## NOTE ON THE FORMULAE (*T.F.A.*, vol. xiv. p. 137—) FOR VALUATION AT A VARYING RATE OF INTEREST.

*By C. L. Stoodley, F.F.A.*

In the case where $k$, one of the basic rates of interest, is equal to zero, we have (from Mr. Lidstone's formula, *T.F.A.*, vol. xiv. p. 163):

$$\delta_{(t)}=\text{co}\phi_t\delta_l=\frac{c^t}{a+c^t}\delta_l=\delta_l\left(1-\frac{\frac{a+1}{a+c^t}}{\frac{a+1}{a}}\right)=\delta_l\left(1-\frac{K_t}{K_\infty}\right)$$

where $K_t=(1+i')^t$

whence $\delta_l-\delta'_{(t)}=\frac{K_t}{K_\infty}\delta_l$.

Thus, in the particular case where the ultimate rate of interest is zero and, accordingly, where the accumulated amount of a unit has a maximum value of $\frac{a+1}{a}$, the interesting proposition is established that the total decrement in the force of interest at time $t$ is proportional to the accumulated amount of a unit at that point. This hypothesis forms the basis of a paper (*Eine Zinseszinsformel für sehr lange Zeitdauern*), by Dr. Ernest Sòs, of Budapest.

[*On receiving a copy of Mr. Stoodley's paper Dr. Sòs drew our attention to the similarity of the formulae independently evolved.*—Ed.]

---

## ERRATA.

*T.F.A.*, vol. xiv. p. 163, 8th line from the bottom. For $(1+k)$ read $(1+k)^{-t}$.

*T.F.A.*, vol. xiv. p. 215, 14th line. Delete the words 'are normally comparatively small and'.

https://doi.org/10.1017/S007136860000210X Published online by Cambridge University Press