

ON THE VARIOUS CLASSES OF ASSURANCE BUSINESS.

To the Editor of the Journal of the Institute of Actuaries.

SIR,—In his speech at the annual meeting in June last, the President foreshadowed a new combined Mortality Experience of Offices, to be taken out under the superintendence of the Institute.

Since the publication of the Twenty Offices' Experience, many suggestions have been offered, from time to time, as to the methods desirable to be adopted, both in the collection of data and in their subsequent arrangement, in a future combined experience. I should like to be permitted to contribute the following analysis and remarks, in the hope that they may be of some service to the Council, when the subject of the proposed new experience is before them.

Mr. George King, in his paper "On the Mortality amongst Assured Lives, and the requisite Reserves of Life Offices" (*J.I.A.*, xix, 382), writes as follows:—"We have principally in view to measure the effects of the 'selection against a company' after its policies have been issued; but the force, and its consequent action upon the mortality, must vary according to the description of policy. If, therefore, there were any large admixture of other kinds with whole-life policies, and especially of such kinds as might follow a very different law of discontinuance, it would be useless to take the trouble which a laborious analysis involves," the outcome of the analysis referred to being Mr. King's well-known "Analyzed Mortality Tables", see pp. 398-404 of the same volume.

Mr. King, however, shows by his Table A—given on page 383—that, since no less than 95·35 per-cent of the total business of the 19 offices whose returns he analyzed was for the whole of life, the usual assumption, namely, that all the policies included in the Twenty Offices' Experience were whole-life policies, did not involve any material error.

The same point is also brought out in Mr. Sutton's paper "On the Determination of an Average Life Office" (*J.I.A.*, xx, 193).

On looking at the column in Mr. King's Table A, headed "Percentage to Total Business", I was struck with the insignificant percentage of endowment assurances, and thought that—in view of the rapid strides in popular favour which that class of assurances has been making in recent years—it would probably be found to constitute a considerably larger percentage of the total business of the same offices at the present time, so that we might be within measurable distance of the "large admixture of other kinds with whole-life policies" to the possibility of which Mr. King refers.

I am aware that, further on in the same paper (*J.I.A.*, xix, 384), Mr. King says, "Many of the special whole-life cases, and the joint-life and endowment assurances, *probably* follow a very similar law of discontinuance" (to that of the ordinary uniform-premium whole-life assurances); but, judging by the kind manner in which he has expressed himself with regard to the present suggestion, I think it not unlikely that he would now approve of an investigation into the *actual* law of discontinuance in endowment-assurance policies being undertaken.

The appended tabular statement sets side by side the figures for "the eight broad classes" of policies into which Mr. King divided the

Analysis of the Business of Offices which contributed Data to the Institute Experience:

- (1) Mr. King's Analysis of the business of 19 of the 20 Offices, 1876 (*J.I.A.*, xix, 388, Table A).
- (2) Analysis of the business of 17 of the 20 Offices, 1889.

Description of Assurances	Amounts Assured		Amounts Reassured		Percentage of Reassurances		Amounts Assured, less Reassurances		Percentage to Total Business	
	1876	1889	1876	1889	1876	1889	1876	1889	1876	1889
Whole-Life, Uniform Premiums	£ 103,039,506	£ 133,677,013	£ 5,661,334	£ 7,777,603	5.49	5.82	£ 97,377,572	£ 125,899,410	90.33	84.22
Do. other Descriptions.	5,803,330	11,383,836	397,642	396,805	6.85	3.48	5,410,688	10,987,031	5.02	7.35
Joint Lives	862,897	980,875	180,600	244,550	20.93	24.93	682,297	736,325	.63	.49
Endowment Assurances	1,683,415	8,342,145	21,250	83,500	1.26	1.00	1,662,165	8,258,645	1.54	5.53
Short Term	1,353,998	1,733,151	245,997	408,651	18.10	23.58	1,113,001	1,324,500	1.03	.89
Contingent Survivorship	895,679	2,105,498	188,680	637,213	15.48	30.26	756,999	1,468,285	.70	.98
Last Survivor	779,023	681,504	77,850	118,250	9.99	17.35	701,173	563,254	.65	.88
Endowments	108,175	240,665	<i>Nil</i>	<i>Nil</i>	108,175	240,665	.10	.16
	114,536,023	159,144,637	6,723,953	9,666,572	5.87	6.07	107,812,070	149,478,115	100.00	100.00

NOTE.—From among the 20 offices, there had been one amalgamation prior to 1876, and two others have taken place since that date; as one of these latter amalgamations, however, was a union of two companies, both of which were included in the 20 offices, my figures in effect comprise the returns of 18 of the offices.

business of the offices in his Table A, in the year 1876, with those I have extracted from the latest valuation returns of the offices.

In most instances no difficulty was found in obtaining the required information from the Board of Trade schedules; but as one of the offices did not separate "short term" and "contingent" assurances and reassurances in its return, some method of approximation was necessary, in order to obtain the separate figures and complete the table. Mr. King very kindly came to my rescue in this difficulty, and, acting on his suggestion, I have divided the assurances in question, for that office, in the ratio subsisting between the aggregate "short term" and "contingent" assurances of the remaining offices; and similarly with the reassurances.

There are four features of the comparison to which I should like to call attention.

(1) It may be of interest to note (as exhibiting the relative popularity of the various classes of assurance) that, since 1876, the total net amounts assured under

Whole-life Policies (uniform premiums)		
have increased by	£28,521,838	or 29.29 %
Whole-life Policies (other descriptions)		
have increased by	5,576,343	„ 103.06 „
Joint Lives have increased by	54,028	„ 7.92 „
Endowment Assurances have increased by	6,596,480	„ 396.86 „
Short Term " "	211,499	„ 19.00 „
Contingent Survivorship " "	711,286	„ 93.96 „
Endowments " "	132,490	„ 122.47 „

while the only instance of an actual decrease in the amount of existing business is that of last-survivor assurances, which have decreased by £137,919, or 19.67 per-cent.

(2) The chief feature of the table will at once be seen to be the rapid rise in importance of endowment assurances. In less than 14 years they have risen from 1.54 per-cent of the total business of the offices analyzed to 5.53 per-cent; and the actual increase in the net amounts assured has been £6,596,480, or 396.86 per-cent of the figures of 1876; in other words, the total net amount of assurances in this class, in the later returns, is nearly five times what it was in the earlier.

But since, for the purposes of a mortality experience, the number of lives in the respective classes, rather than the amount of assurances, is the element to be considered, even these figures under-estimate the relative importance of the endowment-assurance class, since it is, I believe, the experience of all offices granting such policies that, on an average, the sum assured on a life is much smaller than in the case of whole-life assurances; so that the addition of six and a-half millions to the sums assured involves, no doubt, the addition of a much larger body of lives to the endowment-assurance class than would be represented by the addition of an equal aggregate amount of sums assured to the whole-life class.

Again, on striking an average of the dates of the last valuations of the 17 offices whose returns I have analyzed, I find the mean date of valuation to be (say) May 1886; so that, if the new experience were to include the data up to the end of the present year, there

would be, taking one office with another, the results of three and-a-half years to be added to those comprised in the present statement. I suppose there can be no doubt but that this would still further enhance the relative importance of the endowment-assurance class.

(3) It will be noticed that the percentage of sums reassured in the endowment assurance class was very small, namely, 1.26 in 1876 and 1.00 in 1889.

This is only what might have been expected from the nature of the case, because the average sum assured on each life in this class is, as we have already seen, comparatively small; and the connection between the average amount of the assurances in any class and the percentage of reassurances in the same class is one of the points to which Mr. King draws special attention in discussing the figures of his Table A.

(4) The considerable increase in the net amount of whole-life assurances paid for otherwise than by uniform premiums, and in the percentage which that class of assurances bears to the total business, is almost entirely due to the very large volume of "limited premium" business transacted by one of the Scottish offices.

As the five minor classes of assurance amount, in the aggregate, to but a very small percentage of the total business (3.11 per-cent in 1876 and 2.90 per-cent in 1889), they do not seem to call for any special notice.

I am, Sir,

Your obedient servant,

A. E. MOLYNEUX.

National Provident Institution,
48 Gracechurch Street, E.C.,
29 November 1889.
