$$^5A \times {}_{\overline{5}|}\ddot{a}_{\overline{15}|} = 17{\cdot}9287 \times {\cdot}06274 = 1{\cdot}124846$$
$$\underline{\cdot 05758}$$
$$_{\overline{5}|}A - {}_{\overline{5}|}AB + {}^5A \times {}_{\overline{5}|}\ddot{a}_{\overline{15}|} = 1{\cdot}182426$$

Annual premium $= \dfrac{1{\cdot}182426}{1 + {}_{\overline{4}|}AB} = \dfrac{1{\cdot}182426}{4{\cdot}588} = {\cdot}25772$ for £100 per annum. Premium in one sum, £118. 4*s.* 10*d.*, or £25. 15*s.* 5*d.* annually.

FORMULA FOR AN APPROXIMATE VALUE OF ANNUITIES AT SIMPLE INTEREST.

To the Editor of the Assurance Magazine.

SIR,—In looking over some old letters, I found one, dated some years back, from Professor De Morgan, in which he gives the following elegant approximation to the value of $\dfrac{1}{1+r} + \dfrac{1}{1+2r} + \dfrac{1}{1+3r} +$, &c. $\dfrac{1}{1+nr}$.

He says the best approximation is

$$\frac{2{\cdot}3025851}{r} \log. \frac{1+nr}{1+r} + \frac{1}{2}\left(\frac{1}{1+r} + \frac{1}{1+nr}\right) + \frac{r}{12}\left(\frac{1}{\overline{1+r}|^2} - \frac{1}{\overline{1+nr}|^2}\right) - \frac{r^3}{120}\left(\frac{1}{\overline{1+r}|^4} - \frac{1}{\overline{1+nr}|^4}\right);$$

error only in the sixth decimal when $r = {\cdot}1$, or interest at 10 per cent.,

$$\frac{1}{1{\cdot}1} + \frac{1}{1{\cdot}2} + \frac{1}{1{\cdot}3} + \ldots\ldots \frac{1}{2{\cdot}0}.$$

Approximation	6·687715
Truth	6·687714

I am, Sir,
Your obedient Servant,
PETER HARDY.

London Assurance, March 10, 1855.

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