(3) By the Binomial Theorem, as follows:

$(1{\cdot}05)^{\frac{1}{4}} = (1 + \frac{1}{20})^{\frac{1}{4}} = 1 + \frac{1}{80} - \frac{1}{3200} = 1{\cdot}0163$; then $(1{\cdot}05)^{16} \div 1{\cdot}0163$ will give a close approximation to $(1{\cdot}05)^{16\frac{1}{4}}$.

For additional information on this subject consult Loan Tables by Professors Cherriman and Louan.

Exercise III.

(1) A person's dividend from his Bank stock is $530 a year. What is the present value of this income for five years to come, computing by simple, and also by compound interest, at 7 per cent.

(2) What annuity, to continue 20 years, can be purchased for $10000, allowing compound interest at 5 per cent.

(3) For what sum might the Government of a country undertake to pay an annuity of $1000 a year, for ever, on the supposition that money may always be invested at 6 per cent.

(4) For what sum might an annuity of $400 a year, for ten years, to commence in 5 years, be purchased, allowing compound interest at 6 per cent.?

(5) A person who enjoyed a perpetuity of $1000 per annum, provided in his will that, after his decease, it should descend to his only son for 10 years, to his only daughter for the next 20 years, and to a benevolent institution for ever afterwards. What was the value of each bequest at the time of his decease, allowing compound interest at 6 per cent.?

(6) A person at the age of 22 put $100 at interest, at 6 per cent., and $100 each year afterwards, until he was 40 years old. He also collected the interest annually, and converted the some into *principal;* what amount was, by these means, accumulated?

(7) A corporation borrows £3769 at 4 per cent., to be paid in 30 years by equal annual instalments. What will be the annual payment?

(8) A property is let out on lease for a years at an annual rental of $\$b$, and after c years the lease is renewed on paying a fine of $\$d$. What is the additional rent equivalent to this fine?