THE FINANCIAL INVESTIGATION OF CHARITABLE FUNDS

By S. F. ISAAC, F.I.A.

Deputy Actuary of the Atlas Assurance Company Ltd.

AND

R. W. A. FOWLER, F.I.A.

of the Clerical, Medical and General Life Assurance Society

[Submitted to the Institute, 27 April 1945]

THERE are in existence numerous charitable funds which provide financial assistance to members or their dependants in the form of either grants or annuities and of which the principal characteristics are usually:

(1) that the benefits are neither legally claimable nor clearly defined,
(2) that membership is voluntary,
(3) that the members' contributions are usually inadequate to support the benefits, and
(4) that donations, voluntary subscriptions and legacies frequently form a large part of the income.

It might at first sight appear doubtful whether an investigation of such funds on actuarial lines is practicable. There are, however, sufficient points of similarity between certain charitable funds and those pension funds, widows' funds and orphans' funds with which actuaries are more often concerned to suggest that it may be possible to apply actuarial methods to an investigation into the financial affairs of many such charitable funds and to furnish useful information and advice for the guidance of those responsible for their administration. The objects of such an investigation would usually be:

(1) to ascertain approximately how much 'liability-free' income ought to be obtained if the present level of grants or pensions is to be maintained and the fund is not to lose ground,
(2) to determine whether any modification of the conditions governing eligibility for membership of the fund or the terms on which members are admitted ought to be recommended, and generally to enable those managing the fund to regulate benefits in such a way that the maximum degree of usefulness is achieved without jeopardizing the future position of the fund.

The authors are unable to trace any reference in the pages of the *Journal* to the problems which arise when an attempt is made to conduct an investigation on actuarial lines into the finances of a charitable fund which is largely dependent on voluntary donations.

In a paper submitted to the Institute in 1905 (*J.I.A.* Vol. xxxix, p. 337) S. J. H. W. Allin considered only the effect of changes in social conditions on a fund which provided for the widows and orphans of deceased ministers of the Presbyterian Church of England and which derived part of its income from voluntary donations. He stated that there was a very satisfactory surplus in the fund, and it is presumably to be inferred that this conclusion was reached without taking credit for any value of future voluntary donations. This enviable position is by no means common.

In 1924 and on four subsequent occasions Mr Wm. Penman, M.B.E., F.I.A., made an investigation into the financial position of the Insurance Orphanage. Many actuaries will no doubt have seen the synopses of his reports which have been issued by the Orphanage from time to time. In 1925 he reported on the financial position of a large pensions and widows' fund operated in connexion with a religious denomination.

In 1943 Mr A. H. Rowell, M.A., F.I.A., reported on a benevolent fund, membership of which is confined to persons engaged in a certain occupation.

It has been the privilege of one of the authors to assist Mr Penman and of the other to assist Mr Rowell in the investigations referred to above, and this paper contains a résumé of the methods followed in those investigations and in the interpretation of the results. The authors acknowledge their indebtedness to Messrs Penman and Rowell for placing at their disposal material necessary for the preparation of the paper.

OUTLINES OF THE THREE FUNDS WHICH HAVE BEEN INVESTIGATED

Fund A. This was a pensions and widows' fund operated in connexion with a religious denomination in which the benefits consisted of (*a*) pensions to members on retirement based on years of service, and (*b*) pensions to widows of deceased members varying according to the relative ages of husband and wife and also based on years of service of the member.

The contributions payable by members, which were based on the annual stipends, were insufficient in themselves to provide the given benefits, and were supplemented by collections and contributions of various descriptions from congregations and individuals.

At the date of the valuation there were 2,224 members on the active list, 514 pensioned members and 578 widows in receipt of pensions.

Fund B. The Insurance Orphanage was established in 1902 with the object of assisting in the maintenance and education of children of deceased or disabled persons engaged in or formerly engaged in the insurance industry. Benefits take the form of cash grants, and the present scale provides, between the ages of 6 and 16,

£48 per annum for the first child,
£48 per annum for the second child,
£24 per annum for the third child,

other cases receiving individual consideration.

Reduced benefits are payable up to age 6 out of a special fund.

Members subscribe a minimum of 5s. per annum or a single payment of not less than £3. 3s. 0d. An entrance fee or an increased annual subscription is charged when a member enters after attaining age 20.

A substantial revenue is derived from donations (mainly from insurance companies, from special collections and from entertainment committees) and this revenue carries no contingent liability.

The membership has increased as follows:

Year	Membership
1903	2,007
1913	4,004
1923	5,393
1933	14,455
1943	19,273

Fund C. This is a benevolent fund, confined to members of a certain occupation, which provides benefits in case of need not only to members during their lifetime, but to their surviving dependants after their death. These benefits vary from a few pounds to several hundreds of pounds for individual claims, and there is one case on the fund's books where benefits are still being paid to the daughter of a member who died 40 years ago. The subscription for new entrants is 40 guineas at the present time, payable over 20 years or a shorter period if desired, and a considerable income is derived from legacies and donations.

The membership at the valuation date was 4,151.

It will be seen that, although the three funds have in common the fact that the support of donations is necessary to their financial stability, considerable points of difference arise with regard to the benefits. In Fund A these are clearly defined, whereas in Fund B they are usually granted in the event of a clearly defined occurrence according to a scale which may be varied from time to time at the discretion of the Committee. The scale has been revised only twice in the last 25 years, in an upward direction on each occasion. Fund C, on the other hand, gives benefits the only definition of which is contained in the phrase ' in case of need '. Apart from this they are indefinite both in respect of amount and time of payment.

METHOD OF APPROACH

Omitting for the moment any reference to liability-free income, which is dealt with in a later section, any actuarial investigation must take the form of an attempt to estimate the value of future benefits. This involves making assumptions as to the frequency and amount of these future benefits, assuming that a fund wishes to maintain its existing standard of benevolence or some modification of its existing standard. The problem thus becomes one of translating this standard, in an arithmetical sense, into such a form that actuarial methods may be applied on the basis of the past experience of the fund, and, in doing this, it must be borne in mind:

    (*a*) that the data are very often inadequate or inaccurate,

    (*b*) that certain types of error, e.g. non-reported deaths, may be unimportant when valuation factors derived from such faulty experience are applied to a membership which continues to exhibit similar errors, and

    (*c*) that it is usually not possible to achieve the same degree of accuracy as in, for example, life office work, and that it is not necessary to do so.

To effect this translation, the experience of the fund must be analysed in such a way as to trace the connexion (if any) which exists between a benefit payable and one or more of such factors as the age of a member, duration of membership, and any other characteristic by which a member or beneficiary may be described.

The extent to which it is practicable to trace this connexion will naturally be affected by

    (1) the size of the experience,

    (2) the degree of consistency exercised by the administrators of a fund in the standard of benevolence (and it should be noted that unless there is reasonable consistency an actuarial approach is impossible), and

(3) any external factors which may have influenced the rate of claim as distinct from the standard of benevolence exercised in respect of each claim.

When allowance is made for (1) by a process of taking sufficiently large groups and graduating the results, for (2) by determining the degree of consistency which the administrators wish to maintain, and for (3) by estimating what the effect of future conditions will be on the rate of claim, it will normally be possible to derive a set of factors which, when applied to members subdivided into appropriate groups, will produce with reasonable accuracy the benefits which are likely to be paid in the future. By combining these factors in appropriate commutation columns, valuation factors can be obtained enabling a valuation of all future benefits to present members or their dependants to be made.

The collective method would usually be employed. The use of the more laborious reversionary method would not be justified having regard to the special nature of the funds and the purpose for which the investigations are made.

As a preliminary the mortality and withdrawal experience of a fund must be investigated in order to provide the basis of the commutation tables to be used, and a short description follows of the methods employed and the results obtained from investigation of the three funds mentioned.

MORTALITY

Fund A

On account of paucity of data the mortality investigation was confined to a comparison of actual deaths in the five years 1920–24 with the expected deaths according to standard tables.

Active members. The mortality proved to be exceedingly light as was to be expected in view of the fact that members suffering serious prolonged illness were usually transferred to the pension list. It was found that rates of mortality equal to 30% of the rate according to the $O^{[M]}$ table (assuming the age at entry in all cases to be 25) represented a slight overstatement of mortality up to about age 45 and a slight understatement from ages 55 to 65, but these rates were considered to be a sufficiently close approximation and were used for the purpose of the valuation. In the early 1920's the business of a well-managed life office probably revealed mortality in the neighbourhood of 70% of $O^{[M]}$.

Male pensioners. It was found that the mortality was represented with a fair degree of accuracy by the British Offices Life Annuity Tables, 1893 (male lives—ultimate) rated down one year. The mortality of pensioners was about three times the mortality of active members of corresponding age.

Active and retired males. For the valuation of prospective pensions to widows of active and retired members the 'Clergy Mutual' table was found to be suitable.

Widows. The mortality experienced was found to correspond closely to that by the $a\,(f)$ ultimate table.

Fund B

It has been possible to estimate, with a fair degree of accuracy, the mortality experienced by members of the Orphanage during their working lifetime. The volume of data is considerable, and adequate and accurate records have been

kept for many years past. In the early days it was not the practice to obtain the dates of birth of new members and therefore, for the purpose of the earlier investigations, it was necessary to make assumptions as to the ages of certain members. The dates of birth of members employed by three of the larger companies were supplied by the offices and the age distribution of these cases, which represented about 10 % of the total for which no information was available, was applied to the latter. The number of those whose ages are unknown has, however, in recent years represented only a very small and rapidly diminishing proportion of the total membership, and, since all such members must now be over 60 years of age (where claims for benefit are rare), the financial effect of any errors on the results of recent valuations must be negligible.

A large proportion of the members of the Orphanage are life members and there is a possibility that the death of a life member may not be notified if no claim arises. There is also the risk that the death of an annual subscriber which does not give rise to a claim may be recorded as a lapsed membership. It is felt, however, that such cases are probably rare because the affairs of the Orphanage are well handled by local representatives who usually have personal contact with members.

Following an investigation of the mortality during the five years ended 31 March 1929, it was found that the rate of mortality could be represented as follows:

For ages up to 50 inclusive   40 % of q_x by the O^M table,
At age 51 ...   .   43 % of q_x by the O^M table,
At age 52 ...   .   46 % of q_x by the O^M table,
and so on,
At age 69 ...   .   97 % of q_x by the O^M table,
At ages 70 and over   ...   100 % of q_x by the O^M table.

This basis was adopted for the valuations made in 1929, 1934 and 1939.

The total actual deaths during the five years ended 31 March 1934 were equal to 87 % of the expected deaths according to the modified O^M table and during the ensuing five years the corresponding percentage was 72.

Fund C

It was expected that, in a fund of this nature, there would be a comparatively large proportion of unnotified deaths, and this proved to be the case. The mortality, although slightly heavier than that of E.L.T. No. 10 at the younger ages, crossed over and became progressively lighter at the older ages.

Apart from the fact that it would have been difficult to make due allowance for this factor, it was realized that any such allowance would have repercussions when rates of benefit were being considered, and, in the circumstances, it was decided to use probabilities of 'notified death' rather than true probabilities of death. Provided that the extent of the non-notification of deaths remains approximately constant in the future, the use of these rates is quite justifiable if they are combined with average claim costs which themselves are affected by the same factor.

The graduation of the probabilities, which was performed graphically, was therefore based as far as possible on the experience, and, as the monetary result of any variations in assumptions at the older ages was small, the graduation was not continued beyond age 85, consideration of the treatment of these ages being deferred until the stage of valuation multipliers had been reached.

WITHDRAWAL AND RETIREMENT

Fund A

The question of withdrawal did not arise in this case but it was necessary to estimate rates of retirement. Following an investigation of actual retirements during the five years immediately preceding the valuation date, rates of retirement were adopted commencing at ·15 % at age 30 and increasing up to 100 % at age 75.

Fund B

Having regard to the very high proportion of life members, the element of withdrawal was ignored in the valuation of benefits, but was introduced in calculating the value of members' subscriptions. For the purpose of the 1929 and subsequent valuations it was assumed that the combined effect of mortality and withdrawal could be represented by the use of annuity values based on the O^M table with an addition of 10 years to the age. It was assumed that contributions would cease at age 65.

Fund C

The aggregate rates of withdrawal rose from ·02 at age 22 to ·03 at age 27 and then gradually decreased to zero at age 62. These rates were used unadjusted.

In dealing with the benefits as applicable to the whole membership, it was felt admissible to use these aggregate rates, but it was also realized that, in dealing with contributing members only (when valuing contributions), selection became a more important factor, and it was, therefore, taken into account in this connexion. The select withdrawal rates among the contributory membership were negligible in the first two years, rose to a peak at ·08 in the fourth year, and then gradually decreased to zero at duration 20.

INTEREST

The valuation rate of interest to be used is naturally affected by the treatment of the capital values of the assets. Broadly speaking, however, the rate adopted in each case was one which reflected the actual yield on the value of the assets taken into account in the valuation balance sheet, and was not far removed from that obtainable on new investments at the date of each valuation.

Since a charity is not liable to income tax the rate used was in each case a gross rate.

VALUATION OF BENEFITS AND CONTRIBUTIONS

Fund A

The valuation of existing retiring allowances to pensioners and widows presented no difficulty, and the valuation of prospective pensions to members followed the usual lines and calls for no special comment. The amount of pension payable on retirement was calculated on the assumption that the member had entered at age 25.

The prospective pensions to widows of active members and pensioners were valued by the collective method as varying assurances payable on the death of a member or pensioner provided he left a widow. The marital status at the date of death of those members, active or pensioned, who had died during the last five years was investigated but the results proved inconclusive. The

proportions married at each age were therefore derived from statistics relating to these deaths and to active members alive at the valuation date. (No information was available as to the marital status of pensioners.)

The following percentages were adopted:

Age	Percentage married	Age	Percentage married
Up to 25	0	70	80
30	60	75	65
35	90	80 and over	50
40–65	95		

The average value of the widow's annuity was also based on an investigation of data relating to active members living at the date of valuation and those who had died during the preceding five years. The values adopted took account of the fact that the amount of the widow's pension depended on the length of her husband's service and was reduced in cases where the widow was more than 12 years younger than her husband.

The proportion married and the average value of widow's annuities at each age were combined with values of C_x based on the 'Clergy Mutual' table, which represented the mortality of active members and pensioners combined, and the values obtained by summation of the results and division by D_x were multiplied by the number of members and male pensioners at each age.

It was found that members' contributions, which were based on stipend, tended to increase with age, and a scale of contributions depending only on age attained was constructed and graduated. Contributions were valued as varying annuities ceasing on death or retirement.

Fund B

Current grants were valued as annuities-certain ceasing at age 16.

Prospective benefits payable after the death of present members were valued as varying assurances ceasing at age 67. The average sum assured assumed to be payable on the death of a member was calculated in quinquennial age groups from statistics relating to claims. It has been apparent for some years that the size of family and the ages of the children in relation to the father's age were undergoing changes, and it would have been more satisfactory to have based the investigation on statistics relating to the families of all members at a valuation date, but, unfortunately, this information was not available. An analysis covering deaths of members during a short period of years suffered from the effects of paucity of data, whereas, when a longer period was reviewed, the results were obscured by the progressive changes referred to above. The least unsatisfactory course appeared to be to examine the experience in five-year periods and to attempt to give effect roughly to any clearly defined trends in the resulting figures.

Although, for the calculation of valuation factors, the average cost of grants per death at each age would suffice, it has been found useful and instructive to calculate the average proportion of deaths which result in a claim for a grant or grants and the average cost of such claims. Obviously, the average cost per death at any age is equal to the proportion of claims to deaths multiplied by the average cost per claim, treating claims in respect of more than one child as one claim.

The results of recent investigations are set out in Table 1. The figures given relate to the General Fund of the Orphanage which provides benefits only between the ages of 6 and 16. The investigation of the separate fund out of which provision is made for children under 6 follows similar lines.

It will be observed that in the period 1929–1934 there was a marked tendency for the average cost per death to decrease at the younger ages and to increase at the older ages, and that this feature has persisted. It would have imposed a considerable additional strain on the finances of the Orphanage (for about two-thirds of the total cost of claims emerges in respect of members aged 43 and over) had it not been very largely offset by an improvement in mortality.

Unless it is apparent that a deviation of actual experience from the assumptions made in the valuation is likely to prove permanent, there is little to be gained from making frequent alterations in the assumptions underlying successive valuations, and the bases adopted for the 1929 valuation were therefore employed without any alteration for the purposes of the 1934 and 1939 investigations. The total cost of actual claims during the quinquennial period ended 31 March 1934 was very close to the total expected cost according to the valuation assumptions, i.e. the total of the assumed average cost per claim multiplied by the number of actual claims at each age. The total costs during the periods ended in March 1939 and March 1944 were 62% and 76% of such expected costs respectively.

The valuation as at 31 March 1944 was made on bases which appear to be more in accord with recent experience.

Members' contributions were valued as annuities ceasing at age 65 or on earlier death or withdrawal.

Fund C

The benefits were taken in two categories: (*a*) those payable during the lifetime of a member, and (*b*) those payable to his dependants after his death, and it was necessary to determine for each category whether it was possible to relate the benefits to any other variable in order to provide a basis for valuation.

(i) *Category (a)*. The two variables of age and duration of membership are correlated to a certain extent, as most members entered at about age 30. As an ideal it would no doubt have been preferable to have investigated on a 'select' basis, but, in view of this correlation, it was decided that it would be sufficient to investigate the relation between benefit payable and age attained only, disregarding duration. The experience was investigated in quinary age groups to find

A_x = total amount of benefits paid in a year to living members of valuation ages $x-2$ to $x+2$ at the beginning of the year,

B_x = total number of successful claims to benefit made during a year by living members of valuation ages $x-2$ to $x+2$ at the beginning of the year,

E_x = exposed to risk at valuation ages $x-2$ to $x+2$ at the beginning of the year.

Then, in the case of a member of valuation age x at the beginning of a year, the chance that he makes a successful claim during the ensuing year is B_x/E_x, the average amount of each claim is A_x/B_x, and the average amount of benefit payable per existing member is A_x/E_x.

Table 1. The Insurance Orphanage—General Fund. Experience during four quinquennial periods from 1 April 1924 to 31 March 1944. Scale of grants as set out on p. 416

Age of member at death	Percentage of claims to deaths				Average cost per claim				Average cost per death			
	1924–29	1929–34	1934–39	1939–44	1924–29	1929–34	1934–39	1939–44	1924–29	1929–34	1934–39	1939–44
					£	£	£	£	£	£	£	£
23–27	14	7	0	9	577	310	—	407	81	22	0	37
28–32	40	31	16	13	577	309	402	403	231	96	64	52
33–37	82	68	32	57	619	538	443	428	507	366	142	244
38–42	77	79	63	55	619	530	320	448	477	419	202	246
43–47	37	72	67	64	495	396	316	287	183	285	212	184
48–52	21	25	38	37	371	341	335	300	78	85	127	111
53–57	10	21	31	23	371	320	173	450	37	67	54	104
58–62	3	8	6	12	330	348	374	332	10	28	22	40
63–67	2	7	0	3	330	159	—	461	7	11	0	14

N.B. The death of a member resulting in the payment of more than one grant is treated as one claim. The few claims which have arisen at ages over 67 have been omitted on account of paucity of data. The figures under each heading for the years 1924–1929 have been graduated but represent closely the experience over that period. They were used as the basis for the 1929, 1934 and 1939 valuations. The figures in the remaining nine columns have not been graduated.

The claim costs were arrived at by discounting at 4 % per annum and ignoring mortality of children.

Table 2 gives these three functions calculated for quinary age groups and shows that there is, in fact, a decided correlation between age attained and benefit payable. The function A_x/E_x, which is the one required for valuation purposes, was graduated graphically and the graduated figures are also shown.

Table 2

Valuation age group central age x	B_x/E_x	A_x/B_x	A_x/E_x	
			Ungraduated	Graduated
			£	£	£
22	·01	9	·07	·1
27	·00	16	·06	·1
32	·01	30	·27	·2
37	·02	28	·46	·4
42	·03	46	1·15	·8
47	·03	58	1·61	1·3
52	·03	56	1·82	1·9
57	·05	57	2·85	2·7
62	·07	55	3·92	4·2
67	·10	67	6·82	6·5
72	·13	64	8·29	8·5
77	·20	65	13·21	10·4
82	·22	59	12·66	11·9
87	·09	59	5·40	13·0
92	·08	59	4·50	13·5

It will be seen that the average claim is small in early life and rises to approximately a constant figure from age 47 onwards, whilst the rate of claim rises constantly throughout life apart from the last two values. These values for ages 87 and 92 were based on only 1 % of the experience, being derived from five claims only. On such small data it was felt unwise to draw any definite conclusions from the sudden drop. In fact, in view of the flimsiness of all the data at the older ages it seemed better to disregard the experience from age 85 upwards and to extrapolate valuation factors for these older ages from the factors given by the experience for the younger ages.

In order, however, to make a reasonable graduation of the average benefit per member it was necessary to make some assumption as to the shape of the curve at its extremity. This assumption took the form of a gradual decrease in the slope of the curve from age 75 onwards, thus making allowance for the effect of the unnotified death element, such that an arbitrary final value of £14 was produced for age 100.

(ii) *Category (b)*. The valuation of benefits under this category proved to be the most interesting part of the investigation. It was obvious that if values at death of all payments to be made to dependants after death could be found, it would be possible to value these as variable 'sums assured'. From general reasoning the curve of these 'sums assured' at various ages might have been expected to rise with increase in age to a peak at middle life and then to fall, the most 'expensive' dependants being those who are too old to seek work but still young enough to have a fairly long expectation of life.

These 'sums assured' represented the sum of the 'after death' payments discounted to the date of death and thus it was necessary for this purpose to allocate each benefit payment to its duration from death. 'After death'

benefits, therefore, appeared to be dependent on two variables, age at death and duration from death, and as a first step the experience was analysed to find, for all values of x and n,

$\theta_x^n =$ total amount of benefits paid to the dependants of a member in the calendar year n years after his year of death, his valuation age at the end of the year of death being x, and

$\phi_x^n =$ total number of successful claims made by dependants of a member in the calendar year n years after his year of death, his valuation age at the end of the year of death being x.

The appropriate 'exposed to risk' may be defined as the number of deaths which occurred during a calendar year n years before the calendar year of a benefit payment at valuation age x at the end of the year of death. Then, denoting this 'exposed to risk' by E_x^n, in the case of a member of valuation age x at the end of a calendar year dying during that year, the chance that a claim will be made by his dependants in the calendar year n years later is ϕ_x^n/E_x^n, the average amount of each claim is θ_x^n/ϕ_x^n, and the average amount payable in that year in respect of each death is θ_x^n/E_x^n.

In order to obtain precise values for E_x^n, it would be necessary to have full details of all deaths which had occurred in the history of the fund. In fact, apart from those cases on which a benefit was payable during the 6-year period under review, the only data obtainable in respect of deaths prior to that period were the total number occurring in each year. It was necessary, therefore, to make some assumption as to the age distribution of the deaths in those early years and, in the absence of any more accurate method, the same age distribution of deaths in each year was assumed as that of the deaths in the 6-year period being investigated.

This assumption had little effect on the factors derived at the shorter durations but probably tended at the longer durations to increase the exposed to risk for the older ages at death at the expense of the younger ages, the fund having had a growing membership in its life of over a century. This error was counterbalanced in valuing the future benefits in respect of those who were already dead, since the same assumption entered into the calculation of the age distribution of such former members for use at the valuation date. In valuing the future 'after death' benefits of those who were living at the valuation date, however, a certain degree of error occurred, but, as the magnitude of any error varied with the duration from death, the larger errors were subject to the greater discount in arriving at the various 'sums assured' and were thereby reduced. As over 80 % of 'after death' benefits had been paid within 15 years from death and the age distribution of deaths could not have altered appreciably over the previous 20 years, it can be seen that the possible error involved by what would appear to be rather a drastic approximation must be comparatively small.

From Table 3 it will be seen that the 'sums assured' referred to above exhibit a marked connexion with the age at death.

As a matter of interest, investigation was made of the subdivision of the average benefits per death into rate of claim and average amount of claim, but the only point worthy of comment produced by this was that the latter seemed to be approximately constant, variations in the average benefit per death being due mostly to variations in the rate of claim.

Table 3

Valuation age at end of year of death x	'Sum assured' $= \sum\limits_{n=0}^{\infty} (v^n \theta_x^n \div E_x^n)$
	£
20–29	90
30–39	185
40–49	267
50–59	202
60–69	197
70–79	161
80–89	114

'Service' tables having been prepared from the mortality and withdrawal experience, the values of A_x/E_x and $\sum\limits_{n=0}^{\infty} (v^n \theta_x^n \div E_x^n)$ were incorporated in the commutation columns to give valuation factors as shown in Table 4.

Table 4

Valuation age group central age	Valuation of future benefits	
	Category (a)	Category (b)
	£	£
22	17	29
27	23	38
32	31	50
37	40	63
42	51	75
47	60	83
52	69	89
57	77	96
62	86	99
67	91	98
72	90	95
77	82	90
82	69	81
85 and over	49	69

The future category (b) benefits in respect of existing members having been dealt with, there still remained the similar benefits in respect of those already dead. As these deaths had been assumed to have a certain age distribution it was not necessary to analyse them according to age at death, and the value of future benefits in the case of a death which occurred between t and $t+1$ years previous to the date of valuation was thus given by

$$(1+i)^{t+\frac{1}{2}} \sum_{n=t+1}^{\infty} \left\{ v^n \sum_{x=20}^{\infty} \theta_x^n \div \sum_{x=20}^{\infty} E_x^n \right\}.$$

Final values of this function were obtained for all integral values of t by a process of grouping followed by graduation, and the values used decreased from £177 at duration $t=0$ to zero at duration $t=50$.

The valuation of contributions was performed by the use of factors based on withdrawal rates and mortality rates applicable to an entrant aged 30. The use of an average entry age was considered justifiable because the lapse rates were large in comparison with the mortality rates at the ages during which contributions were payable.

RESULTS OF THE VALUATIONS

The results of the valuations described above, omitting the value of donations which carry no liability, were as follows:

Fund A (interest 4% per annum)

Liabilities		Assets	
Present value of:	£		£
Current pensions	329,000	Fund	272,000
Current widows' pensions	297,000	Value of members' future	
Members' future pensions	890,000	subscriptions	48,000
Future widows' pensions	558,000	Deficit	1,754,000
	£2,074,000		£2,074,000

Fund B (interest 4% per annum)

Liabilities		Assets	
	1929 Valuation		
Value of:	£		£
Current grants	27,500	Fund	72,300
Future grants	124,200	Value of members'	
		subscriptions	18,400
		Deficit	61,000
	£151,700		£151,700
	1934 Valuation		
Value of:			
Current grants	38,700	Fund	98,500
Future grants	163,100	Value of members'	
		subscriptions	19,000
		Deficit	84,300
	£201,800		£201,800
	1939 Valuation		
Value of:			
Current grants	32,200	Fund	127,200
Future grants	221,800	Value of members'	
		subscriptions	19,300
		Deficit	107,500
	£254,000		£254,000

Fund C (interest $3\frac{1}{4}$% per annum)

Liabilities		Assets	
In respect of existing members:	£		£
Payments during lifetime	249,000	Fund	304,000
Payments after death	324,000	Value of members'	
		subscriptions	16,000
In respect of deceased members:		Deficit	416,000
Payments to dependants	163,000		
	£736,000		£736,000

INTERPRETATION OF RESULTS

In interpreting the results of a valuation on the lines indicated above, it is desirable to draw attention to the many assumptions which have had to be made and to the fact that the results are consequently to be regarded only as somewhat rough approximations. It should be emphasized that the words 'assets', 'liabilities' and 'deficit' have not the same significance as they have, for example, in the case of a life assurance valuation where the company is legally liable for payment of the benefits. It should also be explained that the value of future voluntary donations which carry no contingent liability has been omitted from the valuation balance sheet because there is no satisfactory method of capitalizing such fluctuating amounts.

The primary purpose of the investigation is to deduce some standard by which to measure, approximately, from time to time, the extent to which the fund is gaining, or losing, ground financially and to enable protective action to be taken if necessary.

It is of the essence of a charitable fund that the subscriptions payable by members are inadequate to secure the benefits given. Provided, however, that there be a steady flow of new entrants at young ages, the income of the fund may be in excess of the outgo for a considerable period and a substantial fund may be accumulated. The actuary's valuation, ignoring the value of contributions which do not carry any contingent liability, usually reveals a substantial deficit, and it is necessary (1) to explain how this has arisen and (2) to recommend what steps should be taken to deal with it. It is helpful in both connexions to indicate approximately the net liability (i.e. the excess of the value of future benefits over the value of future subscriptions) imposed upon the fund by the admission of an average new entrant at various ages.

It is then a simple matter to calculate

(i) a year's interest at the valuation rate on the deficit, plus
(ii) the estimated strain caused by the admission of the usual number of new entrants each year, plus
(iii) the average yearly expenses of management,

and to explain that, provided voluntary donations equal to the total of these amounts be collected each year, the deficit will be prevented from varying by any appreciable amount so long as the assumptions made in the valuation prove to be reasonably accurate.

Whether the deficit should be allowed to remain stationary or to increase or whether steps should be taken to reduce it must depend on the circumstances of each case.

In the case of Fund A, for example, where benefits were clearly defined, were not on a very generous scale and were presumably a matter of considerable importance to members, urgent measures were called for to reduce a deficit which had been allowed to reach alarming proportions. In that case it was estimated that voluntary donations which for some years had averaged £60,000 per annum, would have to be increased to £85,000 per annum to prevent an increase in the deficit, assuming that the admission of new entrants would be continued on the existing terms. It was therefore recommended that the terms for admission of new members should be revised and that an attempt should be made to reduce the deficit in one or more of the following ways:

(i) by a special appeal for immediate assistance,
(ii) by an attempt to increase annual voluntary donations,
(iii) by asking members to subscribe in future on an increased scale.

On the other hand, it is possible to visualize a fund operated in connexion with an undertaking or group of undertakings in such circumstances that there could be no reasonable doubt that voluntary donations would always be available to bridge the gap between outgo and members' contributions. In such a case the accumulation of a fund might be considered unnecessary and the existence of a deficit on an actuarial valuation would be of little or no importance.

The actuary will usually be concerned with funds approximating more closely to the first example than to the second. The suggestion that voluntary donations should be forthcoming each year sufficient to provide interest on the deficit and to meet the strain caused by new entrants may be regarded in some cases as unnecessarily cautious. It might be argued that, since the liability in respect of existing members is not fully provided for, there is no reason why full provision should be made for new entrants and that the sphere of usefulness of the fund could well be extended by the admission of new members, or even of new types of member, provided that the ratio of the growing deficit to the assets is not allowed to increase. This argument rests on the assumption that the criterion should be not so much the actual amount of the deficit as the ratio of the deficit to the assets. Whether this argument can be accepted must depend on the extent to which an adequate increase in voluntary donations can be relied upon. In the case of the Orphanage the deficit has been allowed to increase with the increasing membership, but the proportion of deficit to assets has remained almost constant and increased voluntary donations have been collected adequate to cover interest on the deficit. To have adopted a more exacting criterion in this case might have restricted the usefulness of the Fund, but the question naturally arises whether development along present lines can be expected to continue indefinitely. The figures for recent years have been as follows:

Valuation date	Deficit	Proportion of deficit to assets	4% on deficit	Average voluntary donations in previous 5 years	New members admitted in previous 5 years
	£	%	£	£	
1929	61,000	84	2,440	2,500	2,311
1934	84,300	86	3,372	3,200	4,839
1939	107,500	85	4,300	4,600	6,425

It seems desirable that the actuary in his report should point out that, although certain rigid scales of benefits and contributions have been assumed for purposes of valuation, it may not be desirable to standardize benefits accordingly. It may be necessary, from time to time, to adjust benefits or contributions in the light of changing circumstances and the report should contain a reference to this point. It is also necessary to consider whether the subscription payable by life members is reasonable in relation to that payable by annual subscribers, whether members should be admitted at other than the usual young entry ages without evidence of 'insurability' and what subscription such members should be asked to pay.

INVESTMENTS

An actuarial report of a charitable fund would not be complete without comment on the investments held, and one of the most important points for consideration is the question of whether the tendency should be for investments to be in long-term or short-term securities. Having regard to the character of such funds it would seem that, provided that no realization of holdings is likely to become necessary and since there is no necessity to publish the results of valuations, variations of capital values owing to changes in general interest rates are of relatively minor importance and that the funds should be invested to secure the greatest yield commensurate with intrinsic security. This would suggest that at the present time investments should be in long-term or irredeemable securities, which give a higher yield than those of shorter term. If it is thought, however, that interest rates generally will rise in the future, better results may be attained in the long run if investment is in short-term securities. In other words, normal investment considerations apply.

With regard to the classes of securities held, tastes vary between a fully gilt-edged investment list and a 'mixed bag' embracing all classes from British Government to high-class industrial securities.

Funds will often be limited in respect of their investments by a clause in their rules, but within the limits of this clause it is possible that, given sound financial advice, an increase in the yield may be affected without any appreciable decrease in the intrinsic security of the holdings.

CONCLUSION

It seems probable that there are in existence many charitable funds which would be found, on investigation, to lend themselves to actuarial treatment although they appear at first sight not to be susceptible to such treatment. The actuary who undertakes work of this character will be confronted with many unusual problems and he will probably have to content himself with approximations which fall short of the standards to which he is accustomed. The work, however, will not be without interest and he may have the satisfaction of helping to maintain or extend the usefulness of an organization the good work of which might otherwise, through failure to appreciate the true position and failure to apply remedial measures, be ultimately curtailed or suspended.

ABSTRACT OF THE DISCUSSION

Mr K. A. Wood, in opening the discussion, said that in the case of charitable funds there was a contingency which was not usually met with elsewhere, namely, the risk of inconsistency in the management of the fund, and he wondered whether a better approach to the valuation might not be to abandon the actual financial experience and to work on the statistics of claims and of those drawing claims and so to endeavour to build up skeleton rules of benefits. The Orphanage was a good case, since the benefits were fairly stable and the valuation did not present very great difficulties. The drawing up of such rules would also help when advice had to be given to the management on future methods of dealing with the fund.

The subdivision of the data, as in category (*b*) of Fund C, inevitably produced very small groups, and he wondered how many deaths had been experienced, as the groups depended not only on the age at death but also on the number of years elapsed since death.

Another point concerning the valuation was whether the experience of the living should be applied to the claims arising on death. In the case of Fund A, for example, it was said that the deaths did not give a sufficiently clear picture of the proportion married, and so the active members were also brought in to arrive at that proportion; but it should be remembered that bachelors were likely to be proportionately more numerous amongst the deaths than amongst the living. In the case in question the method produced, he thought, an overvaluation of the liabilities. In Fund B the experience was based on the deaths only. There was some regret expressed in the paper that the experience of the living was not available, but he thought that that was possibly an advantage. The family statistics of the dead were probably not very closely related to those of the living and, if the living had been brought in, it would probably have meant an overvaluation of the liability. On the other side, the statistics relating to the living reflected more accurately the effects of the decline in the birth rate.

Turning to the assets, it seemed to him that if they were stationary it was as well to settle their value as far as possible once and for all, as then it was unnecessary to change the valuation rate of interest in the future. The assets represented only so much income per annum, and it did not matter very much how they were valued, provided that the valuation was consistent; it was a very complicated matter to produce new commutation columns for each valuation. The question of the actual type of investment to be selected was simpler than in the case of a life office. The members of a charitable organization were subsisting in the main on charity, particularly if there was a deficit, and there was no need to preserve equity between existing members and new members. The ideal to aim at, therefore, was a well-secured income of the maximum amount possible. An active investment policy was probably unsuitable, as the committee of management might not be sufficiently experienced to follow the market, and he imagined that the actuary would not always be available to advise on matters of that sort.

The question of how to deal with the deficit, which seemed inevitable in all such funds, was difficult to discuss in hypothetical cases. Where it was increasing, the reasons should be examined, and expanding membership was not necessarily a satisfactory explanation. If there were more members because more of the eligible population took advantage of the scheme, and if the source of income were stationary, an increase of the deficit might be very serious. The Insurance Orphanage was a case where membership had grown by leaps and bounds, but the actual number of employees in the insurance industry had not increased by anything like the same proportion. He was not suggesting that the deficit in that case was in fact serious, in view of the backing available for the Fund.

Other points to consider were whether the sources of liability-free income were affected by death duties or other taxation and, on the other side, whether there would be claims for higher benefits on the grounds of an increase in the cost of living. Committees of management were presumably benevolent in their attitude to claims, and might easily be moved by a plea that the cost of living had risen 50 % and be inclined to give

correspondingly increased benefits, with disastrous results. In fact, the valuation seemed to him to provide an opportunity to advise the committee of management on scales of benefit and to set them out for future guidance. That would have the advantage of stabilizing the practice of the future.

Mr R. I. MacIntosh said that there were two points of valuation procedure to which he wished to refer. The opener had mentioned the methods adopted for obtaining the proportion married in the case of Fund A. The resultant percentages were set out in the paper, and some comments should be made on them. It was evident from the high proportion married in the age group 40–65, namely 95 %, that either marriage rates were high in that particular Fund or it attracted mainly married members. After age 65, however, the proportion married fell rapidly to a figure of only 50 % for ages 80 and over. A fall was naturally to be expected on account of a transfer of members from the married class to the widower class, but it seemed to him that the scale adopted after age 65 underestimated the liability in respect of those below that age, who probably represented the main body of the members. He would have thought that, whatever results were obtained from pensioners' deaths, a more gradually decreasing scale should have been used for the pensioned lifetime of the existing active members. Perhaps the authors could explain whether there were any special features which affected that point.

In the valuation of the benefits, Fund C seemed to be much more interesting than the other Funds, for grants were made in case of need not only during the lifetime of a member but after his death as well. The mortality was very light at the older ages. That feature was assumed to be caused by the presence of unnotified deaths, but no attempt was made to correct for it, apart from that implied in the continuous increase throughout life in the graduated values in the final column of Table 2, and it was argued that the continued use of probabilities of notified deaths and of an active membership containing unnotified deaths would result in a neutralization of the error. It would be seen that the valuation was dependent throughout on those probabilities, which seemed to him to be unsatisfactory and unreliable when used to forecast future experience, and he wished to suggest an alternative method of valuation which did not require any assumptions regarding mortality. If all benefits were grouped according to the duration since birth of the member in respect of whom that benefit was being paid, whether the member was alive or dead at the time that the payment was made, and if all members, alive or dead, were grouped according to duration since birth, it should be possible to obtain a series of payments dependent only on duration since birth. For valuation it would be necessary to discount those average payments to each individual duration since birth, allowance being made for the single decrement of withdrawal. Those values could then be applied to all members, alive or dead, and in that manner all the three forms of liability shown in the valuation balance sheet on p. 428 could be valued in one group. That method of valuation was, of course, open to all the objections of the collective method, but it had the merit of being simple. In any case an exact valuation was not called for, nor could it be expected in the circumstances. From their remarks on p. 418 it seemed that the authors considered the collective method a suitable one.

The most important and interesting part of the paper was that which dealt with the treatment of the existing deficit and of the strain which would arise in the future from the admission of new members. It was suggested that the financial position of the fund would remain stable if the deficit were not allowed to grow, i.e. if the amount to be collected each year in the form of donations were sufficient to provide the expenses of management, a year's interest on the deficit at the valuation rate, and an amount equal to the strain caused by the admission of new members. It was later suggested that, as full provision had not been made for existing members, it need not be made for future members, and that the criterion to be adopted could be that the ratio of deficit to assets should not be allowed to increase. The table on p. 429 illustrated that, in the case of Fund B, the growing deficit had kept within that limit. Beyond those remarks, however, the authors did not commit themselves regarding the relative size of the deficit or whether any steps should be taken to reduce it.

In the normal type of fund, which had to be valued actuarially, solvency, if not already attained, was necessarily the constant aim. In a charitable fund, however, insolvency would always exist to the extent that the payment of part of the benefits depended on donations which could not be anticipated in the balance-sheet. Following that line of thought, it seemed to him more realistic to measure the condition of any particular fund, not by the valuation deficit, but by the extent to which the payment of future benefits on the same scale as in the past was dependent on donations. That measure could be found by taking the ratio of fund plus value of future contributions to liability for benefits, and it worked out at 15 % for Fund A, 44 % for Fund C, 60 % for the first valuation of Fund B and 58 % for each of the other two valuations. Thus, in the case of Fund C for example, the management, instead of being told that they would have to find each year 3¼ % on the deficit, would be told that for every £100 of benefits paid they should collect £56 in donations, the degree of solvency being 44 %. If the problem were approached in that manner, it produced a valuation result which was more easily understood. It also saved the actuary from the difficult decision whether the deficit was safe at its current figure, whether a controlled increase was permissible, or whether every effort should be made to reduce it. It would be realized that the suggestion made by the authors, that the deficit should be limited to a fixed proportion of the assets, was a test which could be applied only after the valuation had been made. The test, therefore, could form no part of any advice to be given to the management of a fund.

So far he had not considered the question of new members. If existing members were being considered on a degree-of-solvency basis, a corresponding test could be applied to new members. Where the ratio of the value of contributions to the value of benefits at the average entry age approximated to the degree of solvency of the fund, he thought that the strain of new entrants, as a capital item at any rate, might be ignored, and the benefits made up to the full scale when they began to become payable, as in the case of existing members. Where, however, the degree of solvency in respect of new members was less than that of the fund, it would be as well if the cost of bringing them up to the same standard as the existing members were considered to be a charge on the donations of that year. An increase in the membership of a fund was a matter which should be considered carefully, and should be allowed to take place only if it were felt that the donation income was capable of sufficient expansion to enable the full scale of benefits to be maintained.

It remained to compare the relative amounts of the annual payment required under the two methods. Where the age distribution and number of the members were stationary, he thought it was clear that each method would produce the same payment; but where, through a fall in the number of new members, the average age was increasing, interest at the valuation rate on the deficit would be smaller than the payment based on benefits paid. That would be the case because under the latter method of payment the deficit, being a fixed percentage of the value of future benefits, would gradually decrease, and therefore larger payments would be required to effect that decrease than when the deficit was allowed to remain unchanged. Conversely, an increasing membership would involve larger payments when based on the deficit than when based on the benefits.

There were three main reasons why the donations should be related to the benefits paid rather than to the amount of the deficit: (1) the result was more realistic and intelligible, (2) any reduction in the deficit was effected automatically as and when it became necessary, and (3) any growth of the deficit was automatically kept within limits similar to those set by the authors, without the necessity to await the valuation results to check it. In addition to those points, it was possibly true to say that the donations which a fund was able to collect were more likely to increase when the benefit payments increased than when the actuarial deficit increased. He would admit, however, that it would be more necessary to keep a careful check on any increase of membership, and to advise the management of the ultimate cost of benefits when the membership again became stationary.

Mr R. J. W. Crabbe said he was interested in the problem of devising a method whereby the trustees or the persons running a fund would be able to tell how much they should obtain in the form of charitable donations. He thought it was important that, whatever method was adopted, it should be one that was easily understood by the laymen who were running the fund and one that automatically made allowance for the effect of new entrants. When he said 'automatically', he meant that it should be a method by which those running the fund could tell what their new entrants would cost them, without having to refer on every occasion to the actuary. It seemed to him that both the methods proposed for dealing with the problem suffered in that they did not enable the officials of the fund themselves to understand the effect of what they were doing, and he thought that any method based on the usual practice of equation of payments would suffer from that drawback. Actuaries would understand what was meant, but he did not think that any layman who had not been through an actuarial course of training would be very clear about deficit payments based on a proportion of the actuarial deficit, a proportion of the fund, and so forth.

Looking at it from that point of view, he would suggest as an alternative method that the actuary should determine, on the basis of the experience of the fund, an economic scale of contributions to be paid by each member, varying according to age or in whatever other way was suitable for the particular fund. He should give that scale of 'notional' contributions to the managers of the fund and say: 'This is the contribution you require for each of your members'. They should then be advised to keep a record of those notional contributions, as well as of the actual contributions which the members were paying. For any year the first charge that should be covered by the charitable donations was the short-fall of the actual contributions compared with the notional contributions. He realized that that would not necessarily represent the total charitable donations required, because the fund in the past might not have collected sufficient donations to make up the full notional contributions for existing members; but he thought that the method automatically provided a test of how much of the valuation deficit should be regarded as permissible and how much as a real deficiency, to eliminate which every effort would have to be made. The method which he would suggest for determining the latter was a second valuation based on the notional contributions. If that produced a position of solvency or a surplus, then future charitable donations need be sufficient only to cover the shortage in current contributions; if, however, that additional valuation produced a deficiency, then he thought that the trustees of the fund should be advised that additional donations were necessary of an amount sufficient to make good that deficiency.

He thought that the method he had outlined had the advantages that the officials of the fund would understand at any moment exactly what their position was, why the fund was in deficiency, and why they needed additional contributions; and he felt that any method which did not possess those advantages was not the best method that could be adopted.

Mr G. A. Hosking remarked that on p. 420 the authors said: 'Since a charity is not liable to income tax the rate used was in each case a gross rate'. Taken in the context of the paper, that statement was no doubt a correct one; but, taken out of that context, it might give rise to substantial error. The definition of a charity for the purposes of the Taxing Acts was rather different from what was generally accepted as a charity.*

On p. 417 the authors said: '...it must be borne in mind...that certain types of error, e.g. non-reported deaths, may be unimportant when valuation factors derived from such faulty experience are applied to a membership which continues to exhibit similar errors.' In funds of the type in question, the experience was liable to violent fluctuations. A case in point might occur on the retirement of the secretary and the appointment of his successor. The old secretary, possibly owing to advancing years, accepted the non-payment of a contribution as a lapse, and he wrote it off as such. The new secretary, full of enthusiasm, followed up the circumstances of each so-called lapse and, if he found

---

* A note on the liability of charities to income tax appears on p. 444.—Eds. *J.I.A.*

that the member was still living, cajoled him into paying the contribution, so that there was no longer a lapse; on the other hand, if he found that the member was dead, it was recorded as a death. In that way the rate of withdrawal could be very substantially and suddenly altered. Of course, if there were no benefit payable in respect of that particular death, it did not matter much from the actuarial point of view whether it was recorded as a death or as a withdrawal. Nevertheless, in the latter case, if any change in the benefits were contemplated, the use of death rates found from the data might give rise to quite substantial error.

He knew of one fund which, though not a charitable fund, gave rise to very similar points. It was a fund with a very large membership under which hospital benefits were paid which were confined entirely to the payment of hospital costs. There were three categories, and, within each category, each member paid the same contribution. The risks, however, were by no means uniform, because the contribution covered a family unit, so that the one contribution might cover a single male or a single female or it might cover a husband and wife and four or five children; the only stipulation was that the maximum amount claimed in any one year could not exceed a certain figure. As a result of the investigation of the experience, which was quite large, it was found that the contribution payable was sufficient to cover a family unit of limited size, but that outside that limit the contributions were insufficient. It would thus be seen that part of the actuary's responsibility in reporting on the fund was to notify the secretary of the fund that a certain balance would have to be maintained in respect of the size of family of those applying for membership, because otherwise, if there were an inrush of members with a large number of dependants, the balance would quickly be upset and the fund would become insolvent. He might add that age of member in that particular case had not so far proved a definite factor in cost.

He had mentioned the fact that in that fund there were three categories of membership. In the first, the payment of one contribution covered hospital costs up to a certain maximum in any one year; in the second, the contribution was increased by 50% but the maximum benefit was increased by a smaller percentage; and in the third, the contribution was doubled but the maximum benefit was increased by only 75%. It might have been thought that, as a claim below the smallest maximum would be paid under any of the categories, the members paying double contributions, with their maximum increased by a smaller percentage, should be the most profitable; but it was interesting to note that the most profitable category was that with the lowest maximum, and the category showing the greatest loss was that with the double contribution. That was due, he thought, to the different financial status of the membership in the different categories and to the fact that the average number of dependants was highest in the double contribution category.

Mr P. F. Hooker said that he had had practical experience of only one charitable fund and, although it was a comparatively simple one to value, he thought that a little information about it (which he gave with the permission of the actuary of the fund) might be of general interest. The object of the fund was to provide annuities for members of the upper and middle classes who were in indigent circumstances, and persons were not eligible if they were under age 40 or in receipt of an income of more than £65 a year. Beneficiaries were elected for membership each year, and the number of members to be elected depended on the advice of the actuary.

Up to about fifteen years ago, the assumed 'mortality' had approximated fairly closely to the mortality of the O[af] ultimate table with one year added to the age, but during recent years it had improved, and it now approximated to the mortality of the O[af] ultimate table with one year deducted from the age. The true mortality was somewhat lighter, for every year a few annuitants had their annuities suspended because they were no longer eligible; the total deaths and suspensions were usually more than the expected 'deaths'.

The principle which had always been adopted in the valuation by the present actuary and by his predecessor, both of whom he (the speaker) had assisted, had been that the subscriptions, donations and legacies which were received each year should be sufficient

to provide the capital value of the new annuities and of the increases of existing annuities which were granted during the year. The actuary valued the fund at the beginning of each year and, by dividing the sum of the surplus (or such portion of it as he considered was available for use) and a conservative estimate of the donations which would be received during the year by the appropriate annuity value, he determined the amount of annuities per annum which he could recommend the committee of the fund to grant during the year, either by way of new annuities or by additions to existing annuities. The average age of the existing annuitants was fairly high, and the average age at entry of new annuitants was quite steady from year to year, so that the calculation was a very simple matter. During the period of his association with the fund it had always shown a surplus and was therefore in a happier position than the majority of charitable funds.

There was one point (already mentioned in the discussion) which seemed to him to be of considerable importance, namely, the question of the circumstances in which it was sound actuarial practice for the actuary of the fund to advise the trustees that they need not take any steps to reduce a deficit. The authors said on p. 428, 'Whether the deficit should be allowed to remain stationary or to increase or whether steps should be taken to reduce it must depend on the circumstances of each case', but they gave no indication of the standard of measurement the actuary should adopt. On the following page they pointed out that, in the case of Fund A, the deficit was of 'alarming proportions', but they did not indicate how the actuary might have decided, if the deficit had been only one-half the figure shown, whether it was necessary to recommend that steps should be taken to reduce it. It was true that, when the authors dealt with Fund B, they mentioned a standard of measurement, namely, the proportion of the deficit (in the sense in which they used the term) to the assets. They suggested that standard, not as a basis for determining whether the deficit should be reduced, but as an indication whether the fund was gaining or losing ground. Even for that purpose, it did not seem that the suggested standard of measurement was satisfactory. For example, in the case of a fairly new fund the deficit might be several times the amount of the fund; but that would not necessarily mean that the fund was in an unsatisfactory condition, because it might be receiving a substantial income from voluntary donations. At succeeding quinquennial valuations of such a fund, the ratio of the deficit to the fund might be expected to decrease, and the fact that such a decrease took place would not be an indication that the fund had gained ground.

He thought that the more obvious and simple method of making the desired measurement was to compare the deficit, not with the amount of the fund, but with the value of such portion of the future voluntary donations as might suitably be regarded as applying to the existing members. The precise method of determining the latter would depend on the circumstances of the individual fund, but a possible method would be to multiply the current income from donations by an annuity-certain commencing at unity and decreasing in arithmetical progression over a period of, say, thirty or forty years. If the assumption were made that a decreasing figure would be available each year in respect of the existing members, any donations which were received over and above that figure could be regarded as applicable to the new members entering in the future.

He had applied the idea to the figures which the authors gave on p. 427 in respect of Fund A. It was clear that the Fund was in a very unsatisfactory condition, because the liability for current pensions to members and widows was £626,000, which was much greater than the amount of the Fund. However, he had valued the income of £60,000 per annum from voluntary contributions by a decreasing annuity-certain vanishing in thirty or forty years' time (it made comparatively little difference which term was taken), and he found that the value of the future donations in respect of the members in the fund on the valuation date was approximately £600,000 to £700,000, whereas the deficit was £1,754,000. That showed that it was very important that the deficit should be reduced.

Applying a similar test to Fund B, he found that at each of the 1929, 1934 and 1939 valuations the value of the future donations which could be regarded as applying to existing members was equal to about half the deficit, which seemed to suggest that the Fund was not in a satisfactory condition and that, strictly speaking, the actuary should

have advised the trustees of the Fund to take steps to reduce the deficit; but he agreed with the authors that to adopt an exacting criterion might have restricted the usefulness of the Fund. There were circumstances in which the deficit had to be allowed to remain at a higher figure than appeared to be justified by the method which he had suggested. However, he thought that the method provided a very useful standard of measurement.

On p. 429 the authors said: 'It might be argued that, since the liability in respect of existing members is not fully provided for, there is no reason why full provision should be made for new entrants...'. He did not agree at all with that argument, and he was not sure that the authors did. He thought that if the deficit was considerably greater than the present value of the future donations (calculated on the lines which he had suggested), the fund was not in a satisfactory condition; in such a case it was quite unsound to say that, because the existing members had been admitted on terms which had created a deficit, it was safe to continue to admit new members on the same terms. On the other hand, if the deficit was considerably less than the value of the future donations in respect of existing members, that showed that the fund was in a strong position and that it was safe to allow the deficit to increase.

Mr M. E. Ogborn thought it undesirable to put too narrow an interpretation on what an actuarial investigation was or on the form that actuarial advice should take. It was necessary to suit the advice to the circumstances, and to show the results in a form which would be readily intelligible to the committee managing the fund. From what had been said by previous speakers it was clear that there was not full agreement on the form in which the results should be put forward; but that, he thought, was as it should be, because the method of presenting the results inevitably depended on the circumstances of the particular case.

One point which should be emphasized was that, as the authors had suggested, the words 'surplus' and 'deficit' did not mean the same thing in funds of the kind in question as in a valuation of life assurance contracts. In the case of a life assurance fund a surplus on valuation meant that the fund was in a healthy condition, but in the case of a charitable fund a surplus on a valuation such as had been made by the authors might mean merely that donations which had been made for the benefit of existing members were being held up for the benefit of future members. That course would defeat the purpose of the fund. A deficit did not necessarily mean that the fund was in an unhealthy condition; it depended upon the donations that the fund could rely upon collecting.

Rather than value the future donations in the way which had been suggested, and rather than adopt the other methods which had been put forward, he would prefer to compare the amount of the fund with the present value of the current liabilities. As had been pointed out, the amount of Fund A was insufficient to cover the value of the current liabilities. It seemed to him that that was the first thing that the committee wanted to know; that was a situation which they would have to deal with at once by appealing for further donations to avoid reduction of the current pensions.

Turning to the prospective future pensions, he would depart from the valuation balance-sheet altogether. He did not think that a valuation balance-sheet showing a deficit of £1,000,000 would convey anything to the committee of management of a fund of the type in question. The actuary might feel able to say that the committee need not worry about the deficit, but that might make the position worse, because then the calculation would be regarded as theoretical and not related to practical facts.

He would prefer to put the valuation in the form of income rather than of capital. The present value of the contributions of the members could be computed and, by proportion, the amount of the additional sums related to those contributions which would have to be collected as donations to keep the fund solvent for the prospective benefits of existing members. With the figure representing the income to be collected as donations before them, the committee had a target at which to aim. He suggested that that would be the form which would be most helpful to the committee of the fund; and they could see at once how the progress of the fund compared with the past by comparing the donations which they would have to collect in the future with the donations which they had in fact collected in the past.

With regard to future entrants, he would leave those to the future. There was a strong case for saying that further members should not be admitted to Fund A, at least until the Fund was in a more satisfactory state; but in the general case he did not think it was necessary to meet the liabilities of new members at the time they entered. It would be helpful to the committee, however, to show the proportion of the proposed benefits that would be provided by the future members' contributions; they would thus be able to relate the sum which it would be necessary to collect as donations to the number of members admitted in the future.

Mr James Bacon said that it was not particularly difficult to make a valuation of funds of the kind in question; the real trouble arose when the results had to be interpreted.

It was clear that every fund had to be dealt with in its own particular setting. In the case of certain local funds of a limited nature, such as police and fire-brigade funds, he had found that the donation income, originally very much in excess of the contributions of the members, had tended to disappear after a period of years, with the result that finally it had been necessary to ask for a contribution from each member which was adequate, and to use the donations simply to provide bonuses as and when the money was received, or to meet expenses of management. All those funds ultimately showed surpluses, and it might be said that they had ceased to be charitable funds; but he wanted to emphasize the reason, which was that the sources of charity, if they had not altogether dried up, had become only an inconsiderable part of the income.

Another fund, which was connected with a particular profession, was rather similar to one which was mentioned in the paper. Once again he had found the same features— membership had increased, donations and legacies (owing to causes which it was easy to understand) had tended to become a very much smaller proportion of the total income, and it had become necessary to put new members on a proper contribution basis and to use the donations for bonuses and expenses of management.

In the case of yet another fund, connected with a large denomination, precisely similar features were apparent. As the benefits of the fund had become more widely appreciated by those who could join it at a nominal contribution, the membership had increased. There was a limited area of appeal, and, although the total donations had not decreased, they had declined in relation to the number of members. It had been necessary to take the step of providing for the existing members and a sum of £400,000 or £500,000 had been raised to put the fund on a proper actuarial basis; it was recognized that the area of appeal was limited and that whatever was received in donations in future could only take the form of bonuses.

Circumstances were such as to render it unlikely that charitably supported institutions would be able to function in the future to the extent that they had done in the past, and so it became almost imperative to go far beyond the valuation and to point out to those responsible for the administration of the funds that they would have to come to decisions on at least three points: (1) whether the fund was to be administered for the benefit of the existing members, with the current scale of benefits maintained; (2) whether the fund was to be continued as a fund for the profession as a whole (as in the case of the Insurance Orphanage), even though that meant a reduction of benefits for existing members; or (3) whether the area of appeal was capable of an expansion sufficient to meet the expansion of the membership. Each of those points called for a different method of treatment of the valuation results.

One method, which appealed to him considerably, was to say that each new member would require a given contribution to support his benefit, and that before the committee of management admitted new members they would have to make sure that their total income from members' contributions and from donations would provide the contributions necessary to meet the benefits. In that case it would be possible at least to meet the benefits of existing members, no matter what unforeseen events might occur. It would be seen that that again raised the question whether the primary concern was to be for the existing beneficiaries and, perhaps, the existing members, or whether the fund was to be regarded as a continuing concern.

He had found it advisable not to use the term 'deficit', and in some cases he had used the wording 'amount to be obtained from future donations, legacies, etc.', which showed exactly what had to be done. He had also found it advisable to state the proportion of the benefits that was being provided by the members' contributions and the proportion that had to be provided by additional donations and legacies. That gave the committee of management a fairly clear idea of what was firmly based and of what was not quite so firmly based.

There were two further points which he wished to mention. He had found it advisable in some cases to trace, so far as he could, first, the movement of the rate of claim, and secondly, the movement of the amount of claim. In the valuation the actuary was concerned with the amalgamation of those two items, but a separate investigation gave useful information for the benefit of the committee in the determination of future policy. When he had wanted to administer a severe shock and make a special appeal, he had made a forecast of the future, and had said to the committee: 'With the number, type and age distribution of your present membership and with certain assumptions as to new entrants, you will require to raise so much in the years 1950, 1960 and 1970 from donations and legacies if you are to maintain your present standard of benefits'. Probably that was already done by actuaries who made such valuations, but with a rapidly expanding membership, with a limited area from which donations could be drawn, and with growing claims on the resources of the people from whom donations might legitimately be expected, the warning might have a very salutary effect.

Mr A. H. Rowell, in closing the discussion, said that the opener had come to the conclusion that a valuation in essence gave an opportunity for the actuary to advise on the scales of benefit with a view to stabilizing the practice of the future, but he did not regard the actuary's duties in that light. In charitable matters he felt it was proper to collect from the head and dispense from the heart, and the last thing that he wanted to do was to stabilize the practice of the future. He thought that the standard of benevolence was something which the committee of administration had a complete right to control, and all that the actuary should do was to utter a warning if he thought that the committee were going astray. The main task of the actuary was to show the committee clearly the consequences of their procedure.

Mr MacIntosh had suggested an alternative method of valuation in Fund C by which all the liability items might be shown in one group. That might have various advantages from the point of view of simplicity; on the other hand, there was some advantage in showing to the committee as many component parts as was conveniently possible, so that they might know the relative magnitude of the burdens which they were carrying in respect of the living and in respect of the dead.

Much had been said about the method of presenting the results; the matter had been summed up admirably by Mr Ogborn, who had taken the view that each case should be treated on its merits. Mr Crabbe had dealt in terms of notional and actual contributions, but it would be obvious from the balance-sheets given in the paper that the actual contributions were very small indeed; they were little more than token payments in Funds B and C, and he was not sure that there would be much difference between the gross and the net liability for a new entrant. He thought that the suggested method placed too much emphasis on the actual contributions, which were in themselves obviously very small.

He still preferred the method described in the paper, which was in effect to say to the committee: 'In my opinion, this is the figure at which you should aim'—a round figure which was a simple target. He felt that the committee themselves, who were faced with the task of collecting donation income (it had to be collected strenuously—it did not simply arrive) were much more helped by one plain, straightforward figure, which they could quote or double or deal with as they liked, than by a percentage which would vary from year to year. If he had one regret, looking back on Fund C, it was that at the time he made the valuation he lacked the imagination to double the target figure with the purpose of inducing an increase in donations. However, it was supposed to be an actuarial valuation, and perhaps his remarks from that angle were improper.

He believed that Mr Penman had once said that he made the first valuation of Fund B in direct acceptance of a challenge; someone had said that he could not apply actuarial principles to it. In the case of Fund C there had also been a challenge of a kind. A former official of the fund had stated in a report, in which he made a completely praiseworthy attempt to produce lessons for the future from the past, that it would be obviously useless to enlist the assistance of an actuary on account of the nature of the benefits; that view, it was interesting to note, was cordially shared by the auditor. On the face of things, the case against the usefulness of the actuary was convincing. The report had said that the calls for assistance were multifarious in character, that not individuals but families varying in number were concerned, that benefit expenditure varied from a few pounds to an aggregate of several thousands in particular cases, and that, therefore, the liabilities, especially those arising from unemployment, long illnesses, operations or breakdowns in health, were unpredictable in an actuarial sense.

In the case of Fund C there seemed to exist amongst the beneficiaries at any time a large and expensive hard core of pensioners whose distress and need of assistance were probably permanent, whereas the fluctuations in outgo from year to year arose mainly among the smaller, non-recurring grants, and their financial effects were not serious. It was that long-term nature of a material proportion of the liabilities which facilitated the application of actuarial principles and which at the same time enhanced the importance of actuarial guidance, because a drastic revision downwards of the standard of benevolence at any time might be unfortunate enough if the benefits consisted mainly of non-recurring grants, but would involve untold hardship if the beneficiaries consisted in the main of otherwise destitute pensioners.

He had been very interested in Mr Bacon's examples of cases in which the ability to collect donations seemed to be declining, and in his views on the new-entrant liability. It had been suggested that the actuary should have one eye upon a cautious estimate, for his own purposes, of the future donation income. He felt that if the actuary were briefed properly by the committee, as no doubt he would be, he would have access to the records of past donations and would have a good idea of the buoyancy or otherwise of the donation income. He thought that such a review should be made, either formally or informally. In the case of Fund C, the target figure which he had suggested took the form of a round figure for the deficit plus so much per head for each new entrant, because he agreed with previous speakers that that was a note which it was most important to strike. The real point was that, in dealing with a fund which drew its membership and its donations from a profession or industry or any similar group of persons, it was necessary to consider whether in assuming liabilities in respect of a large number of new entrants the fund was, or was not, tapping a new field of charity which would support their admission.

Even from his own very slender acquaintance with charitable funds he was convinced that the actuary, armed with his technical weapons, could render unique services. In the absence of actuarial guidance, the administrators of a fund could steer their financial course only by rule-of-thumb methods, and most of the questions which they asked themselves necessarily remained unanswered. Actuaries should also advise on the proper investment policy to adopt with a tax-free fund, and on the form of the investment clause itself. In such financial matters a real moral obligation rested upon the administrators of funds to use to the maximum financial advantage the subscriptions which they received from the public.

The President (Mr R. C. Simmonds), in proposing a vote of thanks to the authors, said that he was a little surprised that more attention had not been paid during the discussion to the prospective 'standard of benevolence'. The authors had said that they had to assume either the maintenance of the existing standard or some modification of it, but undoubtedly that question lay at the core of the problem of valuing charitable funds. The standard of benevolence might have regard to current economic conditions or, as in that happily-placed fund mentioned by Mr Hooker, it might be related to a monetary limit—even though current conditions might have made that limit completely inappropriate. Other funds were not in so fortunate a financial position. Mr Bacon's

mention of a police fund evoked a far-off memory of one such case with which he himself had once been concerned. The contribution for each member was about one penny a week, and the very substantial balance required to meet the benefits had to be raised mainly by brass-band processions and other miscellaneous functions.

He thought that some speakers had made a good point when they said that often it was better not to refer to a deficiency but to quote the amount to be provided by future donations and legacies. It should be remembered that a deficiency on the valuation date was subject to increase, so long as it was unliquidated, at the valuation rate of interest; if, however, the amount to be provided by future donations and legacies were quoted, it should be in the form of a target per annum that allowed for deferred payment.

Mr S. F. Isaac, in reply, said that the thanks which had been given to the authors were really due largely, if not entirely, to Mr Penman and Mr Rowell, whose work in the past formed the foundation of the paper, and but for whose encouragement the paper would almost certainly not have been written.

He had hoped there might have been some discussion on whether actuarial investigations of charitable funds were really practicable, and, if practicable, worth while. It was perhaps not surprising that, in a gathering of actuaries, it should be agreed that they were practicable, but he had expected that some question would have been raised whether they were worth while, because he thought that among people who doubted their value were to be found a certain number of actuaries. He felt himself that the work was well worth doing. Those who took a different view founded their conclusion upon certain arguments. They said: ' If an investigation on actuarial lines is made, the result will almost always be undue caution on the part of those administering the fund, the accumulation of quite unnecessarily large reserves, and the consequent undue restriction of benefits, to the detriment of those who are intended to benefit from the fund.' He did not share that view. He thought that most funds did such excellent work that there could be no question whatever that every effort should be made to ensure their permanency. He agreed entirely with Mr Rowell that the committee of management ought to control the standard of benevolence and ought to vary the benefits from time to time, if necessary; but at the same time he felt that the members assumed (perhaps with some justification, even though they had no legal claim) that if adversity overtook them or their dependants they would probably receive much the same sort of assistance as had been extended in the past to others in similar circumstances. He regarded it as most desirable, therefore, that the problem should be approached on actuarial lines. Moreover, he believed that reference to an actuarial deficit was in fact a very powerful and effective argument on which to base an appeal for funds, and very often had the effect of raising funds which might otherwise never be raised.

There had been some criticism of the methods adopted in the investigations outlined in the paper. The opener had criticized the use of statistics of the living as a basis for claims arising on death, and had mentioned that the living were included as well as the dead in determining the percentages married at various ages in Fund A. That was necessitated by paucity of data; figures based on statistics of the dead alone were inadequate and quite inconclusive. Because of such difficulties approximations were inevitable, but he felt that a high degree of accuracy was not attainable in the calculations in any case, and in fact was not usually essential.

Most of the discussion had centred round the problem of the best method of interpreting the results. The method the authors preferred was that which ignored the liability-free income and which then suggested that each year a sum should be raised representing interest on the deficit, the strain caused by the probable number of new entrants, and the expenses of management. They did refer to an alternative—the degree of solvency—but they preferred the first method. It had been suggested that that was not easily understood, but he thought that, if properly explained, it was quite easily understood by those who administered the fund. Mr MacIntosh had suggested that the problem might be approached by recommending that, if the fund were $k\%$ solvent (i.e. if the fund plus the value of future contributions were $k\%$ of the total liabilities),

then $(100 - k)\%$ of the benefits should be found from donations. The objection to that suggestion seemed to be that it implied an increasing donation income when the outgo was increasing, and it might be highly dangerous in the extreme case of (say) a pension fund which was on unsound foundations but had not been very long in existence, having very few pensioners and many young members. In such a case the suggested method would call for very little donation income for many years, but the time would almost certainly come when a very substantial donation income would be required, and remedial action might be deferred too long. There was also (as pointed out by Mr MacIntosh) the complication that the simplicity of that method would be lost if the new entrants were not, by their own contributions, providing approximately $k\%$ of their prospective benefits.

One or two speakers had suggested that the authors had not been sufficiently definite on the question whether the deficit should be allowed to increase or should be kept stationary, or whether efforts should be made to reduce it. That was probably the most difficult problem with which the actuary was faced in such work, and he was not sure whether, in fact, it was a problem for the actuary. The question of the maximum and minimum donation income which the supporting body or industry might reasonably be expected to produce year by year in future was largely a matter for those administering the fund. The actuary might be able to offer some advice and guidance, but it was not primarily his responsibility, and he felt that it was not possible to lay down any very definite rule in that connexion, because it was possible that a degree of solvency which could be regarded as reasonable in one case might be quite unreasonable in another.

He was interested in Mr Hooker's suggestion of valuing a decreasing donation income limited to a period of years, but he felt that it might be a little difficult to decide on the term of years and the rate of decrease to be assumed. The method certainly provided the actuary with a useful standard of measurement but he was doubtful whether it would be readily understood by those administering the fund. Mr Hooker had criticized the suggestion that in certain circumstances full provision need not be made for new entrants. What the authors intended to convey was that it could be argued that, in certain circumstances, there was no need to make full provision each year for the whole of the initial strain resulting from the admission of new members in that year. They had been careful to point out that the validity of the argument depended on the extent to which it was possible to rely on an adequate increase in voluntary donations. They had in mind the possibility that the admission of a particular group of members might open up fresh sources of future donation income. In such a case it would not be appropriate to make full immediate provision for new entrants, either by requiring them to contribute sufficient to secure the full benefits likely to be received or by requiring the new donors to make good the strain of new entrants by a single payment. Provided those managing the fund were reasonably satisfied that sufficient additional donations would be received in future, they could justifiably admit new members on terms which, under the methods suggested in the paper, might result in an immediate increase in the deficit but a steady improvement in future in the degree of solvency. As Mr Hooker had pointed out, the final decision depended on the circumstances of each individual fund.

Mr MacIntosh had referred to the very high proportions assumed to be married at ages 40–65 in Fund A. He felt, however, that those rates were appropriate. The fact was that in that fund a very high proportion of the members were married, which he believed was quite usual in funds for clergymen. The fund had been established for a very long time, and he believed that almost all, if not all, the ministers in that particular denomination were members; he did not think it was a case where the married men had entered and the single men had not done so.

Mr R. W. A. Fowler, who also replied, said that he would like first to answer the opener's question about the size of the groups in connexion with the 'after death' benefits in Fund C. Table 3 showed the only grouping which gave anything like a reasonable graduation of the facts. The figures shown there were the result of summing columns under five-year groups of duration from death, discounted for the appropriate period; and the square table from which they originated did not show any sign of

progression, at any rate not to the extent that it could be said to show a definite con-
nexion. It was only when summed together into the seven figures given in Table 3 that
there seemed to be a marked connexion between the valuation age at end of year of
death and the 'sum assured'.

With regard to the unnotified deaths, he agreed that it would be very much better if
the degree of non-notification could be determined and the necessary corrections made,
but that was not possible, and he felt that what had been done was the next best thing.
From Table 4 it would be seen that a man aged 62 should have a reserve of £86, and
if, in fact, he had just died he would have a reserve of £99, while, if he had been dead
for ten years, the reserve would be something like £70 or £60. It followed that there
was no great error in calling a man dead when he was alive, and as, in fact, those figures
had been derived from the membership including the dead people (how many they did
not know) he thought the error would be much smaller than might have been imagined.

He was interested in Mr MacIntosh's alternative suggestion for valuation. He
thought it might be described as 'more collective' than the method which the authors
had used in the paper, and to that extent he thought that it was less exact and more
likely to be upset by changes in future conditions. In other words, if the mortality rates
in the future altered to any great extent, then the proportions dead in any of
Mr MacIntosh's groups would vary immensely in the future, with resulting inaccuracy
in the valuation. If simplicity were the only requisite, it would be feasible to adopt
that method, but he preferred the method given in the paper.

He had also been interested in the remarks made by certain speakers with regard
to the word 'deficit', because he had had a letter from a colleague in the Forces saying
that 'deficit' was a word which he did not like, and that he would prefer some such
wording as 'present value of donations to be collected in order to produce solvency'.
He had added that he did not like those words, but no doubt some better phrase could
be found. There was, of course, a connexion between the deficit disclosed by the valua-
tion and the donations which had been collected in the past and which were likely to be
collected in the future. If the deficit disclosed was such that the target figure produced
from it was within the region of what could be collected in the future, then obviously
the right thing to do would be to work on the basis of the deficit remaining unchanged.
If, on the other hand, the deficit were of such an amount that the collection of donations
equal to the target figure was an impossibility, then it was obvious that something drastic
had to be done, and the whole structure of the fund would have to be altered in some
way. If the deficit were such that the donations were far in excess of what was required
to produce solvency on the target-figure basis, then equally obviously there was a case
for increasing the benefits or extending the membership to more people.

Mr R. J. W. Crabbe subsequently sent the following written contribution:

I spoke early in the meeting, and in the light of the subsequent discussion it seems to
me that I might with advantage have enlarged upon the practical results of the method
I proposed.

I would reiterate that the object of my suggestion is to determine the target to be set
up for donations by such a method that the committee of management can themselves
arrive at it, while it will at the same time enable the fund to meet all demands upon it.
Thus if, from the commencement of a fund, the annual target is the difference between
the actual subscriptions and those which the members would have to pay if it were not a
charity, and that target is regularly achieved, there cannot be any question as to its
solvency. An increase in membership will automatically produce an increased target,
while if the fund is closed (with a probable shrinkage in charitable income) the target
will diminish until it becomes zero when there are no longer any contributing members.
Thus pensioners will be fully protected. Remembering that in valuation the fund is
treated as closed to new entrants, this last point automatically meets Mr Hooker's
suggestion that a diminishing proportion of future donations should be treated as an
asset in the valuation. Further, the criticism of Mr MacIntosh's method (that it calls
for increased donations at inappropriate times) is clearly not applicable.

The valuation can now be conducted on the assumption that the annual targets will

be realized (i.e. the full benefit contributions can be treated as an asset). If a deficiency is shown by this valuation it must clearly be dealt with, either by setting a special additional target analogous to the deficiency contribution levied to cover back service in a pension fund or, if this is not practicable, by reducing benefits. If, on the other hand, a surplus is brought out, it can be used to increase benefits—permanently if the increased target necessitated by the higher benefit contribution can be achieved, but otherwise temporarily.

I appreciate that in many cases the contributions charged are small or merely nominal. This will not, however, affect the method, as the greater part of the 'notional' contributions will then have to be collected in the form of donations.

The following note on the liability of charities to income tax has been received from Mr G. A. Hosking:

The definition of the word 'charity' for the purpose of the Taxing Acts depends on many cases which have been before the Courts and is a good deal narrower than the general conception of the term. Briefly it may be said that for this purpose a charity is a body or fund established in the United Kingdom under an irrevocable trust for charitable purposes and charitable purposes only. The expression 'charitable purposes' may be taken to include the relief of poverty, the advancement of education or religion, and activities of a similar nature which are beneficial to the community as a whole or to a large section of the community, even if that section is confined to a particular locality. It is to be noted that bodies formed for political or professional purposes do not come within the term, nor do bodies which are not under a binding obligation to use their income for charitable purposes only. Nevertheless, if the non-charitable purposes are of a minor nature, relief would generally be granted. If the charity accepts premiums or contributions and in return is legally bound to grant certain benefits, relief from tax would not be given, but the fact that premiums or contributions are paid does not of itself prevent relief from tax being granted if the benefit is given by way of bounty.

Buildings and land owned by charities are normally exempt from income tax under Schedule A unless the charity is in receipt of a rent in respect of them or they are in the occupation of a person whose total income is £150 per annum or more. Profits arising from husbandry or other trading on the part of the charity are normally exempt from tax if such profits are applied solely to the purposes of the charity and either (a) the trade is exercised and conducted as the main and primary purpose of the charity or (b) the work in connexion with the trade is mainly carried on by the beneficiaries of the charity.

Interest and annuities received by a charity are normally exempt from tax if they are applied by statute, deed, will or similar instrument to charitable purposes only. Interest on stock in the Public Funds received for charitable purposes, as certified by the Charity Commissioners, may be paid by the Bank of England without deduction of tax.

The above is a very brief statement of the position. Those desiring to go further into the matter should refer to the standard works dealing with the subject.