

Ex. 3.—By Table VII. the amount of \$1 at 3% yearly for 10 years = \$1.3439 and $\frac{1}{r} = .3439$ its interest. To find the amount of 10 yearly annuities of \$1 at 3% yearly, divide .3439 by the interest on \$1 for 1 period = 1 year or .03; $\frac{.3439}{.03} = \$11.463$. (See Table VIII).

Ex. 4.—(Amount, Forms 8, 9 and 10).

What is the amount of a yearly annuity of \$10 for 20 years, at 3% interest, convertible yearly?

$$a = 10; n = 20; r = 1.03; t = .03; \log. r = .01283, 72247; \log. t = .24771, 21213$$

(8) $\log. 1 = 0$	(9) $20 \times \log. r = .2567445$	(10) $\log. a = 1$
$20 \times \log. r = .2567445$	$r^{20} = 1.80611$	$20 \times \log. r = .2567445$
$\log. \frac{1}{r^{20}} = 1.7432555$	$r^{20} - 1 = .80611$	$C^t \log. t = 1.5228787$
$\log. \frac{1}{r^{20}} = 1.7432555$	$\log. (r^{20} - 1) = 1.9063950$	$\log. \frac{a r^{20}}{t} = 2.7796232$
$\frac{1}{r^{20}} = .553676$	$\log. a = 1$	$\frac{a r^n}{t} = \$602.037$
$1 - \frac{1}{r^{20}} = .446324$	$C^t \log. t = 1.5228787$	
$\log. \left(1 - \frac{1}{r^{20}}\right) = 1.6496505$	$\log. A = 2.4292737$	Perpetuity or
$\log. a = 1$	$A = \$268.704$	$\frac{a}{t} = \frac{10}{.03} = 333.333$
$C^t \log. t = 1.5228787$		$A = \$268.704$
$\log. r^{20} = .2567445$		
$\log. A = 2.4292737$		
$A = \$268.704$		

(By Table VIII, $\$26.8704 \times 10 = \268.704)

Ex. 5.—(Annuity, Forms 11 and 12).

What quarterly annuity for 15 years will \$2,038.75 purchase at 5½%, compounded half-yearly?

$$V = 2,038.75; r = 1.013657; t = .013657; n = 60; \log. r = .00589, 09153; \log. t = 2.1353472$$

(11) $\log. 1 = 0$	(12) $60 \times \log. r = .3534549$
$60 \times \log. r = .3534549$	$r^{60} = 2.25660$
$\log. \frac{1}{r^{60}} = 1.6465451$	$r^{60} - 1 = 1.25660$
$\frac{1}{r^{60}} = .443144$	$\log. (r^{60} - 1) = .0991961$
$1 - \frac{1}{r^{60}} = .556856$	$C^t \log. " = 1.9008039$
$\log. \left(1 - \frac{1}{r^{60}}\right) = 1.7467412$	$\log. V = 3.3098640$
$C^t \log. " = 0.2542588$	$\log. t = 2.1353472$
$\log. V = 3.3098640$	$60 \times \log. r = .3534549$
$\log. t = 2.1353472$	$\log. a = 1.6989700$
$\log. a = 1.6989700$	$a = \$50.00$
$a = \$50.00$	

(By Table III $\frac{2038.75}{40.775} = \50.00)