dropsy, which is not a primary disease, but is usually symptomatic of some other disease, it will be found that, the more correct the returns obtained by the Office, the less the number will appear that have died of this disease; and similarly of other heads, such as palsy, paralysis, and “unknown causes:” and, conversely, the smaller the numbers under these heads, the more correct and precise are the returns likely to have been, and, accordingly, the more satisfactorily will the business of this Office appear to have been conducted, and the more faith and confidence can we place in the results. The return of deaths from “natural causes” is very far from satisfactory, unless the age was very advanced.

It will be seen, I apprehend, from the foregoing observations, that these investigations are of a most important character; and the careful manner in which they have been conducted affords the best evidence of the progress that is now being made in life assurance statistics. These papers are worthy of careful study, not only by the medical examiners, but by the actuaries also, of all Life Assurance Companies.

We may deduct from them the following important considerations:—

1st. The necessity for as strict an inquiry into the family history of the life proposed for assurance as into the present and past state of health and habits of life of the individual himself.

2nd. The extreme importance in all cases of the use of the stethoscope, and of the careful examination of lives proposed for assurance, in every case, by competent medical practitioners; and,

3rd. That the improved methods of inquiry now so general among respectable Companies, and the advances which are constantly being made in the knowledge of the causes and effects, and in the diagnosis, of disease, though they cannot be expected to tell with effect upon the business of a Life Assurance Company for some time to come, must eventually tend to reduce the mortality of such Societies.

I have the honour to be, Sir,

Your obedient Servant,

H. W. PORTER.

Alliance Assurance Office, London,
1st March, 1854.