

remaining at risk must be calculated, and we think this may be done, with sufficient accuracy for all practical purposes, by valuing the extra amount by the monetary tables in the Appendix hereto, again observing only the duration of the policies.

10. On the above system the labour would be materially reduced, though necessarily heavy. For the ordinary whole-life assurances one grouping only would be required in each section. For the endowment assurances, and the whole-life assurances by a limited number of premiums, a group would have to be made for each class according to the number of premiums reserved under the policies; but by adopting a quinary arrangement the labour here could be considerably shortened. Thus, groups could be formed of policies issued under the five-premium scale, ten-premium scale, &c.; and policies on other scales could be placed in the nearest quinary group. Thus, a policy on the twelve-premium scale would be included with those on the ten-, and a policy on the thirteen-premium scale with those on the fifteen-, and so on.

11. In the method sketched out above, of estimating the profit or the loss from mortality, it is assumed that all the policies on the books have been issued at tabular rates, whereas some of them are subject to extra charge. Each year, therefore, the total amount of extra charge must be ascertained, and treated as additional profit from mortality.

The method that, in our opinion, should be followed in dividing the profit from mortality in each section among the individual policy-holders assured in it will be explained in our reply to Question II.

## QUESTION II.

12. Within certain limits, it is, in our opinion, expedient to adapt the method of allocating bonus among individual policy-holders of an assurance association to the views of the assured; and we think that the method hitherto adopted by the New Zealand Government Insurance Department may, under existing circumstances, be modified, and that, in giving effect to the modification, the end may be kept in view of approximately constant or even increasing reversionary bonuses to the same policy at successive divisions.

On each of the two occasions of allocation of bonus the divisible surplus was distributed in proportion to the "loading" on the premiums in respect of the several policies. The accumulated funds have, however, now reached a large amount; and it is reasonable to expect that a considerable portion of the surplus which will be available for division at future valuations will have accrued from the higher rate of interest realised over that assumed in the calculations.

14. We would suggest that the amount of surplus thus arising from interest be ascertained at each valuation, and that it be distributed among the policies existing at the date of the valuation, in proportion to their respective reserve values at the date of the last-preceding valuation.

The remainder of the divisible surplus (after setting aside the profit from mortality, discussed in the next paragraph) should, we think, be divided in proportion to "loading"—that is, in the same manner as has been hitherto followed in distributing the whole of the divisible surplus.

15. In order to complete our reply to Question I., it remains to say what, in our opinion, would be the best method of dividing the profit from mortality in each section among individual policy-holders assured in it. The theoretically-correct method would involve an enormous amount of labour, out of all proportion to the advantages it would bring. We think that that labour may be diminished, and yet that substantial justice may be done, by merging in each section the profit from mortality with that portion of the surplus coming to the section, which we have recommended should be distributed in proportion to "loading."

16. On the general question of the distribution of profit, we would remark that, by allotting the surplus arising from interest in proportion to policy-values, a tendency will be introduced towards bonuses increasing with the duration of the policy; but it is not possible to say that the reversionary bonuses will always so increase. That will depend on the rate of surplus interest. For example: we have made an estimate, and, assuming that the rate of interest realised on the funds is maintained at about  $1\frac{1}{4}$  per cent. above the rate employed in calculating the reserves, the reversionary bonuses to an ordinary whole-life policy will remain nearly constant from valuation to valuation; while, if the difference between the rates of interest be maintained at more than  $1\frac{1}{4}$  per cent., the reversionary bonuses will probably increase. This, however, is merely an estimate; and an exact calculation is impracticable.

17. In conclusion, we wish to express our strong opinion that no rigid rules for the