¶ 108 ¶ 109.

GEOMETRICAL PROGRESSION.

whose index that the ratio e equal to the

at 5 per cent

Ans. $\pounds 68$ 8s. at 10 per cent s. $\pounds 8$ 15s. 8d. ears at 6 per t is that sum,

i, and the last

refore,

Ans. £4.

ound interest, Ans. £6. due 11 years compound in Ans. £40. to £8'7846 in

and the num-

4th power of

oot, we obtain 10 per cent. 846, at 10 per

; therefore, if

the quotient ain a quotient divisions will Ans. 4 years. 9. At 5 per cent compound interest, in what time will £40 amount to £68 Ss. ?

Having found the power of the ratio 1'Q5, as before, which is 1'71, you may look for this number in the *table* under the given rate, 5 per cent, and against it you will find the number of years. Ans. 11 years.

10. At 6 per cent compound interest, in what time will $\pounds 4$ amount to $\pounds 5$ 7s. $0\frac{1}{2}d$. Ans. 5 years.

Annuities at Compound Interest.

109. It may not be amiss, in this place, briefly to show the application of compound interest, in computing the amount and present worth of *annuities*.

An annuity is a sum payable at regular periods of one year each, either for a certain number of years, or during the life of the pensioner, or for ever.

When annuities, rents, &c. are not paid at the time they become due, they are said to be in arrears.

¹ The sum of all the annuities, rents, &c. remaining unpaid, together with the interest on each, for the time they have remained due, is called the amount.

1. What is the amount of an annual pension of $\pounds 100$, which has remained unpaid 4 years, allowing 6 per cent compound interest?

The last year's pension will be $\pounds 100$, without interest; the last but one will be the amount of $\pounds 100$ for one year; the last but two the amount (compound interest) of $\pounds 100$ for two years, and so on; and the sum of these several amounts will be the answer. We have then a series of amounts, that is, a geometrical series, (¶ 108) to find the sum of all the terms.

If the first term be 100, the number of terms 4, and the ratio 1'06; what is the sum of all the terms?

Consult the rule under \P 107, ex. 11.

Hence, when the annuity, the time, and rate per cent, are given, to find the amount—Raise the ratio (the amount of $\pounds 1$, &c. for one year) to a power denoted by the number of years; from this power subtract 1, then divide the

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