

it from left to right. That line illustrates the claims paid from year to year as the men die off. The line starts at age 20 at about £3,000, and is nearly level for the first twenty years until age 40, but then commences to increase until at age 76 it reaches an enormous height. You do not require figures to follow this—the increase can be seen by the eye; but it may be stated that the outgo for claims is only about £3,000 a year for twenty years (up to age 40), and it increases to over £22,000 a year at age 76, in spite of the fact that there is only half the number of members left there.

Now take the other line, the thick black line. That illustrates the premium payments made by the men. They pay £1 each every year, the income commencing at about £7,220 at age 20, but as they die off there are fewer left to pay the £1, and consequently the income from contributions gradually decreases, as the falling of the line shows.

Now, you see clearly with the eye that the contribution income is considerably in excess of the outgo for about twenty-nine years. You have only to look at the coloured space which, in fact, represents the excess of contributions over outgo in the first twenty-nine years.

Look now at the shaded portion of the diagram. That portion represents excess of outgo over contributions in the next fifty years. Now, it is plain that the coloured area is not nearly as large as the shaded area; that is, notwithstanding the excess of contributions in the first twenty years, there is not nearly sufficient to make up the excess of outgo in the later years.

How is the difference made up? The answer is, that the amount represented by the coloured area must be invested at interest, and thus made to grow until it is as large as the shaded area. A mere glance shows that a large amount of interest must be earned to make the coloured area fill the shaded space.

Now, this diagram shows many things. It shows why the actuarial premium always seems too high at first. It shows that, in fact, it is not high enough unless supplemented by a large amount of interest. It shows why the fund of the lodge exists; that such fund is nothing more nor less than the amounts of the coloured space lying for years till they accumulate the proper amount of interest, and grow large enough to fill the shaded area. A portion of every member's contribution must go into that fund and lie there to fructify until the appointed time. All lodges and life-insurance offices must ultimately reach the point represented by the shaded area where the outgo exceeds the contribution income. On pages 28 and 29 you will find three practical New Zealand lodge examples of this given by Mr. Hayes. I might here state that the accumulations of the societies are not there for the benefit of posterity, as is frequently suggested. Indeed, in most cases they are not sufficient to provide for the present members' own liabilities. It is a fact that in some New Zealand societies to-day posterity in the shape of new members is actually coming in and paying for the earlier members, instead of the contrary being the case.

I am now in a position to answer the question put by Mr. Jennings, and show you why a lodge may have an inadequate contribution and yet accumulate funds. You have only to look at the diagram to see that the contribution income might be reduced to a great extent without completely obliterating the coloured space. That is to say, with a premium considerably below an adequate one there would still be an accumulation; but it would not be sufficient, particularly when it is remembered that if you shift the black line lower you not only reduce the coloured space, but you also increase the shaded area. That explains how a lodge with inadequate premiums may have a large and increasing fund for many years. The accession of an increasing number of new members tends to keep this going for a longer time.

Now, if, instead of charging a fixed contribution, we merely levy as the deaths occur, the amount to be raised by levy would have to follow the dotted line. You would have to raise by levies only about £3,000 a year for twenty years, but later on as much as £22,000 a year at a time when the members are reduced in number. The levies would be only about 8s. or 10s. a year per member for twenty years, but would eventually increase to an enormous amount, and, of course, no aid is got from interest.

18. *Mr. Stallworthy.*] Could you show what the levies per member would be at, say, the higher ages?—Yes. They would be as follows: Age 40, 10s. 2d.; age 50, £1 3s. 5d.; age 60, £2 3s. 5d.; age 70, £5 6s. 9d.; age 80, £12 9s. 10d. Of course, an accession of new members would simply delay the increase in the levies, but the increase would eventually be all the greater.

19. *Mr. Tanner.*] How many of the 7,220 would be alive at age 40?—There would be 6,579; and 5,209 at age 60. In case, however, any one objects that I have not taken the lapses into account, I will show you Diagram B. This diagram needs no additional explanation. It is on the same lines as Diagram A, except that I have started with 12,200 members instead of 7,220, and I have allowed the full lapse-rate observed over some New Zealand lodges, with a large number of lapses. In Diagram B, out of the 12,200 original members there are only 6,579 left at age 40, nearly one-half having lapsed or died. Altogether over one-third of the original members lapse in Diagram B., and yet you can see that it makes very little difference. The same contribution of £1 is employed as in Diagram A. In both diagrams the thick black line representing the contribution income can also be taken as representing the number of members. I may add that the contribution of £1 contains no provision for expenses.