

Mr. Younger expresses himself in strong terms, because having initiated a system at variance with all our previous knowledge of his subject, he is called upon to maintain it. Now Sir, I certainly do not hesitate to characterize his method as empirical, and, until he can defend it on sounder grounds than in his last communication to you, he must bear to be told so.

I remain, Sir,

Your most obedient Servant,

Aberdeen, 28th April, 1858.

H. A. S.

ON THE PRINCIPLES WHICH SHOULD GOVERN ASSURANCE COMPANIES IN AMALGAMATING.

To the Editor of the Assurance Magazine.

SIR,—I shall feel obliged if you will insert, in the next Number of the *Assurance Magazine*, the following remarks on Mr. Jellicoe's valuable paper on the subject of the amalgamation of Assurance Companies. That paper contains the complete and satisfactory solution of a problem of considerable practical interest, especially at the present time. The conclusions there arrived at may be summed up as follows:—If it is proposed to amalgamate two Companies, denoted by (A) and (B), let the liabilities of each be estimated by the same data, credit being taken for the gross premiums on the policies of assurance, and let S and S' be the surpluses thus found to exist in the two Companies; then, if these are proportional to the respective requirements of the Companies for expenses and future bonuses, the Companies may at once unite on equal terms; but if one of them, as S' , is larger in proportion than S , a portion of it, S_1 , is to be reserved, proportional to S , and the remainder, $S' - S_1$, is to be at once divided between the assured and the shareholders of (B). The only question that remains is this—to what elements are S and S_1 to be proportional? In Mr. Jellicoe's way of treating the subject, S and S_1 are taken proportional to the values of the net premiums on the various policies; and the consequence then follows, as he points out, that the bonuses should be thenceforward declared in both Companies upon the same principle, and independently of any difference in the loadings of the rates of premium charged. Such a method would be the very common one of giving an addition to each policy at a uniform rate per cent *per annum*. In effect, if the participating premiums in the two Companies are unequally loaded, the net premiums in (B) having a larger addition made to them than those of (A), the assured in (B) are, in equity, entitled to have larger bonuses added to their policies than those in (A), and the process indicated by Mr. Jellicoe gives them the benefit equivalent to their higher rates of premium *at once*; so that, thenceforward, they will only be entitled to the same amount of bonus as the assured in (A).

But now let us suppose that the method of division of profits pursued in the Company, after the amalgamation, is one which does not neglect the inequality in the loadings—as examples of such, we may instance those methods which give a cash bonus proportional to the premiums paid, or to the loadings of those premiums—then it is at once obvious that the plan hitherto pursued, of reserving a surplus in proportion to the net premiums, will not be consistent with strict justice.

To make this more clear, suppose that the values of the net premiums in the two Companies are equal (or $P=P'$), but that the loading in the Company (B) is double that in (A), then, by the process indicated in Mr. Jellicoe's paper, the same reserve would be made for each Company; but if the profits are divided among the assured, as seems most equitable, in proportion to the loading, the assured of (B) would receive twice as large a bonus as those of (A), although the reserve made for their bonus was only equal to that made for the bonus in (A). This sufficiently shows, that when such a method of division of profits is pursued, we must make a reserve for the profits in a manner somewhat different to that indicated in the paper. In fact, if the bonuses are proportional to the loading, the reserve for those bonuses should be proportional to the value of the loading; and if the bonus is proportional to the gross premium, the reserve should be proportional to the value of the gross premium. The reserve for the bonuses being made according to this law, that for the expenses may be made in just the same way for the participating policies as for the non-participating, supposing it to be thought expedient to make a provision for the expenses apart from that for the bonuses. Thus: let L, L' be the values of the loadings of the participating policies in the two Companies; then, consistently with the notation used by Mr. Jellicoe, in order that the Companies may unite on equal terms, we should have, when the bonus is proportional to the loading,

$$S = \frac{P + NP}{n} + \frac{L}{m}; \quad S' = \frac{P' + N'P'}{n} + \frac{L'}{m}.$$

If the bonuses are proportional, not to the loading, but to the gross premium, we should write, in these equations, $P + L$ for L , and $P' + L'$ for L' : of course, when the loading is a percentage on the net premium, these two methods of division of profits coincide. The above formulæ will be as easy of application as those given in Mr. Jellicoe's paper; and their application, if it should be thought desirable to use them, would present no greater difficulties in practice.

In conclusion, allow me to state, that the preceding remarks are intended simply to show how the principles laid down by Mr. Jellicoe may be applied to cases not included in his very able paper.

I am, Sir,

Your obedient Servant,

London, 25th May, 1858.

T. B. SPRAGUE.