methods used to calculate, store and print premium rates. At the end of the section it is shown how annuity rates may also be computerized, in particular a flow diagram for calculating capital-protected escalating annuities is included.

The second part of the paper, dealing with cash flow programs, gives some examples to show how the premium rates calculated in the first part may be checked. (The projected fund per life at the end of the term of an endowment assurance being equal to the estimated maturity value of each policy.)

Using the same program for a group of policies which have already been in force a number of years it is thus possible to ascertain whether there will be sufficient moneys available on differing future assumptions to meet the maturity liabilities as they emerge.

THE FINANCING OF PRIVATE OCCUPATIONAL PENSION SCHEMES

by

R. B. ABRAMSON AND S. A. CARNE

(Synopsis of a paper presented to the Society on 20 January 1981)

IN the U.K. and the U.S.A. most occupational pension schemes are funded in advance; in France such schemes are run on a pay-as-you-go basis; in West Germany, book (or internal) reserves are the predominant method. There is a tendency for each nation to regard its own method as the most suitable. In this paper the authors have set out to examine the principles of these various systems of pension financing, not in order to advocate any particular system but rather to promote a better understanding.

Companies in the private sector must be profitable if they are to survive. The authors devote a substantial part of the paper to analysing the effects of each financing method on the profits of the supporting employer. The popular view is that funding is cheaper if the assets earn a real return (and more expensive otherwise); this is shown to be a myth. Arguments are put which show that where a whole industry opts for pay-as-you-go the level of profits will be much the same as if the pensions had been funded in advance—it is the price of the industry's products that will differ.

The question of security is also examined. An important aspect of any method of pension scheme finance is the security offered to members in the event of the supporting employer's collapse. External funding has obvious merits in this respect, but, after all, in West Germany and France companies do go out of business without leaving the employee empty-handed in retirement. The paper examines how this is achieved.

The paper begins with an overview of pension provision, considering general economic and demographic factors. For example, one well-known argument against the pay-as-you-go system is that it becomes more expensive with an ageing population, but it is pointed out that demographic movements must have significant consequences for *any* system of financing in view of the underlying reliance of all pensioners on current production. This is shown to be true even with a system of externally funded schemes. In such a system the calls on the private sector, through equity dividends, and on the taxpayer, through government stock payments, would have to be spread over a reduced working population.

In the closing section of the paper the operation of a book reserve is considered and the authors examine some novel problems that arise in this area. In particular they consider how one may determine the interest addition to the book reserve, and the consequences for the actuarial valuation. It is pointed out that the close relationship between salary increases and interest rates traditionally looked for in pension funds may break down. Furthermore, whilst the concept of valuation surplus or deficit is useful to maintain a stable contribution rate for pension funds there are technical difficulties in applying this approach to book reserves.

Other topics considered include the question of pensions and company accounts (important because of the possible effect on financing methods), and legislative requirements in the U.K.

AVIATION INSURANCE

by

G. E. LYONS

(Synopsis of a paper presented to the Society on 3 February 1981)

THE paper investigates the feasibility of using the techniques of