

CORRESPONDENCE

19 St Andrew Square,
Edinburgh, 2. 30th March 1954

The Editor,
T.F.A.

Dear Sir,

Scottish Bankers' Mortality and Marriage Experiences

(i) 1923-43 Experience

I had occasion recently to calculate certain tables based on the 1923-43 experience at $3\frac{1}{2}\%$. Since the tables in the original paper submitted by my colleagues and myself were calculated at 3% interest only, I thought it might be of value to the profession to have these further tables at $3\frac{1}{2}\%$.

I have made available the following tables, adopting the same table numbers as used in our paper (T.F.A. 19, p. 149):—

List of tables based on Scottish Bankers' Experience 1923-43 $3\frac{1}{2}\%$

- TABLE V Single-life annuity values based on the mortality of (a) all males combined; (b) wives.
- TABLE VIII (a) Value of annuity payable during lifetime of wife (y) after death of husband (x).
- TABLE IX Value of annuity to widow by second marriage of married man.
- TABLE X Value of annuity to widow of widower.

In addition I include the following tables:—

- (a) Value of 1 payable on marriage of a bachelor, at 3% and $3\frac{1}{2}\%$.
- (b) Single-life temporary annuity values based on the mortality of all males combined, ceasing at ages 60 and 65 in each case, at 3% and $3\frac{1}{2}\%$.

Marriage and Mortality Table (Table IV)

In our paper (*ibid.*) no specific reference was made to the method of calculation adopted in preparing the above table. For record purposes, I would state that after making tests at various ages it

was decided that for all practical purposes it was sufficiently accurate to calculate the decrements using the appropriate rates of mortality and marriage already calculated.

(ii) 1903-23 *Experience*

In his original paper, submitted in January 1925 (*T.F.A.* 10, p. 213) Mr. Alexander Fraser submitted extensive tables at rates of interest 3%, 3½% and 4%. In this paper the values of $a_y - a_{xy}$ were found by using the equivalent ages by the Carlisle Table. In a further note (*T.F.A.* 10, p. 351) Mr. Fraser re-calculated many of his previous tables using the true annuity values by the Scottish Bankers' Experience, investigation having shown that the equivalent ages method was unsuitable for use there.

Some time later, Mr. Fraser found that substantial increases had taken place in marriage rates, and for his personal use he calculated tables based on increased marriage rates and using the same three rates of interest. The increased marriage rates were the previous rates increased by 50% up to age 40, the increase decreasing thereafter by 5% for each year of age, to merge with the previous values at age 50. Mr. Fraser has kindly made available to the profession his manuscript tables and, as I had informed him that I was submitting tables at 3½% based on the 1923-43 Experience, he suggested that I should also give details of the tables now made available by him.

In the following list the table numbers used by Mr. Fraser in *T.F.A.* 10 have been adhered to where possible.

List of tables based on Scottish Bankers' Experience 1903-23

- I. *Additional tables in connection with "Further Note" T.F.A. 10, p. 351. (These tables are all based on the original marriage rates.)*

		<i>Table No.</i>
Value of annuity to widow by 2nd marriage of bachelor		XIII (a)
Value of annuity to widow by 2nd marriage of married man	3%	XIV (a)
	3½%	XV (a)
	4%	XVI (a)
Values of joint annuities—husband and wife—showing interpolation for all ages	3%	XX
	3½%	XXI
	4%	XXII

II. *Tables incorporating the increased marriage rates.*

	<i>Table No.</i>
a_{∞} —All males combined	VII (a)
Value of £1 payable on 1st marriage of bachelor	X (a)
Value of annuity to widow by 1st marriage of bachelor	XII (b)
Value of annuity to widow by 2nd marriage of bachelor	XIII (b)

III. *Bachelors' annuities.*

Tables of bachelors' annuities based on original and also on increased marriage rates at 3%, 3½% and 4%.

[The figures at 4% based on the original marriage rates, calculated by H. W. Brown, are given in *T.F.A.* 12, p. 12.]

Photostat copies of all the tables mentioned in this letter, supplied by courtesy of the Standard Life Assurance Company, have been made and are deposited at the Faculty of Actuaries, 23 St. Andrew Square, Edinburgh.

Yours faithfully,

J. G. WALLACE.