

## CORRESPONDENCE

### *The Life Table Myth*

The Editor,  
*The Journal of the Institute of  
Actuaries Students' Society*

Dear Sir,

May I draw your attention to the following quotations from the official text-book on Office Premiums (*Premiums for Life Assurances and Annuities*, J. H. Gunlake):

Chapter I, para. 18: 'The outstanding feature of this actuarial task is, therefore, the usual one of forecasting. The actuary is to extrapolate... from the observed but not fully understood past, into the wholly unobservable future; and in doing so he relies like other scientists upon the continuity of phenomena.'

Chapter II, para. 1: 'However, in the many mortality investigations of various kinds that have been made since 1693 a few features can be discerned that seem relevant on the financial side to the task of forecasting future death-rates for the purpose of calculating rates of premium...'

The clear implication of these two quotations is that the life table is an instrument for forecasting, and that when the actuary employs a given table for calculating his premium rates he is, in fact, forecasting the future mortality experience of the fund. It is, of course, recognized that no given table is likely to reproduce exactly the future experience, but it seems to be suggested that ideally a table could be found which would do so. In conditions of changing mortality, however (and were there or will there ever be other conditions?), no single life table can possibly achieve this end.

I suggest, therefore, that when the actuary prepares a scale of premiums he is not attempting to forecast the future mortality rates or, for that matter, the future interest and expense rates, but is rather endeavouring to estimate the cash amount of the premium which, if collected over a period of time from a representative body of lives, will yield to the fund a reasonable profit.

Now I believe that despite the statements in the official text-book this is the frame of mind in which most practising actuaries really approach the problem. Indeed, I think it has been known for the actuary to choose his scales of premiums from general considerations and then to find a basis which fitted them. Shocking as this may seem to the purists it has, at any rate, the merit of being a realistic approach to the problem. The advantage of fitting a basis is that it provides, after the event, a convenient means of determining roughly in what respects the original estimate was wrong.

The fact remains, however, that no matter what the practical approach of the actuary to the problem of premium rates may be, considerable lip service has been paid to the life-table technique and insufficient publicity has been given to its limitations. The result is that outside the profession it has achieved greater fame than it truly deserves, and persons who have no appreciation of its general lack of validity, having mastered its more elementary aspects with some difficulty and considerable jubilation, have proceeded to apply it to population problems in a way which is not merely unsound but positively dangerous. As an example one may refer to the net reproduction rate, which is purely a life-table function but which is often discussed as though it provided an infallible measure of the future trend of the population.

I think, sir, that the life-table myth, like so many other popular legends, is based more on hearsay than on fact and actuaries would be doing no more than their duty if they took every opportunity of revealing it for what it is truly worth.

Yours faithfully,

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*[The Editor will be glad to print letters from members of the Society which are concerned with subjects likely to be of general interest to actuaries.]*