If, in addition to the general advantage of exactness in such questions, there be any other reason for considering the present subject, it is, that if these reversionary annuities (*e.g.*, on a wife's life after her husband's death) should become a desirable and common form of investment, more frequent than annual payments would generally be selected.

I shall be much obliged by your insertion of the above in your very valuable *Journal*, and am,

Your obedient Servant,

THOMAS CARR.

London, 9th June, 1857.

MR. SCRATCHLEY ON POST OBITS.

To the Editor of the Assurance Magazine.

SIR,—I have no wish to add to the criticisms on Mr. Scratchley, already so ably done in the last Number of your *Magazine;* but, if you do not think that the subject has already occupied too much of your space, I would beg to supply an omission of the reviewers'.

I do not think they have given sufficient prominence to the simplicity of the formulæ applicable to the case—where, as in the ordinary way of negotiating such a transaction, the elements to be considered are the actual premiums and annuity values (without regard to their mathematical relation) that may be charged by the responsible Offices from whom the life benefits are purchased.

This is easiest shown, by solving the inquiry of what annuity should be given to the borrower for a specific reversion to be assured.

Let the sum be £1, and the first payment of annuity to the borrower to be made (as most usual) immediately. With an investment of £1, the lender purchases an annuity, which would be payable during joint lives only in a case like Mr. Scratchley's, stipulating that the first payment be made "down"; and the Office purchase price for such an annuity of £1 being a, the annuity purchased is $\frac{1}{a}$: he retains from this the annual premium for assurance of £1$=\pi$, and a year's interest, r, discounted for a year$=vr$, paying the difference to the borrower, whose annuity is therefore

$$\frac{1}{a}-(\pi+rv)=\frac{1}{a}+v-(1+\pi);$$

and its arithmetical complement, or

$$\frac{1}{1\div a+v-(1+\pi)},$$

is the post obit to be secured for annuity of £1.

Should it be preferred to effect the assurance by single premium A, this, of course, has to be subtracted from the £1 invested, and the annuity paid to the borrower will be

$$\frac{1-\mathrm{A}}{a}-1+v;$$

or, the sum to be secured for annuity of £1,

$$\frac{1}{(1-\mathrm{A})\div a-1+v}$$

Finally, if the annuity to the borrower is not to be held as due, but to make the first payment at the end of a year, the investment of the lender for post obit of £1 must then be v, with which, after paying the first premium for assurance, π, he buys the annuity (not one due) of $\frac{v-\pi}{a}$; and the annuity payable to the borrower is therefore

$$\frac{v-\pi}{a}-(\pi+v\pi)=(v-\pi)\left(1+\frac{1}{a}\right)-1,$$

from which resulting formulæ may be easily deduced.

I am, Sir,

Your most obedient Servant,

Aberdeen, 4th May, 1857. H. A. S.

ON MR. ALEXANDER GLEN FINLAISON'S TABLES FOR ALLOWANCES IN SICKNESS.

To the Editor of the Assurance Magazine.

SIR,—Since the publication, by order of the House of Commons, of Mr. Alexander Glen Finlaison's Tables for Allowances in Sickness, I have used them in preference to other data, because, subject to a few criticisms with which I shall presently trouble you, I think them more satisfactory than any we previously possessed. They do not, however, give the money values of such allowances after the age of 70; and as it is found that some Benefit Societies, albeit unwisely, contract for grants extending over the whole of life, I have been led to compute, and I now submit to you, an extension of the Heavy Labour Table (see p. 116) to meet that case. In doing this, and in examining carefully Mr. Finlaison's Reports, I have noticed some peculiarities in his methods of procedure on which I shall offer some comments, in a spirit of great respect for a gentleman who has devoted much labour and ingenuity to the performance of a very useful and difficult task.

The first thing that strikes one, in looking over the Reports, is, that Mr. Finlaison employs one table of mortality in computing his allowances in sickness (given at page 21, 1854), and another (given at page 31, 1854) in computing the values of annuities, pensions, and assurances on death. The former table enormously overrates the probabilities of life; and this appears to me the most satisfactory of several reasons assigned for employing it in conjunction with the tables of average sickness, which probably underrate the liability with which they deal. The result is, a measure of protection in the *single premium* for allowance in sickness; but unfortunately, when that single premium is converted by the same table of mortality into a periodical contribution extending over the whole duration of the benefit, *the protection disappears.* It would have been better, in my judgment, to discard the mortality table altogether. As it is, we shall have, in estimating the position of a Society acting on these premiums, to value the contributions