

The Joint Editors
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Dear Sirs,

In his paper entitled 'Consistent Extra Premiums and Equivalent Decreasing Debts for Endowment Assurances' (*J.S.S.* 15, 141) K. Sandom includes the following sentence on page 145:

'There is no scientific justification for the uniform percentage increase in mortality method and the use of specific factors applied to q_{x+t} might suggest a degree of precision unwarranted by the conditions of underwriting.'

Each of the two statements included in this sentence has some truth in it on its own, but by linking them together and placing them in their original context, the author suggests (i) that other methods (i.e. age ratings and constant additions to the rate of mortality) have a more scientific basis, and (ii) that these other methods enable the actuary to calculate extra premiums and liens on substandard lives without precise assumptions as regards rates of mortality.

- (i) It is hard to see what greater scientific justification these other methods have. The author adds in the same paragraph the statement that 'Statistics on the mortality of impaired lives are sadly lacking' apparently overlooking those included by W. Perks (*J.I.A.* 78, 205) in the paper referred to by the author and the extensive statistics compiled in the United States. These figures lend considerable support to, and are certainly not inconsistent with, the assumption of a uniform percentage increase in mortality as a practical approximation.
- (ii) Whatever method of assessing extra risks is adopted, rates of mortality are assumed or implied. The author himself makes assumptions, all of them arbitrary. In the present writer's opinion the uniform percentage increase in mortality method is the least pretentious and most convenient available, while not doing violence to such statistical evidence as has been provided. Moreover, if the basic table is a Makeham, a constant percentage increase is precisely a combination of a constant addition and an age-rating.

The author admits that extra risks increasing sharply with age are few in practice (foot of page 142) and that 'Decreasing extra risks are generally considered to be rare in practice' (page 146). It would thus appear that for the great majority of cases the uniform percentage increase in mortality method has much more to be said for it than a reader of Mr Sandom's paper might be led to think. Moreover, it seems to be in much wider and growing use throughout the World than any alternative.

Yours faithfully,

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