CORRESPONDENCE.

HYPOTHETICAL AND NET POLICY-VALUES.

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

SIR,—Will you permit me to point out that the demonstration given in the the *Text-Book*, Part II, p. 330, Art. 41, of the relative magnitudes of the hypothetical and net values of a policy, and of the manner in which those relative magnitudes depend on the loading of

https://doi.org/10.1017/S0020268100049593 Published online by Cambridge University Press

the premiums, may be more shortly and conveniently arranged in the following manner?

The office premium P′ being obtained by loading the net premium P with a percentage κ and a constant c, we at once have

$$
\begin{aligned}
{}_n\mathrm{V}'_x &= \frac{\mathrm{P}'_{x+n}-\mathrm{P}'_x}{\mathrm{P}'_{x+n}+d} \\
&= \frac{\mathrm{P}_{x+n}(1+\kappa)+c-\mathrm{P}_x(1+\kappa)-c}{\mathrm{P}_{x+n}(1+\kappa)+c+d} \\
&= \frac{{}_n\mathrm{V}_x(\mathrm{P}_{x+n}+d)(1+\kappa)}{(\mathrm{P}_{x+n}+d)(1+\kappa)+c-\kappa d} \\
&= \frac{{}_n\mathrm{V}_x}{1+\dfrac{c-\kappa d}{(\mathrm{P}_{x+n}+d)(1+\kappa)}}.
\end{aligned}
$$

Not only is this process much shorter, but the final form is simpler than that given in the *Text-Book*, and consequently the relation between the two values is shown rather more clearly, ${}_n\mathrm{V}'_x$ being obviously $>=<{}_n\mathrm{V}_x$ according as $c<=>\kappa d$. These results are, indeed, equally obvious from the third step, ${}_n\mathrm{V}'_x$ being clearly $>=<{}_n\mathrm{V}_x$ according as $c-\kappa d$ is negative, zero, or positive.

Any difficulty which may be experienced in passing from the second to the third step will be at once removed by the consideration that the latter is obtained by a simple application of the formula contained in the first step, unaccented symbols being, of course, substituted for accented.

I am, Sir,

Your obedient servant,

H. C. THISELTON.

19 & 20, *Cornhill, E.C.*
10 *June* 1890.

https://doi.org/10.1017/S0020268100049593 Published online by Cambridge University Press