

## CORRESPONDENCE.

## ON THE CONSTRUCTION OF TABLES OF POLICY VALUES.

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

SIR,—As a small contribution to Mr. Manly's subject of the construction of Tables of Policy Values allow me to send you the following formula, of which I have made use in the computation of tables for surrenders.

By being stated in terms of the annual premium it is suitable both for the purpose for which it was originally intended and (by the substitution of the net for the real or "loaded" premium) for ascertaining the values as in Mr. Manly's form, while, the *final* results being arrived at in series, a check at any point detects an error in the intermediate process of taking out the numbers to the logarithms.

Since the value of a policy for £1 at age  $x$ , the annual premium " $\omega$ " for which is just due, is

$$1 - (1 - v + \omega)a_x$$

which for brevity may be written

$$1 - Qa_x$$

the difference between this and the next higher value, that is

$$Q(a_x - a_{x+1})$$

is the quantity to be first formed, and the addition of each term of this successively gives the final value required.

This is comparatively easy work, the logarithm ( $a_x - a_{x+1}$ ) being, as in Mr. Manly's process, tabulated once for all, and  $Q$  being a constant factor for one column of the final result.

The continuous method of computation may be applied also to the formation of  $\log [Q(a_x - a_{x+1})]$ ; the differences of this series being obviously the differences of the series  $\log (a_x - a_{x+1})$ . Hence, if these last differences be found,  $\log [Q(a_x - a_{x+1})]$  may also be found by continuous addition.

I am, Sir,

Your most obedient servant,

2, *King William Street,*  
*London, 30th April, 1869.*

H. AMBROSE SMITH.

## NEW EXPERIENCE MORTALITY OBSERVATIONS.

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

SIR,—The tables of mortality which Mr. Woolhouse has deduced from the more important part of these observations, and which have been recently published in the *Journal* of the Institute, appear to coincide to a great extent with the tables formed by the same gentleman from the "Experience of the Seventeen Offices." In fact, this part of the investigation has been chiefly valuable as verifying and confirming the "Experience" table, and redeeming it from the reproach directed against it by many