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MERGING LIFE FUNDS

by
J. R. HUNTER, F.F.A., F.I.A.A., and
E. J. JONES, F.I.A., F.I.A.A.

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"What is all knowledge too but recorded experience, and a product of history: of which, therefore, reasoning and belief, no less than action and passion, are essential materials?"

Thomas Carlyle.

1. INTRODUCTION

1.1. This paper developed from an earlier paper given by the authors to the New Zealand Society of Actuaries. The authors were involved in acquisitions and mergers at a time when there was very little actuarial literature on the subject. Since then, the 1980 International Congress of Actuaries had as one of its subjects "Estimating the Value of Insurance Companies and Portfolios" and a wealth of papers appeared on the subject of pricing life funds. However, the aspect of merging life funds does not appear to have been covered to the same extent.

1.2. The major emphasis of this paper is intended to be the actuarial aspects of merging two life funds. This is normally the final phase of a long and complex exercise. For completeness, this paper covers the preparatory and final phases in their normal order, and examines them from both an actuarial and a business point of view.

1.3. The paper is therefore structured as follows:—

Part 1 (Sections 2-6) discusses pricing and business strategies that precede acquisition and merger. Much of this part is a précis of the Congress papers referred to in the Bibliography.

Part 2 (Sections 7-13) discusses some of the business problems that arise during a sale and merger.

Part 3 (Sections 14-22) discusses the actuarial aspects of merging two life funds.

Part 4 contains Appendices, Bibliography, check lists, and two technical notes.

1.4. The paper has been written with a wider audience in mind than the local audience for the earlier paper. However, some of the experience of Australian and New Zealand conditions may have intruded into the paper and, therefore, some background to the life insurance scene in these countries appears in Appendix E, to which the reader is directed if any item seems out of keeping with his or her own experience.

Part 1—Acquisition Studies

2. PRELIMINARY

2.1. A life company that commences looking at prospective target life companies will do so for one or more of a variety of reasons. Weaver included most of the following in the Society of Actuaries' discussion on "Mergers, Acquisitions and Valuations of Stockholders Equity" in 1969:—

1. The desire to gain quick entry into other jurisdictions and other lines of business.
2. The judgement that it is cheaper to buy business than to produce it.
3. The need for executive talent.
4. The desire for greater in-force volume in order to achieve economies of size.
5. The desire for an expanded agency force.
6. The desire of the over-capitalised for additional premium volume.
7. The desire for broader ownership and an active market for the company's stock.
8. The desire to spread the cost of entering new fields.
9. As a defensive measure.

2.2. To cover fully the pricing of a life office for purchase, acquisition by entities other than existing life companies would have to be considered. For example, a firm of brokers may wish to purchase an assurance company as a guaranteed outlet for its business, a banking or financial institution may wish to add an assurance company to its portfolio, or a conglomerate may see the cash flow of a life assurance company as an attraction.

2.3. Although the purchaser of a life assurance company could be anyone, we have assumed for this paper, which focusses on merger aspects of life funds, that the purchaser is a life company and so acquisitions by other than life companies are ignored.

2.4. Another case which would be considered is where a life company looks for a purchaser. This might occur for a variety of reasons. For example, a multinational life company may seek to sell its local branch or subsidiary to a local life company if it finds the local environment has become hostile or less attractive than its home base, or the Directors of a life company may feel that the return on shareholders' funds is insufficient. If the shareholders wish to withdraw their funds and relieve themselves of the responsibility for their life fund, they could capitalise future profits by mutualising the fund. While this may be to the long term benefit of the present policyholders, it might not gain the "best" price for the shareholders. The new mutual might close to new business, continue in operation, or amalgamate with another mutual. Again, this possibility is not further explored in this paper.

2.5. A life assurance company may be:—

1. A mutual association or society of members without shareholders and with control of the office in the hands of the persons (usually the participating policyholders) who are entitled to vote at meetings and elect the board. The office may be constituted by Articles of Association or an Act of Parliament.
2. A proprietary company with shareholders entitled to vote at meetings and elect the board. Such a company will be constituted by a Memorandum and Articles (or an Act of Parliament), which will prescribe the voting rights and may fix the proportions of surplus which may be distributed to participating policyholders and to shareholders.

2.6. Mergers can take place between:—

* a mutual and a mutual
* a mutual and a proprietary
* a proprietary and a proprietary.

2.7. Either party in the merger may be a separate entity or part of a group, either as a holding company, a subsidiary or a branch, or a composite with one shareholding covering life and general operations. The parent of a life subsidiary or branch may be domiciled overseas; its actuarial control may reside locally or abroad.

3. FINANCIAL AND LEGAL BACKGROUND

3.1. Before embarking on discussions with the target company (either directly, through an intermediary or via the Stock Exchange in the case of a listed company) it is necessary to understand the financial and legal background.

In Appendix B a series of points to be considered before a purchase is contemplated is listed — this is based on the check list given in Andreasson's paper TICA 21. Each of these points is now discussed.

Insurance Law

3.2. One would obviously examine every item of legislation covering life assurance. Because of the unique nature of life assurance, life assurance companies operate in most jurisdictions with separate legislation providing different requirements for disclosure and taxation from the normal company legislation.

3.3. In the U.K. the Insurance Companies Act 1982 covers the transaction of life assurance.

Section 49 of that Act covers the transfer of a life policy portfolio.

3.4. In Australia the life assurance companies are regulated by the Life Insurance Act 1945 and Amendments. This is an all encompassing Act which provides, *inter alia*, for an Insurance Commissioner, a statutory minimum valuation basis, and sets out the steps for the transfer or amalgamation of life funds. Briefly, these are the presentation of a scheme by the actuaries of the funds — normally a joint report — acceptance by the Life Insurance Commissioner and then a public High Court hearing. If the Court approves the scheme of amalgamation, the merger of funds may take place.

Exchange Control

3.5. The country of residence of the acquirer or the target may have exchange control legislation governing the flow of funds into and out of the country. This might be relevant.

Takeover Legislation

3.6. Also of particular relevance is any legislation covering monopolies and mergers.

Stock Exchange Rules

3.7. Stock Exchanges have listing and disclosure rules. If either the purchaser or target has shares listed on an exchange, it will have to comply with the disclosure rules when making or receiving a takeover bid or entering into negotiations. This may result in negotiations becoming known to the public, staff and agents earlier than might otherwise be desirable.

Taxation

3.8. Income Tax Acts in most countries have special provisions in respect of life assurance business and these may include tax on realised capital gains. Frequently the tax treatment of ordinary business, pension business, annuity business and long term and short term disability or accident business are on different bases. "Losses" on one class of business may be lost on an acquisition or may be carried forward.

3.9. Stamp duty on transfers of assets may be applicable.

Other Legal Aspects

3.10. The purchaser should also research its Act, Constitution or Articles to find out how the purchase can be achieved, and consider how it would wish to run the target company in future. After consideration of the statutory provisions outlined above, attention has to be given to the practical and legal questions of how to achieve the purchase. The question must be raised as to the length of time the various methods would require and their cost and complexity.

3.11. If the target is a proprietary life company or is a subsidiary and, in either case, is operating in only one country, the purchaser would simply buy the shares in the target. The offer to buy would be made subject to the necessary legal approvals of the transaction. Consent of the policyholders need not be sought. Stamp duty is likely to be levied on the value of the shares, not the value of the assets. No court approval is necessary. On completion of the purchase, the life assurance funds remain separate, though under one control, that of the purchaser.

Note: Section 39 (2) of the Australian Life Insurance Act, which stated "that the assets of a statutory fund shall not, without the sanction of the Court, be invested directly or indirectly in any share or interest in any company or undertaking carrying on life insurance business whether in Australia or elsewhere", has been repealed from 1.7.85. There is no prohibition on the purchase of shares in a life company by a life company in the U.K. or New Zealand.

3.12. Share purchase is obviously not a possibility if the target is:—

* a branch operation of a proprietary or mutual office, or
* a mutual.

In either of these cases, alternative methods must be explored:—

1. The legislation governing life assurance might specifically provide for mergers and acquisitions, and the procedures and precedents might be well established.
2. In New Zealand the seller could be reconstructed in terms of the Companies Act and thus transfer the business to the purchaser. As each policyholder would have to be treated as a creditor with the right to appear at a Court hearing, there would be doubt that three-quarters of each class of creditors would be in favour. There may be adverse publicity in Court and the time taken could be lengthy.
3. The purchaser could obtain an Act of Parliament transferring the life fund of the seller to its control. In New Zealand it is not unusual for a situation which is not covered by the present law to be covered by a special Act of Parliament. Possibly this method could be used in other territories.
4. The purchaser could reassure the existing life business of the seller for a premium, and all new business would be written by the purchaser. This method is the usual interim solution adopted in Australia pending High Court approval of a transfer of life funds. It involves the companies in duplicate book-keeping and in the continued existence of the seller with the need to maintain deposits and make returns, etc. A valuation of the seller's liabilities will be required at the purchaser's balance date. Unless the balance dates are the same, the value of the liabilities will have to be interpolated or the valuation programmes altered.

4. NEXT STEPS

4.1. Next, as much public information as possible will be gathered by the purchaser regarding the target company. Depending on the laws in the territory regarding disclosure and statistics, and the legal status of the target, the information may be scanty or voluminous.

If the target is a proprietary company, then the articles and memorandum of association will be examined to check whether any shares have special privileges, what proportion of profits can be enjoyed by shareholders, what the voting rights are, and so on.

In such a case, a search would be made of the public registry of companies to determine the current shareholders and to obtain copies of other deposited information such as annual accounts.

For mutual company targets most of the above information is not applicable, but the pre-merger activities are likely to be different in any event.

4.2. No matter what type of company is targetted, the purchaser will want to conduct as much "industrial espionage" as possible regarding the existing staffing, distribution network and computer systems. Are there any contracts of service amongst top management? Is it possible to find out the funding position of the superannuation scheme? Is there any depth to the senior management and actuarial teams? What has investment performance been like and who was responsible for it?

4.3. Assuming the above data is satisfactory, the purchaser would move on to pricing aspects. The status of the target is obviously important here too. If the target is a listed and quoted company, the purchaser would have to do its sums completely on the basis of public information. If the target is not quoted or is a mutual, it is likely that approximate valuations for purchase would be conducted and an approach made on the basis of those tentative conclusions. The approach will be at the directorate or senior management level, either direct or using intermediaries; the name of the purchaser can be held back under the second method until a favourable reaction is obtained. The reaction is, however, likely to be lukewarm at best, if only as a bargaining strategy regarding price in the case of a proprietary company. In the case of a mutual an adverse reaction is likely, unless a smaller office is approaching a larger one and offering to merge, or the target is aware of present or future difficulties of one sort or another (staffing or financial, for instance) and wishes to merge.

4.4. The next steps will depend on the approach used and the reaction to it. An actuary is almost certainly going to be used by the purchaser to establish the preliminary price estimate, but this is not necessarily the case for an on-market bid. The actuary employed for the pricing may not be the appointed or chief actuary in the purchaser's organisation (whereas the actuary who will handle the merger of the life funds will be the appointed or chief actuary).

5. PRICING

5.1. The price of a life assurance company is dependent on the value placed on it by the purchaser and the seller, and the reasons for the purchase or sale will determine the negotiators' positions and ability to bargain.

5.2. The role of the actuary in the pricing situation is to provide the negotiators, *within the time available*, with a range of values and a full description of the bases on which these values have been calculated.

It is common to do sensitivity tests to show the difference in price that would result from changing one assumption at a time, other assumptions remaining unchanged, for

1. shareholders' desired rate of return: $\pm 2\%$ p.a. from assumed rate
2. mortality: $\pm 10\%$ from tables used
3. expenses and inflation: $\pm 1\%$ p.a. from assumed rate

and so on.

5.3. At this stage it will depend on the relationship between the purchaser and the seller how much information the seller is prepared to make available. A certain amount of information is public knowledge, i.e. the particular schedules in terms of the Insurance Companies Act, the company's annual reports and accounts, and the history of its share price (if applicable).

5.4. If the seller is keen to sell, then it may be prepared to make available to the purchaser past data and projections, along with whatever is requested by way of an analysis of the assets and a complete set of the valuation summaries of business in force by age or term, or supply a magnetic tape of all or a sample of its business in force. If it is seeking bids to purchase its life business, it may supply a number of potential buyers with a complete summary of its business, along with numerous valuations of assets and liabilities, and invite tenders.

6. VALUATION METHODS

6.1. This section is based on, and quotes extensively from, the 1980 Congress paper by Bell and Hill.

There is general acceptance that the value of a life assurance company will consist of:—

1. The free assets (discussed in section 6.2).
2. The profits arising from the existing portfolio of business (discussed in section 6.3).
3. The profits arising from future business (discussed in sections 6.4 to 6.12).
4. Special factors (discussed in section 6.13).

6.2 *Free Assets*

6.2.1. The "free assets" are the difference between the value of the total assets and the valuation of the company's life assurance liabilities on the statutory or published basis. The bases of calculation of the asset values should be consistent with those employed to determine the profits from existing and future business. Normally assets would be taken at market values.

6.2.2. Although weakening the valuation basis may be considered an option, so as to result in higher "free assets", this overlooks two problems:—

1. Lower future profits will emerge since future profits are based on the emergence of surplus on the valuation basis used.
2. Any release of surplus from the weakening may have to emerge through the "90/10 gate" if profits to shareholders are limited to 10% of total distributed surplus.

6.2.3. If an individual allocation of investments has to be made between the shareholders' funds and the life fund, then the priority is to match as far as possible the terms of the assets and liabilities of the life fund.

6.2.4. Should market values be chosen for the valuation of assets, then the rate of interest used in the valuation of liabilities under items 2 and 3 of 6.1 should be the rate of return on such market values.

6.2.5. The investment portion of investment linked contracts can be excluded from or included in both the assets and liabilities on the same basis. The assets held for capital guaranteed individual ordinary and group pension policies should be included and compared with the liabilities.

6.2.6. In assessing the value of the assets the following have to be taken into account:—

1. The possibility of achieving a sale of the assets at market value.
2. The cost of buying and selling the assets (and any tax liability on the sale). Is the deferred tax provision adequate?
3. The method of making payment to the shareholders and any resulting tax liability.
4. Suitability of the assets — the purchaser may wish the seller to acquire specified assets at the seller's valuation, especially if the value is in dispute. This amounts to receiving some of the price for the life company in kind rather than cash, where the seller takes an asset at the figure it is happy with and at which the purchaser is not willing to buy. This can occur where the life fund has made investments as a "favour" to a client, or where there is substantial difference of opinion as to value, such as with certain types of property, and no compromise can be reached.

6.2.7. The above discussion assumes that detailed information as to assets is available, as is likely to be the case with a "friendly" merger. In the usual case, however, a bid for non-quoted shares in a proprietary company would be made subject to the condition that the purchaser would need to be satisfied as to the value of assets being fully of the value stated.

6.3. *Existing Portfolio of Policies*

6.3.1. The profits to be valued from the existing portfolio are the shareholders' share of the future distributable valuation surpluses. Projections should be made of the revenue accounts and valuation balance sheets and hence the surpluses emerging year by year. The valuation liabilities set up each year would initially be on the published basis. The shareholders' share of surpluses can then be discounted at the buyer's expected rate of return on the investment to find the present value.

6.3.2. In addition to the buyer's rate of return, the assumptions in such a projection include: the return on the assets; expenses and the possible advantages of scale in future, but high immediate costs at the time of merger; the rate of inflation of expenses; future mortality and morbidity; income tax; lapse and surrender rates and surrender values; and the effect of the merger on these rates. The merger will involve legal and accounting costs, as well as many hidden indirect costs of staff time and involvement. Fees and expenses have to be borne and the transfer of assets may involve stamp duties.

6.3.3. The buyer and seller may have different views on the likely future rates of return on investments and rates of expenses, lapse and surrender. The buyer may expect that under its management the rates of the acquired company will tend towards those which it currently enjoys. The seller might find it advantageous to maintain that its existing portfolio of business will continue its own trend. The actuary will make projections on different bases so that the negotiators know the effect of the assumptions and the cost or profit to them of agreeing to accept one or other of the projections as suitable for the pricing negotiations.

6.3.4. Projections should be made using different liability valuation bases to test the effect on the value of the profits. The maintenance of a steady proportion of shareholders' to policyholders' share of surplus should be questioned. Future competition in the market place could force the shareholders to take a reduced share of profits or, alternatively, in inflationary times pressure by shareholders for an adequate return on their investment could increase that proportion.

6.3.5. The above discussion is predicated on the assumption that detailed policy information is available to the purchaser. This is not necessarily the case, particularly for the early work that is likely to precede merger or takeover discussions.

When detailed policy information is not available, other methods must be employed. From deposited valuation summaries it is likely that statistics of data valued and net liabilities will be shown for each line of business —

participating whole life assurances

participating endowment assurances, etc.

and the make up of the net liability into —

value of sums assured and bonuses

value of premiums

value of future bonuses

value of future expenses

will be itemised, together with a description of the bases.

6.3.6. Working from this data, an actuary can estimate the liability on other assumptions. One approach to placing a figure on future profits to shareholders is to estimate all items, except the value of future bonuses, on realistic (pricing) assumptions. The net liability is then derived and compared with the published liability figure. The balance is a crude measure of future profits, which will be shared between policyholders and shareholders.

6.4. *Future Business*

6.4.1. Because the writing of new business has the effect of depressing profits emerging in the early years, the question may be asked as to why include any new business in the pricing exercise. In the case of some policies the profit emerges well down the track and, although the present value of those future profits might be of the order of 10% to 20% of one annual premium, the capitalisation of far distant profits is more speculative than estimating profit from existing business, especially when year after future year of tranches of new business are added to each other and then discounted back to purchase date.

6.4.2. If the objective of the purchaser was not to gain control of the seller's life fund but to remove competition, it could decide that the target company would close to new business and run off its existing business as a closed fund. Nevertheless the price paid would almost certainly include a "goodwill" element, equivalent to the profit which the target company would have made by remaining open to new business.

6.4.3. In the usual case, however, a purchaser will wish to use part of the seller's surplus towards the combined new business strain of the joint operation.

6.4.4. The effect of inflation on expenses also reduces the attraction of closing a life fund to new business, because the expense burden on a closed fund eventually becomes almost unbearable for the final few policies if high rates of inflation continue well into the future.

6.4.5. For the above reasons it is usual to include the value of future new business.

6.5. If the funds are to be merged and the joint company will in future transact the joint volume of new business, there appear three approaches to valuing the profits from business yet to be written:—

1. On the same methods as in 6.3 the future profits generated by one year's new business can be calculated and discounted back to the present value. For each year of the projection another layer of new business is superimposed to build up the future stream of profits, and then discounted back using the shareholders' desired rate of return.

   Assumptions in all areas can be varied to provide sensitivity analyses and a range of results for the estimates.
2. To estimate the cost of building up a comparable sales and administrative organisation from scratch.
3. To make a broad judgement as to the level of profit which should be obtainable in future on each unit of sales. This would normally be expressed as a percentage of first year premiums for different classes of policy. These percentage profitability factors can then be applied to one year's new business at anticipated volumes and the results multiplied by a factor which takes into account the prospects of growth in real terms and the degree of uncertainty involved.

Methods 1 and 3 are well discussed in detail by Lee (JSS 1984).

6.6. One of the dangers of method 1 is that the complex calculations involved may distract attention from the fact that the results are entirely dependent on the assumptions made. The negotiators, and possibly the actuary himself, may be deceived by the apparently scientific method into having more faith in the answers than is merited. Detractors from method 1 point out that it assumes that future business will consist of the same policies as are currently being offered by the company. However, if these policies are profitable, then other competitors will enter the market and the terms will have to be reduced or, if they are unprofitable, the company may change its premium rates to make the business profitable.

6.7. Method 2 may be applied when there is a lack of adequate past performance data on which to base either of the other methods, and can be used to check the reasonableness of the answers under 1 or 3.

However method 2 is difficult to quantify. Collett (1980 Congress p. 143) says U.S.A. rules of thumb are:—

— Every agent is worth $5,000.

— Established agents are worth $10,000 each.

— The value of the entire agency plant is equal to the commission paid last year.

6.8. Method 3 may at first sight appear less scientific than method 1 but it is based on the competitive elements in the market place used when setting premium rates, i.e. the profit is neither too large to make the product uncompetitive nor too small to make the profitability to the shareholders unacceptably low.

6.9. In an efficient market, competitive forces should ensure that profits from any line of assurance business will fall within similar boundaries. Under method 1 it might be found that, for example, whole of life is more profitable than endowment assurance. General market forces should operate so as to require an adjustment to reduce the profits from whole of life. Therefore it would be unwise to base goodwill on the assumption that the present situation will continue indefinitely. That is an advantage of method 3.

Another advantage of method 3 is that one can subjectively incorporate other classes of business not presently written.

6.10. The advantage of method 1, however, is that it enables questions other than pricing ones to be answered. For instance, because it builds up projected revenue accounts and valuation balance sheets, these can be added to those produced for existing business to present the combined picture showing the trend in surplus emergence year by year.

6.11. In the authors' view, method 1 is the most suitable, but it should be cross-checked against the results brought out by methods 2 and 3 for reasonableness.

6.12. Care should be taken to ensure that the results are logical and are not dependent on the time scale involved in the projections. For example, if the rate of growth of dividends exceeds the rate at which these are discounted, then the present value of the future profits will depend on the term of years over which the growth is projected. Alternatively, if the value of future new business is zero or negative, then it would not matter whether the company has 20 agents or 200 agents selling its new business! The profit emerging after, say, 10 years' growth, when the company will have an estimated fund of x, should be compared with the present profits of a similar company which is presently that size.

6.13. To evaluate the profits from future new business it is also necessary to consider how the business of the target company will be managed in future: will it be run as it is, or expanded? What timescale should be considered — the next ten years, twenty years or hundred years? How much should a purchaser pay the seller for expected profits from future business?

The problems can be highlighted by an example.

Let us assume that current new business is written at the rate of 10m in terms of annual premium, and that profits from each tranche of new business have a discounted present value of 15% of the first year's annual premium income. The seller has a history of stable sales in nominal terms in times of inflation, so that in real terms sales have been declining. The purchaser, after examining the sales outlets and other distribution opportunities available to it, using just the seller's existing structure, considers that an initial drop in sales of 5% will occur, but afterwards sales should not only be maintained in real terms but grow in real terms.

The scenarios for costings are, therefore, as follows, assuming a desired rate of return of 20% and future inflation of 8%:—

Value of future profits on existing production levels:—

$$15\% \text{ of } 10\text{m} \times a_{\overline{n}|} \text{ at } 20\%$$
$$= 6{\cdot}29\text{m when } n \text{ is } 10$$
$$= 7{\cdot}50\text{m when } n \text{ is } 100$$

Value of future profits under new owner (matching inflation but ignoring real growth):—

$$15\% \text{ of } 95\% \text{ of } 10\text{m} \times a_{\overline{n}|} \text{ at } i=\left(\frac{1{\cdot}2}{1{\cdot}08}-1\right)$$

$$=8{\cdot}35\text{m when } n \text{ is } 10$$

$$=12{\cdot}82\text{m when } n \text{ is } 100$$

Thus the values range from 6·29m to 12·82m, i.e. by a factor of 2, and the values allowing for real growth will obviously be much higher. In negotiations the value of this item is of paramount importance, and the assumptions are all relatively subjective. Should the purchaser pay for current volumes of production or for potential volumes?

6.14. In any merger, economies of scale mainly by reduction of office overheads may be quite significant in the long term. However, because of the need, at least initially, to service two separate series of policyholders using different methods and computer systems, there is unlikely to be any saving of staff or costs for a period of some 2 or 3 years. After a time, some reduction in staffing is likely to apply; the capitalised value of salaries and overheads corresponding to a reduction of only a few staff can be a significant figure, which the purchaser can regard as an effective reduction in cost. (Note, however, that if the shareholders' share of profits is 10%, then they will benefit only to the extent of 10% of any cost savings.)

6.15. *Special Factors*

The following factors can affect the price:—

1. Leases. Does the company have leases on property, or binding agreements to purchase or build, which will no longer be needed by the purchaser?
2. Contracts. Does the company have contracts of service which will have to be bought out?
3. Pension Funds. Are there unfunded liabilities which will have to be met now rather than in future? The valuation of these would take place on an "agreed basis" in a friendly merger or form part of the pricing negotiations. This can be a time-consuming exercise unless a basis is agreed in advance. The merger is likely to trigger some benefit payments not otherwise expected, in the areas of early retirement and withdrawal.

4. Income Tax. Is there a dispute with the Revenue authorities over past taxation? Will the future merger of the business change the tax status of the funds and which party should benefit?
5. Redundancy. What is the position of staff and agents, and trade union involvement, in mergers?
6. Legal problems. Is the seller involved in any significant legal dispute which would affect its value, or can it give an indemnity and what would that indemnity be worth?

6.16. *Accounting For The Acquisition*

When the four parts of the price are put together, the shareholders of the acquiring company can rightfully ask for a demonstration of how their desired rate of return will be achieved.

It is unlikely that the running yield, as given by dividing the current year's distribution to shareholders by the suggested purchase price, will equal the desired rate of return.

The reasons are:—

1. The earnings on "free assets" might be passing through the life fund and therefore subject to the "90/10 gate". (If so, the value corresponding to the "free assets" as previously defined has to be heavily reduced.)
2. The profits from existing business might be emerging a few years hence.
3. The goodwill will represent an investment in future business which will take many years to generate surplus.

Therefore, the return must be made up from the continuing running yield with capital growth. The capital growth component would have to be determined by repeating the pricing exercise described herein at each subsequent balance date.

This combination of yield with capital growth is not easily presented to shareholders of a proprietary life company. It is more easily disclosed in the annual accounts of a holding company such as a composite insurance group. An acquiring life company might consider forming a holding company because of the opportunity it gives for disclosure of the real value of its life assurance operations.

6.17. A summary of the issues requiring attention when calculating the values of a life fund appears in Appendix C.

Part 2—Some Business Considerations

7.1. It is essential that proper consideration is given to the non actuarial but otherwise important matters which have to be taken into account while the merger is proceeding. Some may appear trivial, but often the apparently trivial are the most troublesome. Many of the items would have to be considered in any merger of companies and are not specific to life funds.

7.2. The costs in time and effort from senior executives are high. These costs are both the immediate and identifiable costs and the opportunity cost. After the announcement of discussions until the purchase, the normal day-to-day operations have to be kept going and the organisation preserved in case the purchase falls through. It is very difficult to hold together staff and agents who know that they may lose their identity. The time scale is long — in one merger involving the authors, it took 14 months from discussion to purchase, and a further 19 months until the merger of the funds was completed.

7.3. The companies must establish clear rules for the management of, and accounting for, changes in the assets and the liabilities in the interregnum between offer, acceptance and merger, and the method of adjusting the purchase price for such changes.

7.4. The availability of the skills and personnel to complete the merger is of paramount importance. Three staffs are needed in the short term — one for each company and one to organise the merger of the operations. Small companies rarely have the resources for such a transaction. Expert legal and accounting back up are essential, and the help of outside experts is invaluable. Consideration should be given to the employment of specialists in merging companies to head up the task force organising the merger.

7.5. From their experience, the authors recommend establishing a senior executive team from the two companies, reporting to the CEO, with outside merger specialists co-ordinating the work. This team should control the activities of numerous sub-groups, with personnel from each company, each with defined tasks.

Among other items, the sub-groups would cover:—

* Staff — terms and conditions
* Marketing — life, annuity, pensions, disability
* Sales — agent, broker, direct mail
* Premises
* Administration — new business, policy servicing, claims
* Investment
* Advertising and PR
* Legal
* Accounting
* Actuarial
* EDP

The commentary in the following sections draws attention to some of the practical problems more specific to life companies which have been encountered in these areas.

8. STAFF

8.1. People are the most important ingredient in the success of a merger and must be given top priority. Despite the usual press announcements: "that there will be increased job opportunities, that future promotions will be on merit, and that there will be no redundancies": there will be unease at every level inside the two companies — Board, executive, management and staff — and outside — policyholders, agents and brokers. Suppliers of services to the companies will be uncertain of their role. Bankers, auditors, stock brokers, medical officers, solicitors and advertising agents will question who will have the account in future.

8.2. Staff matters must receive priority in the initial period and as soon as possible after the purchase is finalised the new management structure should be announced with clear job descriptions and objectives. The personnel managers from each company should draw up a comprehensive list of the terms of service so that these can be compared and the terms for the merged staff agreed upon. The temptation to grant the best of both worlds has to be resisted if the merged staff costs are to be contained within reasonable levels and the planned economies of scale achieved. For example, one company may have had award salaries and a non-contributory pension scheme, where the other had over award salaries but a contributory scheme providing similar benefits. Granting over award salaries and the benefits of a non-contributory scheme to the merged staffs would substantially increase costs.

Amongst the items would be:—

- — Hours of work: lunch breaks, tea breaks, flexitime.
- — Sick leave, study leave, maternity leave, holidays, long service leave, service awards.
- — Job evaluation and remuneration, staff appraisals.
- — Payment of salaries — monthly, fortnightly, cash or direct credit.
- — Medical, dental, hospital benefits.
- — Bonuses, share purchase schemes, incentive awards, commission on sales.
- — House mortgages and other finance.
- — Provision of cars, telephone, club subscriptions.
- — Pensions.

8.3. Very often it would be appropriate to continue a benefit for an employee on the understanding that it was a personal benefit and that the successor in the job would not have that benefit in future. Anomalies will be created between staff but, unless the merged company is able to "sell" a change in terms to the staff who were previously better off, it is probably advisable to let the anomalies continue. Thus, for example, the number of cars could be reduced in future without the difficulty of removing a perk of office because of the merger, or existing house loan terms could continue for each staff separately with revised rules applying to new loans or increased loans. If it is decided to aim for common house loan terms, a full examination of the mortgage deeds is necessary to confirm that a change in terms can be made.

8.4. Although the objective must be to retain all staff, this may not be possible, and the terms of any service agreements must be examined to see if the merger is liable to give rise to compensation payments. Redundancy provisions in legislation or in specific industry awards should be studied and information gathered on the possible Trade Union activity in this regard. The scope of previous settlements in the insurance industry may be a useful guide. Much depends on the strength and militancy of the Union and the availability of alternative employment. Skilled negotiating and prompt action may avoid problems and enable the merger to proceed smoothly.

9. PENSION BENEFITS

9.1. Retirement and other benefits for directors, staff and agents can be a major and continuing problem, especially if well meant comforting assurances have been given "that no one will be worse off after the merger". Such assurances are best not given. Even if there is no intention to change the schemes immediately, they may have to be changed later, and the statement can be an albatross round the neck of present and future management.

9.2. Much will depend on the extent of the differences between the schemes; especially the retirement ages, and form of benefits; the extent to which both are funded, and whether the funding of accrued benefits was part of the terms of the purchase. The deeds, booklets, announcement letters, accounts and actuarial reports will have to be studied, as well as the history of the exercise of options by the respective trustees. Expert advice on the actuarial, tax, and legal aspects of the schemes should be obtained either in-house or independently.

9.3. One solution to the problem of different benefits is to continue one of the schemes (usually that of the purchaser) with new members being admitted to that scheme and to close the other scheme to new entrants. This may work well until the number of members in the closed scheme reduces and a possible tontine situation arises. To avoid this, the benefits could be provided in one fund with separate rules covering the benefits of the closed scheme and the open scheme. There will be difficulties in future if the benefits of the scheme are radically different and these differences are maintained for the lifetime of closed scheme members. The option can be given to members of the closed scheme to transfer to the open scheme.

An alternative is to bring all staff into the continuing scheme in respect of their future service and to make appropriate allowance for past service to rank for benefits on the basis of the closed scheme.

It may be preferable to design a new scheme (unless the purchaser already has a modern scheme) and to take advantage of the merger to bring the company's pension benefits into line with modern plans. The members of both schemes will be admitted to the new plan for future benefits and will retain their former benefits in respect of past service, such benefits being provided by a subsection of the revised scheme. This avoids any suggestion that a member's accrued benefits are being reduced but it means that the future expectations are being altered for all staff. It can give rise to the continuation of a number of subsections if the existing schemes have been revised frequently in the past.

9.4. Care has to be taken that any special tax treatment of existing benefits is not lost on transfer to a new scheme, and that the cost of any additional benefits granted will fall within the costing adopted when the price to be paid for the business was agreed.

9.5. The temptation to solve staffing problems by the use of the early retirement option, especially the granting of enhanced benefits, has to be resisted. A spate of early retirements can affect the pace of funding of the benefits (both because of the cost of the early retirement benefits and the number exceeding the expected number, and because of the reduced number of members over whom the cost of accrued benefits is spread in future). The solvency of the fund could be jeopardised, or the contribution rate rise to an unacceptable level, because of the liberal use of the early retirement provisions.

Because some members close to retirement will have planned their future around the existing benefits, some "grandfathering" may have to be allowed.

9.6. The actuarial and other detailed considerations involved in the merging of pension schemes are outside the scope of this paper.

10. SALES FORCE

10.1. Ranking equally with staff matters are sales force matters. Agents are self-employed, although heavily dependent on the company for the provision of house and car finance, premises and clerical support, sales material, training and product know-how. In Australia and New Zealand an agent normally represents one company, though a number of multi-agents represent a number of companies. An agent will have developed a clientele which may be more loyal to the agent than to the company and which would transfer if the agent changed companies. Agents are heavily dependent on sales for their income. Anything which distracts the agents from their normal business getting activities will adversely affect their income. Thus agents will resist having to take time off to learn about new products or the revised products which will be sold after the merger. They will weigh up whether they should stay with the merged company or change to another company. There will be no shortage of companies keen to recruit them, especially if they have a proven sales record. This applies to the agents of both companies involved in the merger and to the sales managers.

10.2. To avoid loss of sales momentum and to hold the majority of sales managers and agents, priority must be given to the terms under which they will operate in future. As with staff, the temptation to grant the best of both worlds must be resisted, or the products will end up being overpriced and uncompetitive and future profitability will be reduced.

10.3. Full discussions will have to be held with the bodies representing the agents, such as the Agents Societies, to ensure that the support of all the agents is obtained for the new terms.

Amongst the matters to be considered would be:—

* Sales organisation and remuneration of sales managers.
* Terms for sole agencies, general agencies, broker agents.
* Commission on products.
* Commission retention and debits on lapses.
* House and car finance.
* Provision of offices and clerical support.
* Awards, prizes, incentives.
* Product range (pre and post merger).
* Sales support, sales aids, sales material.
* Pension and other benefits.

Similar considerations will apply to Brokers although they will possibly have had the advantage of dealing with both companies before the merger.

11. PREMISES

11.1. Office premises can prove a boon or a hinderance to a merger, since it is desirable that all staff with a common function are housed together in future. Head office branch and sales offices of the two companies have to be assessed and the most suitable chosen. If the existing premises are too small for the additional staff it may be necessary to buy, build or lease new premises, or build an extension. If the building is large enough but has existing tenants, the leases granted to present tenants may have to be renegotiated to persuade the tenants to vacate earlier than planned, or alternative premises found for tenants who would have to be recompensed for the early shift.

11.2. Most likely in the interim separate premises will be used with all the attendant difficulties of communication and control. In such an event the various departments with the same function should be brought together so that, for example, all investment work in respect of the two funds is handled by one department in one location.

11.3. The size of offices and the style of furnishings provided have proved sources of discontent in many mergers. Indeed it may be worthwhile to accelerate the normal process of refurbishing to modernise the layout and supply new equipment for the merged departments, or to promulgate the future standards which will apply. A most successful merger in our experience was considerably helped by the need to move both staffs into a newly acquired and upgraded Head office building.

12. MARKETING

12.1. Clearly a company will not wish to market the same product through the same outlets at the same time at different premium rates.

For instance, term assurance delivered by agents may be differently priced from the same product delivered by mail order, but it is normally identically priced between agents of the same company.

12.2. A merger provides an ideal opportunity for the marketing team to review their product ranges, analyse which products sell profitably and why, and which are likely to sell well in future if the terms are amended to reflect the expected expenses of the merged companies and the future commission terms.

12.3. The comparison between some products may appear straight-forward — for example, "yearly renewable term, smoker/non-smoker" — but consider the following questions:—

* What is the definition of non-smoker (do pipes or cigars count)?
* Does the non-smoker definition apply at each renewal or only at the outset?
* Can the policy be increased in line with RPI?
* What happens if an increase is rejected?
* Is commission paid on the increase?
* Who gets the commission if the agent has left?
* Can the policyholder cease premium increases and reduce the sum insured each year?
* Is the policy renewable to 70, 85 or 100?
* Are premium rates guaranteed?
* What is the reduction for females or do they have separate rates?
* Can premiums be paid monthly or through voluntary groups?
* What is the minimum premium or minimum sum assured?
* Is there a policy fee and/or reduction for size of sum insured?
* What medical limits apply?
* What rider benefits can be added?
* Will lapse and re-entry problems be created if new merged premium rates are introduced?
* What are the reinsurance arrangements?
* Should the product be agent/broker delivered or mass marketed or both?
* What is the expected return on the investment in the product?

These and similar questions will have to be posed and the answers analysed for each existing product and market or distribution system.

These analyses will be very useful to the Actuaries when preparing the merger report.

12.4. It will have to be decided whether new business should be accepted by both funds, or whether the product range will be restricted by that previously offered by one of the companies. Much will depend on the range of products and whether one or other company has products which are not in the other's portfolio, and whether such products form a high percentage of sales and hence agents' remuneration. In two mergers involving the authors, the target companies had different "unique" products, and while in one case the purchaser was able to move quickly and provide the facility to write the product, in the other the target company continued to accept and service the product.

13. EDP AND ADMINISTRATION

13.1. Computer systems (hardware and software) can be one of the difficult problems in a merger. Before the merger is completed each system will be kept separate and will service its own policyholders. Arrangements will be made to provide terminals in the joint offices so that access can be made to either data base. Ideally from the computer point of view, all new business will be written on one or other system so that only one new business suite of programs has to be maintained. But if the agents of one company had higher commission for their product, they would be unhappy to sell the merged product for a lower return just to make life easier for the computer department!

13.2. An evaluation will be made of the systems to see if either can incorporate the volume and type of business of the other. Much will depend on the relative size of merging companies and the degree to which administration is integrated with the computer.

13.3. A large company merging with a small one will probably be able to add the policies of the smaller company to its data base and present operating systems without too much difficulty if the types of business are similar. However, the large company may not have computerised so many functions, nor have them integrated, and thus the smaller company's system may not be incorporated easily.

13.4. Two large companies merging will probably find that neither has the spare capacity to incorporate the other. Even if the capacity is available, much will depend on the efficiency of either system to include the other. How easily can new policy types be added or new business rules incorporated? Has additional data to be added to an existing data base to enable the "other" policies to be added? Is data stored at the same level, e.g. at benefit level or at policy level?

13.5. Again this is a field for the expert; the decision as to future equipment and software may be made easier if one supplier is involved, and easier again if the same operating system and the same data base software have been used.

13.6. Another problem is the time during which one or both systems have to be frozen to enable the changes to be analysed, programmed and tested.

13.7. It is suggested that a computer steering committee, or the merger team, is given the task of allocating priorities. Some changes will be required immediately to enable the flow of new business to be handled smoothly. Others, such as merging the operation of both companies, will have longer timescales.

13.8. In conjunction with administration, the office systems will have to be compared in detail; for example, when are premium notices issued? to whom? what details do they show? is the agent or branch advised? when are reminder notices issued? what happens if the premium is unpaid? The policy conditions have to be checked before it is decided what system to adopt in future to ensure that the planned system complies with the policy.

13.9. To take another example, the companies may wish to bring their terms for house mortgages or policy loans into line, but may find that some loans may not be reviewable or the notice to be given may vary by generation of borrower or generation of policy. It is essential not to antagonise any policyholders and a generous approach to changing terms will enhance the company's reputation.

13.10. Much of the work done here will be useful to the Actuaries when considering the merger, since it will highlight differences between the existing products, e.g. timing of bonus additions, or scale of bonus on paid up policies.

13.11. The company must beware of giving any impression that it is running a merged operation until it has obtained all the necessary legal consents, otherwise it may jeopardise its application to merge by appearing to present a "fait accompli" to the authorities.

Part 3—Merged Operations

14.1. After a price has been agreed upon between buyer and seller, or if the price is conditional upon the fact that the expectations of both companies' policyholders must not be adversely affected, the attention of the parties must be focussed on the operations of the merged venture.

14.2. If the objective was to add another type of outlet, e.g. life agents to a previously broker-oriented company, or to add non-participating business to a with-profits company, or to take advantage of an investment or a taxation benefit by having a separate pension business fund or a separate annuity fund, then both may be continued as separate funds.

14.3. If, as is more likely, it is intended to pool the resources of the two companies and sell one product line in future and take advantage of the ultimate economies of scale, then it will be desirable to merge the two life funds.

15. GENERAL CONSIDERATIONS

15.1. In the U.K. Section 49 of the Insurance Companies Act 1982 requires that copies of the actuarial or other reports upon which an agreement to merge life funds is founded be deposited with the Dept. of Trade. Britt (JIA 62) states that usually a report is made by the actuary of each company concerned, giving his reasons for regarding the transaction in a favourable light. He goes on to say that an independent actuary also shall report to the Board (now Dept.) of Trade. That report should examine the effects of the agreement on every party likely to be involved and, in Britt's view, should condemn, or suggest modification of, an agreement which affects unfavourably the policyholders or shareholders of either office. Britt also comments that the history of life office amalgamations has demonstrated that some safeguards are necessary to protect the interests of policyholders and shareholders.

15.2. In Australia Division 9 of the Life Insurance Act 1945 is devoted to transfers and amalgamations. This prescribes that a "scheme" must be prepared for submission to and confirmation by the High Court before the transfer or amalgamation of life assurance business from one company to another can proceed. A copy of the scheme is to be lodged with the Life Insurance Commissioner together with copies of the actuarial and other reports (if any) upon which the scheme is founded. The Commissioner may cause a report on the scheme to be made by an independent actuary. See Burns and Stanton (TIAA 1977) for specimens of reinsurance agreements and scheme documents.

15.3. As mentioned earlier, the actuaries preparing the scheme may not have been involved in the acquisition or merger discussions. If that is the case, they will have to make enquiries and ascertain the background to the discussions and decisions that preceded the completion of the commercial arrangements.

15.4. The two life funds will almost certainly have differences in the following characteristics:—

1. Age of the office.
2. Size of business in force.
3. New business volume.
4. Premium rates.
5. Asset portfolios.
6. Valuation methods and bases for both assets and liabilities.
7. Bonus histories.

All of the above are relevant to the actuarial problem of merging the life funds.

15.5. Kitton and Beattie (JIA 92) append to their paper some precedent actuarial reports. In each of those cases, as with several recent Australian cases, there is a joint report by the actuaries of the two companies involved. The purpose of such a report is generally:—

1. to show that the liabilities under unmatured contracts will remain amply secured in the combined funds.
2. to show the relationship which it is thought should subsist between the future rates of bonus for the existing participating policies originally in the separate funds.

3. to provide for future treatment of surrenders, alterations and paid up policies.

15.6. A Kitton and Beattie example mentions that, in determining the relationship between the future bonuses on existing policies, the actuaries took into account:—

1. the relative differences between the liabilities and assets of the (three) funds.
2. the proportions and values of the accumulated assets falling within the various categories of investment and the interest yields, in the aggregate, of the funds.
3. the proportions of with-profit business to non-profit business and of life assurances to annuities.
4. the scales of premium charged for existing policies and the differences between the technical bases, including particularly the significant differences between the rates of interest used in the calculation of the life liabilities.
5. the rates of bonus previously distributed to policyholders and the proportions of surplus resources kept in hand.
6. the consequent probable relationship of the future rates of bonus in the (three) companies had they continued to operate separately.

For companies operating branches or subsidiaries overseas, each of these aspects would have to be dealt with for each separate territory.

The following sections 16 to 20 discuss the above items in some depth.

16. SECURITY

16.1. In the situation of two proprietary companies merging or two mutuals merging, the relative security of policyholders will be determined fairly readily. The security will be measured by the free assets plus the estates that each party brings to the merger, and will be judged in relative terms against the volume of in-force business and other attributes of the portfolio of policies.

16.2. In the situation of a mutual office taking over a proprietary company, it is to be expected that the price paid for the acquisition will deplete the amalgamated life fund. The relationship between assets and liabilities will, therefore, be altered but the fact that dividends will no longer be required to be paid can justify the price and leave the overall security unimpaired.

16.3. The wording in the Kitton and Beattie paper (JIA 92) is that the actuary's report is designed to show that the liabilities will remain amply secured. The authors take the view that the actuaries of both companies and the independent actuary must be satisfied that the merger arrangements will be such that:—

— the security of benefits will not be adversely affected,

— the reasonable expectations of policyholders in both companies under current and future conditions will not be adversely affected.

16.4. For non-profit policies it is to be expected that at all times the contractual benefits will be payable in full in the circumstances provided by their contracts. The security of benefits for with-profit policies is a less concrete concept. The terms of the merger should be such, however, that it would be reasonable for with-profit policyholders to expect bonus rates to continue their recent trend if current economic conditions are expected to continue their recent trend. They could also reasonable expect bonus rates under their policies to move in sympathy with those of other companies in the market.

16.5. Probably the most important factor, however, is the strength of the valuation basis. If one company's basis is weaker than the other, then it is to be expected that there will be some dilution of the estate in respect of the stronger company. It is generally agreed that the estate ought to be protected for future generations of policyholders. That being the case, one could consider that the security of the present generation of policyholders would not be unduly affected by the acquisition of a fund with a weaker valuation basis, but future generations will be less endowed.

17. ASSETS AND YIELDS

17.1. There are many interesting lessons to be learnt when investigating asset values and yields thereon in depth for any large life assurance company.

17.2. In a merger the two life funds will have a history of different yields and different percentages in the various investment sectors. How should these be reflected in the actuarial exercise? This is likely to be a major area of discussion between the actuaries concerned in the merger. The two arguments are as follows:—

1. One argument states that, as the companies are operating in the same capital market, it is to be expected that in the long run their investment performance will be similar. One company may have a higher proportion of lower yielding equity holdings (either ordinary shares or property) than the other company but in the long term the capital growth is likely to make up for earlier interest losses.
2. A counter argument runs that a company which places a large proportion of new money in equities or properties which yield less than fixed interest securities will always have a lower running yield than the company which seeks the higher immediate return, since its new money will always yield less!

These points are examined by Carr & Forfar (TFA 258).

They examined the effect on bonus levels produced by holding a high proportion of investments in equities. They concluded that, even if unrealised capital appreciation were taken into account on a formula basis, it was likely that bonus rates would be held down as compared with a separate office that had a lower equity component.

17.3. However, for a merger we have reached the conclusion that, provided the assets are valued on market values, then one type of portfolio mix can theoretically be reinvested in another type of portfolio mix. Therefore, past investment patterns should be ignored, and the bonus linkages should be determined by reference to common future investment yield assumptions.

17.4. It must not be overlooked, however, that unrealised capital gains may, when realised, suffer capital gains tax. This aspect must be recognised in placing current values on the assets.

17.5. There is much difficulty in arriving at market values on common bases, particularly for fixed interest investments and properties, unless a very clear set of guidelines are given to the valuers. If possible, the same computer program should be used for the valuations of fixed interest securities and the same valuers used for the properties in the same city. It is quite possible that property value increases are anticipated gradually through the year, but both companies are unlikely to do this on the same basis or formula.

17.6. If separate accounts have been kept for investment linked business, then extracting this class and dealing with it separately should not be difficult.

18. PARTICIPATING/NON-PARTICIPATING BUSINESS

18.1. The ratio of participating to non-participating business will vary between the companies and the actuaries will have to judge the contribution to profits which will emerge in future and whether this can be maintained. Does this profit enhance the pool of profits available to the with-profit policyholders or does it belong to the shareholders? Highly competitive non-profit premiums can lead to a large volume of, say, temporary assurances but very slim profit margins, whereas a small portfolio at high premiums could give similar future profits.

18.2. If the identification of the profits likely to emerge from a substantial volume of non-participating business is significant, this could be reflected in the bonus linkage proposed by the actuaries.

18.3. Annuity business is not yet a feature of Australian or New Zealand life funds and thus the authors have no practical experience of annuities. However, in the U.K. the profits from annuity business and the possible change in tax status of the annuity fund on a merger must be taken into account and, if such profits form part of the divisible surplus, they should be reflected in the bonus linkage.

18.4. Similar assessments have to be made separately of linked ordinary and pension business, and the capital guaranteed policies of the investment account type. Will they prove profitable in the long term when the source of profit is the margin between the charges and the expenses? The authors' opinion is that in the long run in the Australian/New Zealand environment such business will break even, because of the strong influence of mutual life companies in this market. If the charges are too high, clients will go elsewhere; if they are too low, the company will lose money and will have to put up the charges. If the interest allocated to capital guaranteed policies is too low, future contributions will cease and policies may be surrendered. If it is too high, the participating policyholders will suffer a reduction in their expected profits. The extent of the capital guarantees and the withdrawal terms are important for the actuaries to consider, as these aspects must be covered in their report on the scheme.

19. PREMIUM SCALES AND RESERVING BASES

19.1. It is most unlikely that any two life companies will have the same premium rates for participating assurances. The bonus rates will, therefore, vary even if their experience were identical. Also, the policy reserves could be expected to be on different bases. The bonus rates emerging reflect:—

1. the premium rates.
2. the experience.
3. the reserving basis.
4. the growth rate.
5. the actuary's philosophy with regard to margins, terminal bonuses, desirability of fluctuations in the bonus rate, and so on.

19.2. Nowadays it would be usual for a company to have a computer model available to project future experience with regard to the many factors affecting bonuses (such as interest rates, expense rates, inflation, growth rates and product mix) so that the actuary can assess the capability of the fund to cope with change. The model would incorporate the reserving basis being used and the present surrender value basis. Amendments can be made to the model to ascertain the effect on bonuses of a change in valuation basis, surrender value basis and other factors. (See Carr & Forfar TFA 258.)

19.3. An examination of the product lines of both companies having been made as suggested in section 12 and decisions reached as to which to discontinue and which to keep in the new prospectus, models of future business on the new terms and in the volumes expected will be run and included in the bonus linkage exercises, which are the subject of the next section.

20. BONUS LINKAGE

20.1. Bonuses can be expected in any company to move in sympathy with changes in rates of interest and expenses and the movement in bonuses to be similar for companies competing for new business. If the bonuses for the classes of policy which will be closed for future new sales are linked to the bonuses for the continuing class or classes, then the policyholders in the "closed" classes will receive a proper distribution of the combined surpluses in future.

20.2. The actuaries may first determine the linkage between bonus rates that would apply using relatively unsophisticated methods based on the premium rates for the most common types of current policies — say whole of life and endowment assurances. The relationships between the bonus rates of any two companies are bound to have changed over any given past period, although each would show a similar trend. For similar classes of policy, the absolute and percentage differences can be calculated and a judgement formed as to whether the past relationships were "reasonable" bearing in mind the premium rates, the reserve bases and the experience of the companies. The effect of different surrender value, paid up and calculation bases on past bonus rates would have to be taken into account.

20.3. The relationship would then be tested by computer simulation over a lengthy period in future to see whether it held up under sustainable growth conditions, lapse rates, surrender values (etc.) and in changing circumstances. As far as possible all these variations would be taken into account in the computer projections. The projections are really regarded as a test of an hypothesis, not as a way of arriving at answers.

20.4. Producing accurate projections by computer is not easy. There are so many variations possible that there is tremendous difficulty in getting the sums right for a complex set of parameters, and very careful manual checking of sample results is a necessity. The difficulties are compounded when one company is trying to project the business of another company which uses different valuation bases and has many other differences from its own policies; differences in type of policy — simple bonus, compound bonus (closed and open series), single life, joint life; differences in methods of recording data — ages, terms, dates.

20.5. The bonus linkages that will operate across the two life funds will be "set in concrete" by the actuaries' report. The necessity for this linkage is apparent because of the desirability to ensure fair treatment for a class of policyholder that could be seriously disadvantaged by a merger or takeover.

20.6. However, it raises the question of internal relativities and bonus linkages that exist and are maintained internally within any one company. In Carr and Forfar three methods were suggested for establishing a rate of bonus, and that was in a model office that had only one class of policy. The point was made in the discussion on that paper that the literature is silent on how companies determine bonus rates in practice. When more than one series of premium rates have been in force within a company, the actuary will have had to solve the difficult problem of internal relativities, as well as derive a rule for determining the rate of bonus applicable to current series.

20.7. The actuary can be expected by his professional training to exercise his judgement to ensure that equity will be maintained between types of policy and generations of policyholders. Yet how does he do it in practice?

20.8. From our merger work we concluded that it is quite usual for actuaries to determine bonus rates in current conditions by reference to the bonus earning power of a new policy at issue. This is generally the "worst" time of a policy's life. The determination of bonus rates at the date of issue would incorporate the company's expense levels and commission basis and the actuary's view of suitable interest and inflation assumptions. Although current asset shares corresponding to policies issued many years ago can be developed, the answers produced by bonus studies are difficult to interpret because it is by no means clear how much of the current surplus for a typical policy is repaying its contribution to the estate for the support it received in its first few years of life.

20.9. The projection of the run off of in-force business will show large surpluses emanating, but these are partly generated by assuming that future expenses will continue at the levels applicable to a fund which is not diminishing in terms of policy numbers.

It is for this reason that bonus support programs for the merged operation must of necessity include new business expectations, so that the surplus from the run-off of existing business can be tested against the valuation support needed for new business. (In a mutual organisation this cross-subsidy is the only source of support for new business strain.)

20.10. Many companies will have policies that have been on their books for up to 75 years. In that time it is likely that 25 or more tables will have been in the company's prospectus and will have policies extant. New tables will have been produced at different times to reflect changes in market conditions of one kind or another, or to meet or beat the opposition.

The chief actuaries down through the years will have inherited from their predecessors a set of internal bonuses relativities, together with their method of determination. Possibly the changing conditions (investment, tax, mortality) that cause new series of premium rates to be issued will require an adjustment to long standing internal relativities. If major changes have occurred, for example, in capital gains, it could be considered that fine nuances in bonus differentials would be out of place and some previously distinct bonus classes could be grouped.

20.11. For these reasons the closed series of policies in the acquired company are better to be linked to similar closed series in the acquiring company, rather than to a current series of policies. This concept then will require an examination to be made of similar policy tables between the two companies. The similarities to be looked for are: type of policy, broadly equivalent premium rates, but, most important, the same period of issue, e.g. 1930-1940. Companies of a similar age and maturity which merge will most likely have these similar tables. However, this approach cannot be taken when thè acquiring company is much younger than the acquired one.

20.12. One interesting point to note is that a 1% change in interest rate produces a 0·6% change in bonus rate, irrespective of the thickness of the premium, i.e. irrespective of the bonus loading in the premium rate. This point is evident in Levy and Young's paper (JIAA 1961) and in Kent's paper (JIAA 1977).

It is the conclusion of both those papers that a constant difference between bonus rates is to be expected when interest rates change, and the constant monetary difference does not depend on the thickness of the premium. Accordingly one would expect bonus rates to exhibit constant differences between tables both within and between companies, other things being equal. This is often the case with internal linkages.

20.13. In the technical Appendix we show the theoretical justification of those conclusions, to support the empirical results of Levy, Young & Kent. We are indebted to Mr. A. G. Hutchins, B.Sc., A.I.A., for this theoretical exposition.

From Hutchins' analysis it is evident that, once the linkage is established for one rate of interest in the projections, there is no need to repeat the linkage calculations at other rates of interest.

21. SOME COMPLICATIONS

21.1. *Simple Bonuses*

A problem arises in connection with simple bonuses. The acquiring company may have only compound bonus policies whereas the other has simple and compound. The pattern of past relationships between simple and compound rates in the one company can be viewed as a likely candidate for future relationships. The major problem, of course, is that compound and simple systems can equate at only one point. Determining a bonus linkage to a compound series is well nigh impossible in that situation. As mentioned before, internal linkages are never subject to external scrutiny or to definite unchanging rules, but on a merger a formula approach to linkage has to be found. Therefore, an examination of past internal procedures for internal linkages needs to be made and a linkage formula attempted.

21.2. *Terminal Bonuses*

The actuaries have to take into account the different attitudes to surplus carried forward, disclosed or undisclosed. In similar circumstances one office may have been declaring terminal bonuses and the other may not. A difference such as that would have to be resolved. Much would depend on the source of the terminal bonuses — are they a means of distributing the "natural" surplus or the unrealised capital growth? What is the relationship between market value and value used as the value of the assets for the purpose of declaring bonuses in the past? If these are similar in the two companies, then in future the merged policyholders should share in any capital growth, whether or not they previously enjoyed terminal bonuses.

21.3. *Future Conditions*

It is possible that circumstances could change dramatically in future to such an extent that the bonus and surrender value linkages become inappropriate or the method of distributing bonuses to the major policy types may change. The merger agreement must contain a "let out" clause enabling the actuary of the merged funds to alter the linkages (perhaps after independent opinion supporting the proposed changes).

22. ACTUARIES' REPORT

In Appendix D, the authors list matters which should be covered in the actuaries' report.

23. ACKNOWLEDGEMENTS

1. It has been an interesting logistical exercise preparing this paper, since the authors are now 1,500 miles apart and 12,000 miles from the Faculty. They would like to thank Mrs. K. O'Neil for her patience and expert handling of scripts, tapes and the word processor.
2. Thanks are also due to the many other actuaries, accountants and lawyers who knowingly or not contributed to the paper.
3. However, in true professional tradition, the authors will accept full responsibility for the statements made and opinions expressed.

APPENDIX A

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APPENDIX B

Acquisition Check List

B.1. *Background*

1.1. Insurance law

1.2. Exchange control

1.3. Takeover regulations

1.4. Stock Exchange rules

1.5. Taxation

1.6. Financial controls

B.2. *The Target Company*

2.1. Legal structure — articles and memorandum of association
— balance date
— capital, authorised and paid up
— voting shares, and voting rules

2.2. Main shareholders — bank, financial, affiliations

2.3. Board of Directors — Chairman's role, family holdings

2.4. Senior management — contracts of service, experience and skills
— organisation chart

B.3. *Company's Business*

3.1. Geographical spread, branches

3.2. Lines of insurance, licences held

3.3. Specialisation, e.g. direct mail

3.4. Technical competence — actuarial, underwriting, claims, investments, accounts, sales

3.5. Administration — EDP

3.6. Management information systems

3.7. Reinsurance arrangements

3.8. Investments

3.9. Life business — agency force structure, commissions

B.4. *Past Data*

- 4.1. Past valuation reports, profit & loss statements, revenue account and balance sheets
- 4.2. Past and future policy on transfers to shareholders/dividends
- 4.3. Analysis of business by line, special contracts, special participating policies
- 4.4. Pension fund and other contractual obligations
- 4.5. Transfers to published/hidden reserves
- 4.6. Actuarial management reports, audit reports (internal and external)

APPENDIX C

Valuation Check List

C.1. *Assets*

1.1. Basis for valuing — Listed and unlisted shares and properties
— Government and local body stocks
— Fixed interest
— Mortgages
— Policy loans
— Investment reserves
— Foreign currency
— Furniture, fittings, EDP equipment, programs
— Consistency with liability valuation basis.

1.2. Taxation liabilities on capital gains

1.3. Leases

1.4. Contracts to build or invest or take up shares

C.2. *Liabilities*

2.1. Mortality — life, annuity, pensions, male, female, smoker, non-smoker

2.2. Morbidity — occupation, deferred periods, male, female, smoker, non-smoker, claims in payment

2.3. Surrenders

2.4. Lapses — during first 2 years, and effect of "claw back" of commission

2.5. Initial expenses — commission agreements

2.6. Renewal expenses — commission agreements

2.7. Inflation of expenses

2.8. Interest (net of tax as appropriate) — life, annuity, pensions

2.9. New business — spread by type, age, term, premium and size of sum assured

2.10. New business growth (to be compatible with inflation rate assumed)

2.11. Surrender value basis

2.12. Valuation basis (published or statutory)

2.13. Future bonus rates

C.3. *Discounting Rate for Shareholders Profits*

3.1. Effect of tax

3.2. Net rate — to be compatible with inflation rate assumed in 2.7.

APPENDIX D

Actuarial Report

The Actuarial Report on the proposed reinsurance/transfer of business should cover the following:—

1.1. Names of companies.

1.2. Names of Actuaries.

1.3. Date of Report.

2.1. Description of Company A and the life business of Company A.

2.2. Description of Company B and the life business of Company B.

2.3. Comments on comparative life business and future plans.

3.1. Value of assets (book and market) of A.

3.2. Value of assets (book and market) of B.

3.3. Comments on comparative assets and asset values.

4.1. Recent yields on book and market of A.

4.2. Recent yields on book and market of B.

4.3. Comments on comparative yields.

5.1. Premium rates of A and B and comments.

6.1. Bonus rates (including history) of A and B and comments.

7. Separately for ordinary, pensions and other classes of business:—

7.1. Results of projections, description of bases, and recommended bonus linkage for main tables.

7.2. Rationale for and suggested bonus linkages for subsidiary tables.

7.3. Rationale for and proposed bases for surrender of policy and bonuses and paid up and conversion bases in future.

8.1. Proposals for unit linked and capital guaranteed (investment account) business, both ordinary and pensions.

9.1. Let out clause for unforeseen future changes which render the linkages or other terms inappropriate.

10.1. Confirmation by the Actuaries that such scheme will not adversely affect the security of benefits or the reasonable expectations of the policyholders of either company.

APPENDIX E

Life Assurance in Australia

E.1. The population of Australia exceeds 15·8 million, with 66% aged between 15 and 64 and 10% aged 65 or over. 10 million live in the five main cities on the coast.

E.2. There are 48 companies registered under the Life Insurance Act, made up of 3 state government offices, 39 other companies (of whom 29 have their Head Offices in Sydney and 10 in Melbourne) and 6 reinsurers; 14 are Australian and 34 are "foreign". Control is exercised by the Life Insurance Commissioner in terms of the Act, which, *inter alia*, regulates the companies, provides for a statutory minimum valuation basis, and sets out the various conditions applicable to life policies.

E.3. Measured by new annual and single premium income, the largest 2 life companies, both mutuals, write 51% of the business, and the next 3 account for a further 18%. The market shares by total assets are similar. At least three mergers have taken place in the last five years. Deregulation of the financial market has resulted in two of the mutuals establishing new Banks with overseas Bankers as partners and one Bank forming its own Life Insurance subsidiary.

E.4. The major classes of new ordinary business by premium income are:

36% whole life and endowment assurance (mostly with profits)

16% term assurance

32% investment account and investment linked

9% PHI

The main classes of new pensions premium are:—

25% individual (investment linked or capital guaranteed)

63% company (investment linked or capital guaranteed)

5% group life

Negligible annuity business has been sold, though a new market is developing for deferred and immediate annuities following changes in the tax treatment of the companies and the annuitants.

The dwindling industrial business has been transferred to the ordinary portfolios.

E.5. Pension business is tax free; life and annuity business is taxed on investment income (including capital gains) less investment expenses with a deduction for general expenses and a proportion of reserves.

E.6. The total assets have grown from A$19 bn. to A$24 bn. over the period 1979 to 1984.

Because of the combination of linked business investments at market values and non-linked business investments at book values in the annual returns, comparisons of the investments in each sector are distorted between companies and over time.

However, the percentages from 1979 to 1984 have been:—

Asset	*31/12/79* %	*31/12/84* %
Fixed (property)	24·5	20·7
Loans	12·9	10·7
Govt and local body	31·6	32·6
Ordinary Shares	19·3	23·6
Debentures/Notes/Prefs.	8·2	5·2
Balance	3·5	7·2
	100·0	100·0

Life Assurance in New Zealand

E.7. The population of New Zealand just exceeds 3 million.

E.8. The most recent industry statistics indicate that 35 companies transact life assurance in New Zealand. Others have registered but two have disappeared by merger since the statistics were published.

E.9. Measured by new annual and single premium income, the largest two life companies operating in New Zealand, both

Australian mutuals, write more than 50% of the business. The next three companies between them account for approximately 20% of new business. Only one of the "top 5" is proprietary. Two of the "top 5" have grown significantly in recent years by mergers and acquisitions, and both have engaged in this activity more than once.

E.10. Almost all permanent life assurance sold in New Zealand is with-profit. Term assurance business is more prevalent than it once was, although mortgage repayment insurance by single premium has been an important class of business for many years. The reasons are that most New Zealanders own their own homes and lenders have in many cases insisted on MRI cover being effected.

Almost no individual annuity business is or has been sold. Pension business of life offices consists, in the main, of managed funds, under which assets are usually linked to market values, but a substantial number of capital guaranteed accounts still exist for small clients.

Industrial business has been dying out over many years. Of 2·8 million life policies in force (almost one for every member of the population), fewer than 100,000 (about 3·8%) are Industrial.

E.11. There are practically no long term fixed interest securities available. Therefore immunisation is a theoretical rather than a practical concept in New Zealand.

TECHNICAL APPENDIX 1

To show that an extra 1% yield produces about 0·6% extra bonus rate.

For a pure endowment with a fixed premium P

$$(1+b)^n = \mathrm{P}\times \ddot{s}_{\overline{n}|}$$

$$n(1+b)^{n-1}\frac{db}{di} = \mathrm{P}\times\frac{d}{di}\ddot{s}_{\overline{n}|}$$

$$= \frac{(1+b)^n}{\ddot{s}_{\overline{n}|}}\times\frac{d}{di}\ddot{s}_{\overline{n}|}$$

hence
$$\frac{db}{di} = \frac{(1+b)}{n}\,\frac{1}{\ddot{s}_{\overline{n}|}}\,\frac{d}{di}\ddot{s}_{\overline{n}|}$$

now
$$\frac{d}{di}\ddot{s}_{\overline{n}|} = \frac{d}{di}\left\{\frac{(1+i)^n-1}{d}\right\}$$

$$= \frac{dn(1+i)^{n-1}-v^2\{(1+i)^n-1\}}{d^2}$$

$$= \frac{n(1+i)^{n-1}}{d}-\frac{v^2\ddot{s}_{\overline{n}|}}{d}$$

$$= \frac{n(1+i)^n}{i}-\frac{v\ddot{s}_{\overline{n}|}}{i}$$

$$\frac{1}{\ddot{s}_{\overline{n}|}}\frac{d}{di}\ddot{s}_{\overline{n}|} = \frac{1}{i}\left\{\frac{n(1+i)^n}{\ddot{s}_{\overline{n}|}}-v\right\}$$

$$= \frac{1}{i}\left\{\frac{n}{\ddot{a}_{\overline{n}|}}-v\right\}$$

$$= \frac{v}{i}\left\{\frac{n}{a_{\overline{n}|}}-1\right\}$$

$$\therefore \frac{db}{di} = \frac{(1+b)}{n\cdot i(1+i)}\left(\frac{n}{a_{\overline{n}|}}-1\right)$$

From D. W. A. Donald, 2nd ed., p. 257.

$$\frac{n}{a_{\overline{n}|}}-1 = \frac{n+1}{2}i+\frac{n^2-1}{12}i^2-\frac{n^2-1}{24}i^3\ldots$$

$$\doteqdot \frac{n+1}{2}i\left(1+\frac{n-1}{6}i\right)$$

Thus

$$\frac{1}{ni}\cdot\left(\frac{n}{a_{\overline{n}|}}-1\right) \doteqdot \frac{1}{ni}\cdot\frac{n+1}{2}\cdot i\left(1+\frac{n-1}{6}i\right)$$
$$= \frac{n+1}{2n}\left(1+\frac{n-1}{6}i\right)$$
$$\doteqdot \frac{n}{2n}\left(1+\frac{ni}{6}\right)$$
$$= \tfrac{1}{2}+\frac{ni}{12}$$

This linear approximation is fairly appropriate for $ni \leqslant 2$.

If $ni \sim 1{\cdot}2$, and b and i are small

then $$\frac{db}{di} \doteqdot \frac{\Delta b}{\Delta i} \sim {\cdot}5+{\cdot}1 = 0{\cdot}6.$$

TECHNICAL APPENDIX 2

To show that an additional premium will produce a uniformly additional bonus rate, irrespective of the current interest rate.

Bonus Linkage

i.e.: Relation between Δb and b for two premium scales P and $(P+\Delta P)$.

1. *Calculus*

For an expense-free pure savings contract over term n:

$$(1+b)^n = P \times \ddot{s}_{\overline{n|}}$$

Differentiating with respect to P

$$n(1+b)^{n-1}\frac{db}{dP} = 1 \times \ddot{s}_n = \frac{(1+b)^n}{P}$$

$$\therefore \frac{db}{dP} = \frac{1+b}{nP}$$

$$\text{i.e. } \Delta b \doteqdot \frac{\Delta P}{n\,.\,P}(1+b)$$

For $b<1$ Δb is only weakly dependent on b. Basically Δb is constant,

$$\Delta b \doteqdot \frac{\Delta P}{n\,.\,P}\ldots(1)$$

As i varies b will vary, but Δb will tend to remain constant.

2. *Algebra*

Consider two expense-free pure savings contracts for variable n, with premium scales $P_1(n)$ and $P_2(n)$ loaded for constant reversionary bonus rates b_1 and b_2. Assume both premium scales have the same interest assumption, so that:

$$P_1(n) \times \ddot{s}_{\overline{n|}} = (1+b_1)^n \text{ and } P_2(n) \times \ddot{s}_{\overline{n|}} = (1+b_2)^n$$

Then

$$\frac{P_2}{P_1} = \left(\frac{1+b_2}{1+b_1}\right)^n = \left(1+\frac{b_2-b_1}{1+b_1}\right)^n$$

If b_2-b_1 is small then ignoring terms in $(b_2-b_1)^2$ and higher:

$$\frac{P_2}{P_1} \doteqdot 1+n\left(\frac{b_2-b_1}{1+b_1}\right)$$

$$\text{so} \qquad b_2 - b_1 \doteqdot \frac{P_2 - P_1}{n \cdot P_1}(1 + b_1)$$

$$\doteqdot \frac{P_2 - P_1}{n \cdot P_1} \text{ for small } b_1$$

This is the same result as (1).

3. *Arithmetic*

For premium bases of $b_1 = \cdot 02$ or 20‰

$b_2 = \cdot 03$ or 30‰

and $i = \cdot 10$

we obtain the following premium scales

n	10	20	30	40
P_1‰	69·53	23·59	10·01	4·54
P_2‰	76·66	28·67	13·41	6·70
$\frac{P_2 - P_1}{n \cdot P_1}$‰	10·26	10·77	11·32	11·89

So, $\Delta P/nP$ provides a reasonable indicator for $b_2 - b_1$, which in this case is 30‰ − 20‰ = 10‰.

Now, as i varies, we find that Δb remains roughly constant:

	$i = \cdot 05$			$i = \cdot 15$			$i = \cdot 20$		
n	b_1	b_2	Δb	b_1	b_2	Δb	b_1	b_2	Δb
10	−8·49	1·23	9·72	49·65	59·95	10·30	80·35	90·94	10·59
20	−9·94	−0·24	9·70	52·43	62·74	10·31	86·79	97·45	10·66
30	−11·90	−2·21	9·69	55·15	65·49	10·34	92·46	103·17	10·71
40	−13·73	−4·06	9·67	57·27	67·64	10·37	96·59	107·34	10·75

The conclusion is that Δb is virtually independent of b, i.e. the linkage is basically constant.

Furthermore, the algebra has provided a rule-of-thumb formula for the linkage, for savings type contracts:

$$\Delta b \doteqdot \frac{\Delta P}{n \cdot P}$$

As an empirical test: given two premium scales $P_1(n)$ and $P_2(n)$ if one calculates for each n:

$$\frac{P_2(n) - P_1(n)}{n \times P_1(n)} \quad \ldots (2)$$

and this quantity is reasonably constant, then it is an indicator of the bonus linkage that will apply even if the interest rate varies.

It is also interesting to note the old rule that an extra 1% of interest adds about ·6% or 6‰ to the reversionary bonus. This would estimate b_1 and b_2 for the various i as:

$i = \cdot 05$			$i = \cdot 15$			$i = \cdot 20$		
b_1	b_2	Δb	b_1	b_2	Δb	b_1	b_2	Δb
-10	0	10	50	60	10	80	90	10

This is pretty close to the tabulated values for various n. Like all approximations to compound interest functions it gets worse at high n and i.

DISCUSSION

Mr. E. J. Jones, introducing the paper, said:—It is my honour to introduce the paper "Merging Life Funds" on behalf of my co-author, Mr J. Ronald Hunter, and myself. Firstly, we would like to record the debt we owe to others who have helped in its production, beginning with the people whom we telephoned in various parts of the world at the time when we were faced with our first merger problem, and later from the writings of others who were also concerned with the same problem. We have acknowledged the writings of others in various parts of the paper but we would like to thank the other people that we contacted by telephone. We must also thank the Editor who has turned our paper into the printed copy you have in front of you.

Before working with my co-author on a merger, I was involved as an actuary doing the valuation of a life office which had acquired another one during the previous year. There were no bonus linkages and therefore no guarantee that the rights of the acquired company's policyholders were protected. This was because there is no legislation governing the merging of life offices in New Zealand. The second merger experience for me was as the Independent Actuary appointed when the company of which Mr Hunter was Actuary was acquired by a Mutual in New Zealand. The Mutual Office was the second to largest operating in New Zealand and in Australia where it is domiciled. The other Chief Actuary was a resident of Australia. Afterwards, Mr Hunter and I wrote up some notes of what we had done because the actuarial literature had been so sparse. Then the 1980 Congress Papers arrived and we realised that other people had gone through the same experiences that we had and had used the same approaches. Our draft paper was expanded and what you have in front of you now is the second major revision of a paper principally written in 1980.

Since 1980 I have been involved in six other mergers and acquisitions in New Zealand. The variety, which I hope comes through the paper, of the situations that might arise are illustrated by the six situations I have faced in New Zealand.

Firstly, there was the advising on a merger of two life office subsidiaries of composite insurance groups in New Zealand. That merger is still operating under a reinsurance arrangement and no formal linkage of bonuses or anything like it has taken place, even now.

The second case involved the merger of two mutual life offices. The two mutual life offices were quite large by New Zealand standards and, one might even dare to say, by world standards. The one is the second to largest mutual operating in our part of the world and it merged with the office which I think ranked as number 5. Together they still amount to the second position in New Zealand and Australia.

The third job was pricing the shares for the buy-out of minority shareholder interests so that the resulting structure was a wholly-owned subsidiary of an American insurance group.

The fourth was pricing the shares of a New Zealand based proprietory office so that one of New Zealand's four trading or clearing banks, as you call them here, would have a 50% share in that life office.

The fifth was to consider a tender document. Under the tender a firm of consulting actuaries had put together a proposal on behalf of the owners to dispose of the New Zealand Life Portfolio which was a branch operation of an Australian proprietory life office. The tender went to four companies and the company which I advised was the successful tenderer and so became the fifth largest life insurance company in New Zealand which is quite a major achievement for a company that was started only about 15 years ago in New Zealand.

The sixth was the pricing of the shares in the life and a separate general company which is owned by a substantial finance company in New Zealand which had been purchased by the finance division of a large insurance corporation in New Zealand and we had to price the insurance operations for passing from one subsidiary to the corresponding insurance subsidiaries of the enlarged group.

I hope that will illustrate the type of thing that one has to deal with in constructing a paper on mergers of life offices. You will see from the summary of the six cases that merging of life offices is very much alive and kicking in New Zealand. I am given to understand that that is the case also in Britain. I therefore hope the topic is of great interest to you.

In the third part of my introductory remarks I would just like to publicly thank my co-author for all his efforts in putting this paper together. I would like to say what a pleasure it has been working with him and also to thank him for taking the steps which have led to the enormous privilege which I feel at being present on this platform tonight and being what I think is the first Kiwi to present a paper, albeit jointly, to the Faculty of Actuaries in Scotland.

Mr. C. G. Thomson, opening the discussion, said:—Our thanks are due to tonight's authors for bringing such an interesting subject to the Faculty in such a readable form. As an actuary with no practical experience of this subject, it seems to me to be full of intriguing topics, encompassing many actuarial ideas and yet highly practical. Because of this, the paper shows us both the wide scope and also some of the limitations of our profession.

In Section 1 of their paper the authors bring us up to the starting line. Sections 2 to 4 set out the business decisions involved, while 5 and 6 outline the actuarial approach of a potential purchaser.

It is always a good idea to start at the beginning and paragraph 2.1 sets out the fundamentals. Here is Scotland, where most life companies are mutuals, we are insulated from unwelcome attacks by predators and therefore tend to regard these fundamentals in the aggressive way "How to attack?" rather than with the defensive attitude "How or why may we be attacked?". It is most instructive to spend a little time reflecting on the items in this list and to draw a few conclusions. Perhaps the most obvious is that all of the items on the list apart from the last are aggressive. It is revealing to follow up the reference to Britt's paper in JIA62. Presented in 1931 the economic climate was slightly different from today's and this is reflected in the list of objects of an amalgamation where a much more defensive attitude is revealed. Even where the object is identical, it is being approached from a different perspective. Some items from Britt's list were:

(i) To secure greater economy and efficiency.

(ii) To reduce the effects of competition.

(iii) To prevent the collapse of a weak office in the interests of protecting the whole industry.

(iv) To absorb an office of nearly similar name and thus remove a cause of confusion.

The authors have not ignored the defensive situation—it is covered in paragraph 2.4. However, I believe that the change in emphasis over the 50 years is important and reflects the extent to which the actuarial outlook is, in practice, conditioned by the economic climate.

It is interesting that the cynic's attitude has not changed with the economic climate. It was noted by Britt, although not accepted, that an important object of amalgamations was the craze for big figures. Exactly the same point appeared ten days ago in the letters page of the *Financial Times*—again it was not accepted!

In Britain we lack experience of tonight's subject since, in recent years, we have had a few take-overs but no mergers. I suspect that this has been an unnatural situation and that the future will bring a number of mergers. The most important reason for my belief is the range of services which a life company in the U.K. is now expected to provide and also itself expects to provide. Although I have not attempted to quantify the effect, it seems clear that the minimum viable size of a life company has been rising quite rapidly over the last decade or so, and that it has only been the soft investment conditions which we have enjoyed which have made it possible for all companies to survive. The combination of a highly competitive market, harsher investment conditions, the strange solvency requirements to which we are subject and the high expenses associated with the modern range of services seems likely to produce defensive mergers.

Paragraph 3.4 of the paper deals with the requirements of the Insurance Commissioner in Australia when an amalgamation is envisaged. Requiring a joint report seems an excellent idea. Presumably this means that some extremely hard bargaining takes place before the joint report reaches the High Court, but this seems preferable to allowing the legal profession to reach a conclusion which may not be sought by either party.

Section 6 of the paper deals with valuation methods. Because many aspects of a merger or acquisition are commercial aspects rather than purely actuarial aspects, it is not surprising that this section has more parallels with industrial companies than we would normally expect in an actuarial paper.

The sum of the free reserves and the future profits on existing business provides an actuarial value for the life fund but this is akin to the asset value of an industrial company. A purchaser may be prepared to pay either more or less than this value depending on whether the view is that of an asset stripper or an opportunist, who can make more effective use of the distribution network, the staff or some other aspect of the company.

I would prefer to redefine the first and second items of paragraph 6.1 so that the first item could be described as the estate of the life company. However, I accept that the division between these items is unimportant so far as the answer is concerned, and my wish to use the estate as the first item is probably a function of my years spent in the mutual life office environment. It would be useful later, however, when assessing future profits and also when considering bonus linkages. Perhaps the biggest difficulty with paragraph 6.1 is that the description in words seems clear but there must be few actuaries who would be prepared to stake their reputation on a single value for items 2 or 3.

In paragraph 6.2.6 the value of the assets is considered. This too must vary, depending on the attitude of the purchaser. The asset stripper will be concerned not only with whether or not realistic values have been assigned to the assets but also whether or not these values can be realised in the near future. This is not so for the opportunist. Where the intention is to revitalise the existing business, assets will be held on a long term basis and the only consideration is whether or not the valuation of assets is realistic on a continuing basis.

Paragraph 6.3.2 is a gold mine of sufficient actuarial projections to keep a couple of actuarial students busy at a micro computer for weeks exploring the sensitivity of the results to variations in the assumptions, and presumably producing some nasty headaches in the interpretation of the answers. However, this is the assesment of the profits from existing business—this is the easy part—compared to assessing profits from future business.

In paragraph 6.3.5 the authors note that in many cases less information is available and it is not then possible to carry out full projections. I am not entirely convinced that this is a disadvantage—one of the dangers of our profession is to become blinded to the truth by the sheer force of numbers, without realising that our multiplicity of small assumptions is no better than a few crude approximations. There is a parellel here with other areas of actuarial work when complex calculations are involved, for example, the traditional collective and reversionary methods of valuation, where apparent accuracy can often be poorer than obvious approximation. I acknowledge that the method discussed in paragraph 6.3.6 of subtracting a best estimate of the value of the liabilities from the value of the assets is crude but I have still to be convinced that the apparently better method of detailed investigation is any less so.

From the easy part, the authors next turn to the hard part—what is the value of future profits from future business? I am inclined to think that this question is like asking the distance between the ends of a piece of string. In the extreme situation of the asset stripper, no allowance for goodwill seems necessary—indeed, the value so far should be reduced by the costs of closing down the business through redundancy payments, forced sales of buildings at less than full market price, and so on. I cannot accept that an allowance for goodwill should be almost certain—any company trading at a loss for whatever reason (high expenses, excessive bonus rates, bad product pricing, ineffective sales force) must be a candidate for take-over and is intrinsically worth less than the face value of its assets because of its current trading position. While it will often be necessary to pay more than the intrinsic value to ensure the change of ownership, it would seem reasonable that this should result in a payment for goodwill only for those companies which are trading profitably or are near the margin.

Having said this, I fully accept that recent U.K. experience seems to have been quite different. I submit that that does not make the theoretical argument wrong—it simply demonstrates high demand for entry into the U.K. market and a limited supply of suitable companies. The natural result is an artificially high price for the product, i.e. the life company. If the stockbrokers' assessments of the future profitability of life companies become less favourable for whatever reason, the imbalance of supply of companies and demand for them will disappear. In such circumstances the price at which a company would change hands would bear very little relation to recent values.

My reason for this digression is that I am unconvinced that the actuarial assessment of future profits from future business is important compared to the commercial assessment. The actuarial answer most certainly still matters because it shows how much, out of the improvement in the value of the target company due to the take-over, will have to be surrendered to the seller. Since the seller has earned none of this amount and the purchaser will only realise it if he can produce the changes anticipated in the target company, it would seem only reasonable that the bulk of the improvement should go to the purchaser. We should take our actuarial calculations one step further and multiply the anticipated improvement in value of the company by a probability factor for the likelihood of its being achieved. This is not fanciful since many mergers or take-overs seem to be able to turn profitable companies into unprofitable ones or should I say, one profitable and one unprofitable into a larger unprofitable one. We are dealing with profits emerging over the long term and seem to be making assumptions that conditions will remain within the guidelines of our recent past experience. I do not think that this is justified.

I accept that the opportunist must value the business as a going concern and therefore include consideration of new business production. I am simply unhappy with the method of valuation. The authors consider alternative methods of valuation in paragraph 6.5. Method 1 seems unsatisfactory for the same reason. Far distant and uncertain profits are being assessed and, unless the discount rate is extremely high, there is a danger of seriously overestimating future profits. Method 2 does not seem correct. If this cost was actually incurred, the resulting organisation would match that of the purchaser and be immediately useful. The history of most mergers is that Parkinson's law applies—everything that could be different is different. The answer by Method 2 must be much too high in most cases, although I accept that it does provide an upper limit. Method 3 seems more reasonable but again will suffer from the long projection period problem unless the factor chosen is conservative, for example, taking into account only the next few years' business or using a very high discount rate. This seems to me the most realistic course of action.

It is possible to approach the valuation of future profits in another way. An appealing, although perhaps defeatist, line is to consider what would happen in an economically perfect market. It would then be possible to do no more than earn a market rate of return on capital employed—in our case presumably this is the yield on gilt edged stocks, plus a margin for risk, applied to the estate of the life company. This would be the best return that could be achieved in a perfect market, and the fact that an amalgamation is anticipated suggests that the present organisation is less than perfect! In practice I am sure that the opportunist will place a higher value than this on future profits, but if it is much higher, then the opportunist would be well advised to re-examine his assumptions.

Paragraph 6.6 struck a chord with me and I have already mentioned the point briefly. It seems that we are being invited to apply ever more complex models to individual situations and that, because the models are more complex, we are told that the answers must be more informative. To be blunt, I do not believe this. Whether the model is probabilistic or stochastic it simply takes our assumptions, passes them through the filter of the particular problem and produces a result or range of results. In other words, all we get at the far end of our calculations is the result of our assumptions, rather than a result from our calculations. The skill of our profession lies in avoiding being deceived by the results of our calculations into believing that they prove the accuracy of our assumptions.

In paragraph 6.13, an example of the variations caused by quite a modest change in assumptions is shown. I would be interested to learn of the spread of values which emerge for this item in practice—I would have thought it would be quite a challenge to limit the range of reasonable answers within a 2 to 1 spread.

Paragraph 6.16 discusses the presentation of the result to the shareholders of the purchaser. Is it not possible to present the result as an equity investment exactly like their own? There is a dividend yield which falls short of the desired return on capital. The balance is a speculative figure, assessed in large measure by market forces, which represents the value of profits yet to be earned. The concepts of risk and contingency seem very similar to other equity investments and surely mean that the result should be presented in exactly that way—if the result is presented in a different way there must be a danger that the shareholders assume that their capital is secure.

Sections 7 and 8 outline a few of the harsh realities of mergers. Once again anything which can be different is different and I believe that there are many who would congratulate the authors on a merger which was completed in only a year and a half from the date of purchase.

Paragraphs 8.1 and 10.1 and their consequences are absolutely fundamental. The continuation of the company depends entirely on the people involved—lose their goodwill and the value of the company is no greater than the value of the closed fund to the asset stripper.

The over-riding impression is that the detail of a merger or take-over is horrific unless the intention is simply to establish a shell from which to expand in a different way. The true merger sounds so unappealing that it is difficult to reconcile with the high prices to which I have already referred.

I am sure that the first sentence of paragraph 13.1 struck another chord with many. Computer hardware and software can be quite a difficult problem without even contemplating a merger. The extra layer of problems which a merger could bring must be enough to destroy the morale of the most hardened DP manager.

The most interesting feature in the concluding parts of the paper is the discussion of linked bonus rates in the merged fund to represent properly the equitable interests of each group of policyholders. I am sure that this topic alone could fill at least one full paper to the Faculty.

In paragraph 16.4 the authors state that "policyholders could reasonably expect bonus rates under their policies to move in sympathy with those of other companies in the market". I am sure that the policyholders would regard this as a reasonable expectation, but is it? If two offices merge and one has been declaring higher bonuses than the other in identical circumstances (which can happen), the policyholders of that generous office ought to fare worse than the market average after the merger, and the actuaries involved in the merger should not protect them from that.

The overall implication of Section 20 of the paper is that bonus linkages will be determined by looking at the current situation in each company and projecting on a variety of assumptions. I am sure that this is not correct, since it assumes that equity has been maintained in the past, not only between policyholders in each company but also between the companies. This is most unlikely. While in practice I strongly suspect that the authors' approach is what would be done and that the results are usually reasonably accurate, we should at least consider what we would do if all the information was available.

What we should do is to calculate asset shares for each type of participating policy of each duration as at the date of merger. After that date we should have investment freedom and there should be no difference in the future rates of return between equivalent policies in each fund. There may still be minor differences in future due to, for example, anticipated differences in mortality, the necessity to charge higher expenses against contracts with a particularly difficult design, different lapse rates or profits or losses caused by guaranteed surrender scales (or even by unguaranteed surrender scales if these are not brought into line after the merger).

The resulting assest shares are the correct answers and, in theory at least, can be determined accurately. Any bonus linkage should be judged against these answers, or at least against estimates of the answers. I appreciate that in a merger a simple formula is desirable, and perhaps essential, but it must always be treated as a rough approximation, since that is what it will be.

The only remaining question concerns the allocation of those portions of the estates of each company which cannot reasonably be regarded as belonging to the current generation of policyholders. The answer depends on whether the target is relatively weaker or stonger than the purchaser, and the commercial consequence in each case seems quite clear.

Although I have disagreed with some details, I have found the authors' paper a most useful introduction to this subject. We all owe them our thanks for overcoming the thousands of miles of geographical separation to present such an interesting paper to us here tonight.

Mr. P. Kilgour:—If I may, I will venture a few remarks whilst others more expert than I marshall their thoughts.

As I read it the paper has three main sections—firstly, an examination of matters which may arise during the contemplation of or the completion of a take-over or merger of life companies; secondly, a description of methods of calculating the value of a life company; thirdly, a consideration of actuarial aspects of effecting a merger.

Under the first section the authors set out a large number of topics which require consideration before entering into talks about a merger or completing a merger. For any particular merger some of these topics will be more important than others but each will need to be considered at some point to establish its significance. As the authors point out, a failure to address some of these topics may create embarrassing, if not intractable, problems for solution to complete the merger. The management time and effort required for the examination of these matters is likely to be great but essential. This section provides a useful checklist.

In Section 6, the authors give a description of their methods of calculating the value of a life company, which they see as consisting of four parts, namely, the values of free assets, the profits from existing business, the profits from future business and special factors. Their definition of free reserves seems to include both hidden reserves and shareholders' assets. The shareholders will be entitled to all the income from their assets but to only a well identified part of the profits of the long-term fund, being a percentage of these profits or the profits of the non-profit business only, or whatever. I would prefer to replace the free assets with the value of shareholders' assets and to include all the long-term business fund assets in the calculation of profits from existing business to avoid taking credit in the value of the company of the whole of an item, only part of which is owned by the shareholders. The authors describe a technique of projecting future valuation surpluses, establishing therefrom the shareholders' share and calculating a present worth of that share. For a given set of parameters to describe future experience, the strength of the valuation bases used will determine the emerging surpluses. Would the authors always use the statutory or published basis for this purpose or would they modify it, and if so, in what circumstances would they recommend doing so? There are a large number of parameters involved in these calculations for in force business and more in connection with future business. Self discipline will be required not to become lost in paper as the effect of varying each of these parameters is tested, but such tests will reveal the volatility of the results.

The authors appear reluctant to include a value of future business but, assuming future business to be profitable and that there exists a good sales organisation, the sellers for one are bound to expect some value for this. In fact I would not be surprised to find that this value is very significant when compared to the value of the existing business. Would the authors' experience bear this out? If so, the final figure arrived at for the value of the company will in no small way be determined by the assumptions made in the calculation of the value of future business. Of the alternative methods put forward by the authors to derive the value of future business, I quite accept that it is necessary to look critically at the value placed on future new business and a meaningful alternative would be useful. I would be interested to learn how the authors would set about determining the general profit levels needed to start their Method 3. Can Method 2 apply equally to companies where the shareholders own only the profits of the non-profit business or differing shares of total profits?

Section 49 of the Insurance Companies Act 1982 sets out one of the legislative requirements on transfers of long-term business. Any merger proposals would need to be examined under this section. I am not sure how well tested this procedure is. In paragraph 16.3 the authors set out their interpretation of this paragraph, both for non-profit and with-profit policyholders, in that both should require their security not to reduce and the latter should require a continuance of their reasonable expectations. I am uncertain what is meant by this last phrase—perhaps the authors could provide amplification of what they believe it to mean in this context. To achieve a merger, the authors require a bonus policy for the various classes of with-profits policyholders in the combined funds. It may not be possible to achieve this for some funds without one fund subsidising the other. I do not know if an arrangement under which one group subsidises another with the knowing approval of all policyholders concerned would satisfy the legislative requirements mentioned already—perhaps it would and so such a scheme could be proposed. It is difficult to describe a bonus linkage for compound, simple and two-tier compound bonus participation methods, especially when there are also terminal bonuses to be considered. In the Appendices the authors produce a "rule of thumb" to link two compound bonus series but, in current conditions, that is only part of the problem. The funds may, of course, differ in other respects from premium bases, for example, non-profit gearing, surrenders experience, each of which may affect future profits to each generation of policyholders. At the end of the day there may be no acceptable solution except to run separate funds with one perhaps closed to new business.

I look forward to contributions from speakers with more practical experience of these matters than I have and thank the authors for their paper.

Mr. D. O. Forfar:—I should also like to congratulate the authors on their interesting and comprehensive paper based on their own experience of being involved in the purchase and merger of life companies. It comes out clearly from the paper tonight that the merger of two insurance operations is a highly complex exercise involving financial, legal, actuarial and organisational aspects. To anyone having to deal with such an exercise, the authors' paper will surely be of great value.

I should like to look first of all at the question of what should be paid to the shareholders of a proprietary company when it is acquired by a purchaser, which is discussed by the authors in Section 5. The methods proposed are appropriate both to value a company with no Stock Exchange quotation and to judge the cheapness or dearness of the share price for companies with a Stock Exchange quotation. A technique of this kind was discussed in a paper presented to the Faculty Students' Society by Derby and Rice, which is referred to in the bibliography. One of the points which emerged from the Derby and Rice paper and which is echoed in paragraph 6.13 of tonight's paper is the paramount importance of the profit contribution from new business yet to be written. As the opener has said, the value of a company is very sensitive to changes in the assumptions regarding the growth of new business. I should be most interested to hear from the authors how difficult in practice it has been to reach agreement on the contribution to the purchase price from profits on new business, as it seems that agreement on this is fundamental to the establishment of a mutually acceptable price.

As discussed in paragraph 6.3.2, the profits emerging to the shareholders from existing and new business must depend on the rates of return deemed to be earned in the future—in the same way as bonuses depend on profits yet to be earned. Again I should be interested to know whether in fact anything other than an estimated long-term interest rate would be used in these circumstances.

In paragraph 6.2.1 the authors define the free assets of the company. I am not sure, however, how the authors would evaluate the shareholders' share of these—for example, would the free assets be multiplied by the shareholders' participation rate or would the size of the free assets be scaled down before multiplication by the participation rate since I think it could be argued that part of the free assets is likely to continue to be maintained as a "buffer reserve", if I can call it that, to give financial strength to the office and would not be distributed to the participating policyholders and shareholders except to the extent necessary to control the smooth emergence of policyholders' returns.

In Section 20 the authors discuss the problems of the merger of two life funds. They describe the requirement that the merging of the funds will not adversely affect the security of the benefits or the reasonable expectations of policyholders of either company. I imagine in most cases the former will not be in doubt and attention will focus on a comparison of the expectations of with-profit policyholders of company A, if it stands alone, the expectations of with-profit policyholders of company B, if it stands alone, and the expectations of with-profit policyholders, if A and B are put together. I would, however, like to raise one problem which arises from paragraph 2.6 where it is mentioned that mergers can take place between a mutual and proprietary company. If a mutual were to purchase a proprietary life company through the life fund then, even if the proprietary life company previously charged the same premium rates as the mutual, there would, I feel, still have to be a bonus differential in future, otherwise the with-profit policyholders of the mutual would not receive proper benefit for the purchase price they had paid. On the face of it, the mutual would appear to have paid for participation in the profits of the proprietary company for business yet unwritten and therefore a differential bonus should persist in the future on new business but this would be impracticable for new business written in future in the merged fund. I cannot quite see how this difficulty is resolved, but perhaps the authors can help me out of this difficulty.

A further consideration is the strength of what I shall call the inherited estate, namely the difference between the market value of the assets and the accumulated asset shares of the existing policyholders. If the inherited estate as a proportion of the funds is different between company A and company B it is difficult to see how it is fair to merge the two without dilution of the position of the stronger company.

The authors mention terminal bonuses in paragraph 21.2. If we regard terminal bonuses as, broadly speaking, making up the difference between the sum assured plus reversionary bonus and a smoothed asset share for the policy, then it seems that the establishment of differential terminal bonus scales would also be a very useful way of establishing equity between the policyholders of company A and the policyholders of company B.

In conclusion I should like to thank the authors for an interesting and thought-provoking paper, particularly so as they have come 12,000 miles to present it, and on a personal note I should like to thank them for the kind references to the paper which Peter Carr and I wrote a few years ago.

Mr. R. J. H. Milne:—I would like firstly to congratulate the authors for presenting such a comprehensive and readable paper on the merging of life funds and the usually implied merging of two companies.

In this paper much is, quite rightly, made of equity and the maintaining of the reasonable expectations of policyholders. I feel, however, that when one is considering the merging of two companies we should not be so cold as to ignore the reasonable expectations of the employees. I cannot agree, therefore, with the authors' statement in paragraph 9.1 that assurances such as "no one will be worse off after the merger" are best not given. Any expenses involved in ensuring the continuing enthusiasm of the workforce must surely be treated as cost of acquisition or merger, whichever is the case.

On an unrelated point, the authors say in paragraph 12.2 that "a merger provides an ideal opportunity for the marketing team to review their product ranges." I feel this to be a theoretical ideal which is unattainable in practice. There appears to be general agreement that a merger will place additional burdens on most areas and surely the best that can be hoped for on the contract range is a weeding process leaning heavily on the strong contracts of either company, even if this means a certain amount of incompatibility. Indeed, in view of the problems a merger will bring to the E.D.P. departments, it is not difficult to imagine the computer manager's reply if the marketing manager were to ask for the additional programming development time connected with a review of contracts.

Finally, I feel that the clearly evident practical usefulness of this paper would have been enhanced by just one detailed example of merging life funds.

Mr. M. H. Field:—I would like to thank the authors for their presentation and will start with my one criticism of their paper. In their long and comprehensive catalogue of all the problems my criticism is that they make it look too easy. The immediate reaction you get after a merger is that all the staff are on the defensive. They look for trouble everywhere. They review every statement from Management with suspicion and rumours are rife throughout the organisation. Consequently Management is under an extreme handicap for perhaps 18 months to 2 years.

I was interested in the reference to maintaining normal day to day operations in paragraph 7.2. A particular problem area is in the Development Department where, until the Management has decided how the scheme is going to work, the Department has nothing to develop. This may last perhaps for a year, and it is very difficult to maintain morale during that period. Moreover, of course, the combined company has actually lost a year of development, so there can be enormous problems in that area.

This brings me to my main point which arises out of personal experiences. I have been involved in two take-overs. On the first occasion it was a paragraph 2.1.1 situation—we took over another company and we did it to get an opportunity to enter a different field of operation—in our case we wanted to get into direct selling. We made a conscious decision to keep the new company separate and I think that was the right thing to do, but it does remind me of a point made earlier this evening—the price you pay. We knew we were paying a full price for that agency force. We knew that the shareholders of the previous company were probably doing quite well out of it but we also took the rather cynical view that had we, knowing that we wanted to get into a different field of operation, done it by ourselves, we would have made mistakes and it would probably have cost us more. We did it consciously and I think it was a good investment for the group.

The second occasion, of course, we were the under-company, we were taken over. This was a paragraph 2.4 case but it is a different case from some of those mentioned in the authors' list. In our case we were faced with the situation of a substantial but minority shareholder who wished to dispose of his shareholding and this was in the days immediately following a disappointed overseas predator company. We knew that a block of shares of that kind coming on to the market would possibly create a contested bid that might take 18 months or 2 years to resolve. Our Management decision was neither a U.K. solution nor an overseas solution. Our main consideration was to have a quick good solution from the point of view of shareholders, policyholders and staff and to avoid at all costs a contested bid. I think we were successful in that from knowing that the situation was to arise to the date of completion, it was in fact only 4 months. The point that I really want to make is that we regarded it as absolutely essential to achieve a solution quickly. Therefore, we had an independent actuarial report on the value of our business because it was seen as essential that our directors could strongly recommend the bid to the shareholders. The directors felt they could not make such a recommendation without independent advice. Of course time was short. Data was extremely short. I think with hindsight I would wish we had been more prepared and had had more information at our fingertips at the time.

Mr A. D. Shedden:—We are grateful to the authors for the opportunity their paper affords to discuss the fascinating topic of merging life funds. Few actuaries get involved in mergers but for those who do it is an exhilarating experience indeed. Large sums of money are tossed around, if not with gay abandon, at least with regard more to the practical considerations than to actuarial niceties. A merger is a trading operation, with usually a buyer and a seller involved, and theoretical considerations tend to be outweighed by market forces. Apart from anything else, the significant features of the merger or purchase may often have to be decided at the outset on very limited data, as the authors have described, and it is only later, once the two parties have agreed that they are going to discuss a merger or are committed to one, that consideration can be more detailed. By then, of course, it may be too late to alter the major decisions.

I have been involved in three merger operations, all of which involved the merger of a foreign mutual company with a foreign branch of a U.K. mutual company. With mergers of mutuals, since there are no shareholders involved, the number of possible parties to the merger is reduced and the commercial considerations may perhaps be less dominant, although still present. Nonetheless there were at least five parties involved in the mergers I am about to describe. These were the with-profits policyholders of the foreign mutual, the with-profits policyholders of the foreign branch of the U.K. mutual, the remaining with-profits policyholders of the U.K. mutual, and the two supervisory authorities in the U.K. and in the foreign territory. In one of the mergers there was even a third supervisory authority involved, since the foreign company was also foreign to the territory in which the branch was situated. In another of the mergers the foreign territory had a federal supervisory authority and also a number of provincial authorities each of which had some measure of control over insurance operations in their own province. Clearly the more parties there are involved in a merger the more complex the negotiations are likely to be.

In the first of the mergers there was an element of force majeure, in that due to the introduction of local insurance legislation the foreign branch had to cease to do new business and the alternatives were therefore to merge the branch with a local company or to operate it as a closed fund. The policyholders would clearly have preferred the latter course of action, believing that present bonus levels were more likely to continue if they stayed with the U.K. company. This was, of course, a compliment to the past performance of their company and it proved very difficult to persuade these policyholders that the legislative changes being introduced locally might affect bonus performance in the future. The branch staff also did not wish the branch to merge with a local company. They had considered themselves superior to other companies' staff by virtue of their position in the U.K. mutual and feared that in a merger they would lose out in promotional opportunities within the merged operation. This was a short-term view of course which in the event proved to be erroneous. In the longer term a closed fund operation would have seriously affected job opportunities and the younger and more ambitious staff members would undoubtedly have wished to move elsewhere.

Apart from the parties to the merger there are usually at least three actuaries involved—the respective actuaries of the two merging companies and an independent actuary who acts as a sort of referee. These three actuaries all have to agree on the financial aspects of the merger and since this is a difficult problem at the best of times they will be only too glad to seize on any fortuitous features that offer an easy solution to the problem of insuring equity between the different parties. In the merger I am describing, the types of policies sold by the branch and the foreign mutual were very similar and the only difference in the bonus rate was that the U.K. mutual's branch policies had a higher rate of bonus on bonus than the foreign mutual's policies. The problem of equity was solved by granting a special bonus to the branch policies which, though immediately available on death, could not be immediately surrendered and would increase in value over time. Thereafter the bonuses were to be kept the same and the funds could therefore be merged rather than having to be kept separate. Another actuarial problem concerned the branch's sizeable portfolio of without-profits policies having guaranteed surrender values. These were policies effected to cover pension liabilities but since the pensions legislation was liable to change in a few years time it was by no means certain for how long these policies would remain in force. It was therefore difficult to assign credible probabilities to the run-off of this particular block of business and a considerable amount of bargaining took place in order to agree on the appropriate value of the assets and cash which could be transferred to cover these policies.

The second merger took place in a similar environment but was simpler because the branch operation was already operating as a closed fund. Some years earlier the U.K. company, having had to cease writing new business in the foreign territory, had decided that there was no suitable local company with which to merge the business and in the interests of policyholders maintained a closed fund instead. This decision was not in the long-term interests of the staff, however, and they were happy to participate in the proposed merger, which essentially involved them becoming a foreign branch of another mutual company which, though not local, was permitted under the insurance legislation to operate in the foreign territory. Since the portfolios of policies involved were very similar to those which I have described for the first merger (and indeed the same two mutual companies were involved) there was no difficulty in arriving at a suitable basis for the merger.

The third merger was much larger and more complex, there being considerable differences between the portfolio of the foreign branch and that of the local foreign company involved. To begin with, the branch, though large, was considerably smaller than the local company, whereas in the two previous mergers the branch had been comparable in size. Furthermore, the with-profit policies of the two companies were on a different bonus system and most of the branch policies were without-profits. Because of this the philosophy behind the merger was largely one of sale, there being two components: a merger of with-profits policies and a sale of without-profits policies. Unlike the two other mergers I have described there was a surplus of local assets and when a possible figure for this surplus was revealed there was considerable local outcry at the thought of a large amount of money leaving the country. Local sentiment was that this money belonged to the local policyholders, even though very few of them were entitled to profits. This sentiment ignored the financial features of the deal which, though involving mutuals, was essentially commercial. Had two proprietary companies been involved in a similar venture there would have been no comparable feeling that the policyholders had been deprived. The lesson to be learned is that where a mutual company does business in several countries there must be a clear strategy for dealing with the respective with-profits policyholders throughout its organisation and this strategy should be made clear to policyholders and staff alike.

There were two other features to this merger which in the event contributed to its eventual abortion. One was the question of taxation on the proceeds of the transfer of the foreign branch business. Where proprietary offices are involved and one office buys the shares of another, such taxation questions are not normally a problem but where the transfers are the life funds themselves, and this must be the case with mutuals, the question of taxation on the transfers of assets and liabilities is very important. If the foreign country is prepared to treat the transfer as a special disposal there is no problem but if it decides that the transfer is a disposal for gains tax purposes then of course the effect can be very significant. In the particular case of this transfer the taxation system was in the process of change and it was not possible to find anyone who could say definitely what the taxation outcome would be—in fact the outcome under the existing taxation system was also uncertain. The other feature which caused difficulty was the legal impossibility for the company transferring its business to get rid of its ultimate liability. If the foreign company, having taken over the branch liabilities, had subsequently become insolvent the transferring company would still have been legally liable for any shortfall in the policies which had been transferred. This would have required qualification of the annual report. Oddly enough, similar considerations apply in the case of reinsurance but I have yet to see any annual report qualified to indicate the ultimate liability of the ceding company.

The experience of the above merger amply illustrates the problems referred to by the authors in their paper. In particular there is the need to work out the main features of the merger before approaching the authorities for permission and even before publicising the proposal generally. On the other hand there is a difficulty in obtaining sufficient information in advance to know whether the merger is possible or will be allowed. One point arises in regard to any transfer of assets to support the transfer of business, and that is that it is advisable to fix the basis of transfer in advance. This is simply because the transfer may have to be effected as at some future or past date and it is by no means certain that the assets held at the time negotiations are being conducted will be the assets which feature in the transfer itself. Another point relates not so much to the various uncertainties but to the time taken to resolve them. One cannot hang about indefinitely waiting to know whether a merger can be effected since in the intervening period staff, and in particular sales staff, tend to leave. It is very difficult to abort a merger and retain the confidence of the existing staff but even during merger negotiations that eventually are successful there is a drain of staff to other companies regardless of any comforting or encouraging statements which have been made by the company to whom the business is being transferred. For this reason I include myself amongst those who are sceptical of the values placed on future new business in such cases. Such values could be illusory if the existing sales staff, or the better elements therein, move elsewhere.

I will close with a word on mergers of life companies in this country. There have been few mergers of any size and this is in contrast to the experience with building societies, banks and composite insurance companies, where there have been several significant mergers over past years. One can only assume that the prevalence of mutual life companies in this country inhibits merging activity but this cannot be the only reason for the lack of mergers. Up to now there has been little advantage in mutuals merging and disadvantages in attempting to weld together two similar, but different, blocks of business. However I have read recently arguments suggesting that it would be economic for a large mutual to merge with a smaller mutual and pay the latter's policyholders for the privilege. This is because the larger company might end up getting a block of new business, and an increment to its sales force, cheaper and sooner than it could do so by growth. If this were so, and I have doubts of the validity of the arguments, the terms for such a merger would contrast with the terms for merging two mutuals more equivalent in size, since in this latter case one could argue that the merger should be on a neutral basis. There is an interesting actuarial paradox here.

Mr. P. Ford:—I work for a mutual life office that, until the early 1960's, was a proprietary company. Had it not at that time been allowed to mutualise, it would by now have had at least three successive owners, involving at least two other sets of with-profit policyholders, and the problems of equity between the various funds, highlighted in this evening's interesting paper, would by now have been very real indeed for my actuarial colleagues and myself.

Even without these added problems, I found on reading the later parts of the paper that many of the problems of equity between different life funds apply equally to different classes and generations of policyholder within the *same* fund, and the paper is therefore doubly useful for the ideas that it generates in that respect also.

One aspect of merging life funds that I suspect is implicit in the paper, but receives only one passing comment (paragraph 18.4) is that of existing option guarantees attaching to the policies of the merging life funds. These will consist partly of financial options, which have increased substantially in recent years. The 15-year retirement age spread of self-employed deferred annuities, the guaranteed surrender values on deposit administration contracts, the capital guarantees on certain unit-linked contracts, and surrender value guarantees on life policies are examples of this. In addition, a wide range of medical options exist, convertible term assurances being a prime example.

It is probably fair to say that, in one shape or another, virtually all the old-established with-profit mutual life offices now have a wide variety of these guarantees in existence. Although the expected cost of the guarantees is small, there is normally the need for substantial external contingency provisions to reduce the risk of insolvency to a very low probability. These provisions can be covered by the future bonus reserves of the with-profit policyholders (indeed, in most cases, there would seem to be no alternative). A modest additional charge is paid to those policyholders for the cost of providing that risk cover. However, the volume of those provisions in relation to the future bonus reserves may vary substantially between two merging offices, and could alter significantly what might be called the "ruin volatility" of those merging offices.

Policyholders' expectations could be affected. The subject was well described in the paper by Barrow and Ferguson presented to the 1984 Congress. I suspect that the authors of this evening's paper have the point in mind in paragraph 21.3 where they refer to circumstances changing dramatically and effecting bonus and surrender value linkages.

Mr. M. D. Thornton:—When I first heard of this paper, it was little more than a twinkle in its authors' eyes: it is therefore a special pleasure to me to welcome it in its mature state. On reading it I was struck by the phrase in paragraph 1.2, "both from an actuarial and a business point of view". There is an old American definition of an actuary, dating from the time before they trained their own, as a Scotsman with a little mathematics and a strong business sense. No one could so describe a modern actuary but, if it were ever said of us that we were Scotsmen with strong mathematics but little business sense, the Faculty would cease to be the body we know, and the actuaries in our offices would be occupying the back rooms while the managerial chairs were filled by people who did have a strong business sense. The actuarial point of view includes the business point of view and must always do so or else it is mere mathematics.

This brings me to Section 5 in the paper which is a distillation of some of the papers at the Zurich/Lausanne Congress. The paper that I liked best at the Congress on that subject is not mentioned. That was Pilet's paper in which he said, if I understood him correctly, that the value of an office was its market value and no other considerations were worth a docken. The paper was in French, so perhaps conveyed its message more delicately. If you ask a stockbroker the value of a mining share he would not give you an answer based on geological and metallurgical considerations and then mention as an afterthought that they were actually changing hands at a very different price. The value of the share is the price at which they are changing hands, and the same applies to an office. Where you are merging two offices and are employed, as the authors were, to advise both parties, then all the examinations which they do and the considerations to which they devote so much attention are essential. The position is rather different if you are advising one side only. In that case if you base your views on theoretical considerations alone and the sellers, on your advice, part with their office for £x million to someone who then sells it not long afterwards, whether the sale price then is justified or not, for £(x+y) million, you may find that your clients feel that your advice has cost them £y million. You should therefore make sure before you act in this way that your professional indemnity insurance is in good shape.

Actuaries of my generation were taught when we were young (the subject was called "Reversions") that if anyone asks you the value of an interest, you ask him who wants to know and why, and you give completely different answers depending on whether it is someone wanting to sell the interest, someone wanting to buy it, the estate duty office or the Board of Trade, and so on. Much the same applies to the value to be placed on a life office. Our students nowadays, perhaps unfortunately, are not trained in Reversions, and one of the things that we do to show them that the business side is important is to warn them when they qualify as actuaries that, if they are not business men, they are not qualified to give business advice. The profession is poised between two spheres. It must have one foot in the universities in order to ensure the continued development of its techniques but it must also have the other foot very firmly in the market place. I had the privilege of seeing an early draft of this paper and I mentioned to Mr Hunter that I would comment on the phrase in the paper "both from an actuarial and a business point of view". I am grateful to him therefore for having let it stand. After all, we know exactly what he means and the rest of the paper makes it quite clear that both the authors have their feet well positioned and very firmly on the ground.

Mr. C. B. Russell:—I have been involved in a small number of take-overs as an employee, slightly more as an actuary and more as a tax consultant. The latter were particularly beneficial because they gave me the opportunity to actually see actuaries in action in such situations, while in actuarial terms I was partly a spectator. Nevertheless this paper is of great value to me because it is so easy in take-over situations to forget something one ought to be thinking about. In future, whenever I am involved, I shall get out the paper and read through it.

First of all, two definitions which I do not think are actually given in the paper. I would define a take-over as where corporate bodies come into common ownership and a merger where portfolios come into the same corporate body. One of the speakers referred to the absence of mergers in the U.K. recently. That must have been on a different definition because cases of portfolios coming together have been to the High Court in the last few years. At least one was rejected by the High Court. Portfolios have been put together by reassurance after take-over situations. The two may or may not go hand in hand. You may have mergers with take-overs, but take-overs need not involve mergers and mergers need not involve take-overs. I have seen a situation of one life office taking over the life business of a composite with no common ownership between the companies—that was a pure portfolio merger situation.

I would like to say a few words on the pricing of companies. I do not think I can go along with Mr Thornton that the value of something is necessarily its market value. After all the stockbroker would be quite likely to say they are trading at £2 but they are not worth it. If you do define value as stock market price, then that probably does explain recent stock market behaviour because by definition whatever you pay must be right. So there is nothing to stop the market continuing whichever way it is going. I think that some of the views expressed tonight, particularly on pricing, have been perhaps from a slightly Scottish with-profits point of view. In other company I would claim to give a southern point of view; that would be presumptious on this occasion but a very slightly southern point of view. On the actual practicalities of pricing it seems to me that despite what one would expect to be the difficulties, valuing the free estate and valuing the future profits from business in force does not in fact seem to be a real problem. Usually the people on both sides manage to agree on the ball park it is in. The great problem is undoubtedly goodwill. The three methods are referred to in paragraph 6.5. Method 1 and Method 3 amount to putting a value on future business at the current rate. The difficulty with that, of course, is that one may have set production plant in motion or expanded the plant but the new business is not yet coming in. Undoubtedly the seller in that situation will suggest something akin to Method 2 which is to estimate the cost of building up a comparable sales and administrative organisation. I was encouraged to see that the authors do not say that you look at the cost incurred, because the cost may well have been extravagant. I think it was Mr Thomson who said that by definition the goodwill value must be less than the cost of building a comparable sales organisation. Surely that cannot be true. If it were true that setting up a sales force or expanding a sales force is bound by definition to create something worth no more than the expenditure, then it must be right never to expand.

Coming back to the paper the authors distinguish somewhat between welcome, and friendly, take-overs and others. I have been trying to rack my brains for why it is, but the vast majority of cases in the U.K. do seem to be friendly and where it is one insurance company taking over another I would say they are almost always friendly. I suppose the insurance parent is often the lesser evil, but even with other parents, there is not normally outright rebuttal. Often, of course, take-overs fail at a later stage because a price cannot be agreed. In the early 1970's a number of cases failed. I think Howdens tried to take over Nation Life a couple of weeks before the final announcement of the Nation Life problems and clearly in that case it failed because Howdens subsequently discovered things which they did not know at the earlier stage. Sometimes failure is for simple reasons which perhaps ought to be spotted at an early stage. I know one case which failed because the buyer was looking for his rate of return gross. I did not really understand the foreign tax situation, but it was a foreign company and from its point of view it could invest looking at a real return gross. The seller was looking net. An expanding life office is very like a zero coupon bond. If the buyer had started off by saying "I am a non-taxpayer" and the seller said "I am a high taxpayer, do you want to buy my zero coupon stock", they would have known immediately that a price would not be agreed.

I would like to say a few words about my view of what has actually happened to market prices, just to see if anyone will agree or disagree. In the late 1960's and early 1970's prices of life offices and insurance companies became very high. Then there were a number of accidents and the market became very quiet indeed for a few years until the late 1970's when prices began to accelerate and merger activities began to accelerate. That continued until perhaps a couple of years ago with purchasers beginning to think that whatever money had been put into a direct sales force must produce a sales force worth the money. This is the opposite of the Mr Thomson theory that the money put in is by definition the maximum value obtained. I have the impression that, over the last year or so, purchasers have become very much more discerning and are asking whether the money put in really did do anything or whether there is nothing there at all and whether the sales force is ever going to pay its way. So I have the impression that the market is again turning down and perhaps becoming more sensible. I will be pleased to know if there are any other views.

Mr. I. M. Aitken, closing the discussion, said:—This evening the discussion has been both interesting and thought-provoking, interesting because the merging of life funds does not happen frequently in the U.K., thought-provoking because the authors have raised a number of stimulating questions—some have been answered whereas the answers to others will depend upon the circumstances of the particular merger.

Mr Hunter and Mr Jones have gained their experience in the merging of life funds in New Zealand; however, many of the problems are of an actuarial nature and therefore transcend national laws and regulations. Naturally, it is this aspect of the paper which we have been most interested in and concerned about this evening.

In paragraph 2.1 the authors give a number of reasons why one company might look at another with a view to a merger. I would like to add a further one, namely, the wish to improve solvency margins. This is one aspect about which little is said in the paper; however, in the U.K. it is a matter of serious consequence and must be taken into account by any company which is contemplating a merger or take-over. The impact will vary from company to company and depends upon the product range and the estate of that office. However, once the merger has taken place, the larger merged company should have no difficulty in complying with the legislation.

If a company has a substantial with-profits portfolio and a significant estate, it is apparent that the solvency margins will not hinder progress. On the other hand, if a company has a considerable amount of non-profit business and a small estate, this could be an impediment to future expansion. Indeed, one of the main reasons for contemplating the merger could be to answer the problems of solvency.

It is important that at an early stage the purchaser should look at all the financial and legal implications of the take-over. Obviously if it is within the U.K. between two U.K. companies, the legislation will be known. However, if the target is situated in a different country, it is necessary to ensure that the legislation and insurance requirements of that country are investigated thoroughly. Further, legal opinion should be sought on any legislative matters that are not clear.

If the target is a proprietary company, there should not be too many difficulties in ascertaining its value. However, much will depend upon the willingness of the target to merge with the purchaser. If it is to be a marriage of convenience, then the pricing structure will be settled very much more easily; however, if the target values its independence and wishes to remain independent, a long and bitter battle could ensue. For example, in the case of a proprietary company, there could be promises of increased dividends to shareholders. Irrespective of the type of company, there may well be promises of increased bonuses to policyholders. Further, there could be implications from the target that such dividends and bonuses would not be maintained in the merged situation.

In calculating future profits as commented upon by several speakers (Mr Thomson, Mr Forfar) one of the biggest problems must be for the purchaser and seller to agree on future rates of return from investment and rates of expenses, lapse and surrender. Any diversions of opinion on any one of these assumptions will make a very significant difference to the projected new business and consequently the value to be placed upon that tranche of business.

Although much time will be spent looking at the actuarial aspects of the merger, it is important not to overlook staff. There is an old army saying that one volunteer is worth ten conscripted men and this applies in a merger. It is important that the staff of both companies are informed of all steps and kept fully aware of what is happening. This point has been amplified by Mr Field. People do not like the unknown. Consequently they do not like a muddled and unclear picture of the future. As soon as possible it is imperative that staff are informed that their jobs are secure, that they will continue their existing offices or, alternatively, that offices are being merged and, if so, which office is to be used and what the consequences will be for staff as a result of the merger. As the authors so rightly say, the objective in a merger should be to retain all staff, if at all possible.

On a similar theme, it is prudent to advise all intermediaries of the impact of the merger. Will they be able to continue selling policies from the two companies or will these be discontinued, and will there now be a new series of policies? If the intermediary does not receive information guidance, he may quickly move his business elsewhere. Mr Shedden mentioned that he had known a merger to be called off because the sales staff of one company had all left.

In the technological society in which we live the computer systems of the two offices could cause problems. If the two systems belong to different manufacturers, it would seem that there will be significant problems to be encountered. Further, it is not realistic to continue two different systems running in parallel for a number of years. Hence, there may need to be a merger of the computer systems; if so, the costs could be substantial and must not be under-estimated. At the present time, technology is moving very rapidly and it may be wise to consider establishing one new system which will have the capacity to take on the original systems of both the purchaser and the seller.

When a merger takes place in the U.K., Section 49 of the Insurance Companies Act 1982 requires that an independent actuary should prepare a report on the merger. In the investigation, amongst other things we must look at:

1. administration,
2. bonus prospects and other variables which may affect the terms and conditions, and
3. security.

Thus, U.K. legislation is little different from that of Australasia.

The Scottish financial institutions have an enviable reputation for financial stability. This is exemplified in the way the senior officers conduct the affairs of the Scottish life offices. In Scotland in recent years, there has been no merging of life offices. Looking to the future, it seems unlikely that any will take place. However, south of the border there are a number of younger offices which could well be the subject of a merger or take-over. In the circumstances, it is a pity that this paper has not been presented to the Institute of Actuaries. However, it will not surprise me if it is presented in the near future.

I should like to finish by adding my congratulations to those of the previous speakers and I would like to thank Mr Hunter and Mr Jones for allowing us the privilege of reading their paper and listening to the ensuing discussion.

Mr. J. R. Hunter, replying to the discussion, said:—It is indeed a privilege for me to stand in front of you this evening and to reply to some of the comments which have been made and to promise on behalf of Mr Jones and myself that we will submit in writing our thoughts on some of the other statements made.

If I may take a few points up from the opener, I would just issue a caveat to him—he said he had no practical experience of mergers—nor 5 or 6 years ago had we! He warned us that we should have a good look at the various life assurance companies which are trading just now to see which of the companies we felt could survive a downturn in the economy. He instanced the Australian Act and said he liked the Life Insurance Act in Australia because it gave rise to a joint report and that would lead to hard bargaining. I can assure you it is hard bargaining. One of the actuaries realises that he will be working for the other one! But in all fairness I must state that those of us concerned in the two mergers that I have been involved with, had then and still have the very highest regard for each other's work and we get on very well.

Paying for goodwill is obviously a problem which came up with many speakers. How much should we pay for business yet to be written? Mr Thomson suggested a fourth method which related to the yield on the estate.

One of the points which was made later was really in response to something raised by the opener and that was the maintenance of equity in the past. The assumption that we had made in our paper was that equity had been maintained for past generations of policyholders. Certainly in one of the mergers it was felt that one of the offices had been extremely miserable to its policyholders and hence the bonus rate for that office was raised substantially. That, I think, was the point made in respect of one of the mergers Mr Shedden mentioned: a special bonus to one set of policyholders brought the two into kilter and from then on things were more straightforward. Mr Kilgour asked us a few questions and we must reply to them later. Mr Shedden answered some of the questions which Mr Kilgour had raised about a closed fund. One of the problems is what to do with the surplus which eventually emerges in that fund if you do not allocate full expenses to running that small closed fund. There was an excellent contribution from Mr Forfar. Could I just mention here that he was one of those whom Mr Jones and I contacted because the Carr and Forfar paper was just coming through at that time and the work that was done there on bonus relativities proved very useful to us in trying to establish what would happen in our offices. Mr Forfar was kind enough to run his computer model with some of the New Zealand assumptions in it. In New Zealand at that point in time we had a unique income tax situation where the offices were charged tax on the value of the bonus declared according to the A49/52 4½% table. That meant we had very different assumptions from yourselves taxed on "I-E"; but he modified his program and ran some figures off for us. In this Hall it might be proper for me to say how much those of us in New Zealand benefit from that freemasonry of actuaries which exists around the world. We are able to contact people and say: "Look we have a problem which we have never come up against before. Have you any advice on how to go about it? Have you ever seen one like this?" and numerous people were very generous in their help and support, and we were and are very grateful.

Mr Milne raised the point about the reasonable expectation of the staff and said that the cost of staff benefits should be included in the cost of the merger. We have always felt that the benefits of a merger were split three ways—half to the policyholders, half to the agents and the rest for the staff! It is significant that in New Zealand, in one of the mergers, the New Zealand Examiner of Trade Practices raised no questions at all about the security of policyholder benefits, but insisted on statements being made about jobs and job creation in the future. In his view, the merger was to give rise to more job opportunities, not less! Mr Field, from his practical experience, mentioned the staff reactions to a merger and the need to deal with things quickly and resolve them quickly. We fully agree with that. If you have to pay what might seem at that point of time over the nose in certain areas, get it done and get it done quickly and you will settle the staff down. If you are going to go for what seems to you to be the correct solution and that solution takes a long time, it will jeopardise your merger or the flow of benefits thereafter.

Mr Shedden's excellent comments on the three mergers will repay closer study. He raised the very valid point that you must watch out for taxation. If you are going to be charged capital gains tax or if you are going to be charged a transfer tax on transferring the assets between the life funds, you can be up for a very large bill and you must be careful to get the legal work done correctly so that you do not get caught with an unexpected tax.

Fixing the basis for the transfer of assets and tracking their subsequent movement and holding very firm to the basis you agreed is very difficult if the merger takes a long time. Things are sold, asset values change, nobody is quite sure whether the rights issue for this year was really in this fund or that fund, and the computer system is loading it here or loading it there. You have a very big management job making sure you track all the monies in the correct pockets before you merge, far less keeping it tight afterwards. I would agree it is the understatement of the year to say that sales staff tend to leave when a merger is mentioned. Numerous other offices do nasty things like sending video tapes and audio tapes to your agents extolling the benefits of joining them and not waiting until the merger goes through.

The merger of the two larger mutuals in Australia took place because the Campbell Committee which had reported on the deregulation of the financial system, had said: "You can all be free to enter each other's areas, from banks into insurance, from insurance into banking". The two mutuals decided that unless they got together they would not have a large enough capital base to enable them to enter banking if the need arose for that.

From our experience on the cost side, we felt that the initial three costs, the two staffs plus the staff running the merger, reduced after a couple of years to about 1¾ staffs—but you have to work hard on the merger to bring the numbers down quickly.

Mr Ford mentioned the let out clause—that is essential and one of the items which Mr Jones and I proposed when we drew up a section to go in the Life Insurance Act. We also proposed that the Actuary to the merged company should include in his report on the fund's operation for the year a statement to the effect that the terms and conditions of the merger document and the bonus linkage had been carried into effect, or if it had not been carried into effect, why he had changed the linkage. Otherwise there is a danger that publicly you lose track of what is happening, and have no guarantee that the linkage is being maintained and that the policyholders continue to be treated fairly.

Mr Thornton mentioned the strong business sense which is an essential part of the actuarial approach. I would certainly agree with that. The timescale very often means that detailed actuarial work has to go out the window. The question is asked: "By the way, we are thinking of buying or merging with company ABC and would like you to give us an idea of the value". You say: "Well it is of the order of £5m to £15m", and you are immediately laughed at. None of this actuarial nonsense! We want the figure, not £5m to £15m, and you say" "Well, give us three months and we will give you a report which will describe the £5m to £15m much more precisely." That again does not suit!

The next speaker was a tax consultant, Mr Russell, talking about "friendly mergers". In Australia, these are not always friendly. Great defence is raised and this is one of the additional costs of a merger. You may have a staff defending its position to the hilt and feeling that their company is in safe hands, and then a block of shares moves hands and they find themselves labelled as the antagonists. Then they possibly feel they have to move very quickly and get out. There have been ones where it is not easy on staff to accept the merger, having fought against it for a while. You have brought out a very good point there—that we should examine the failures of mergers and take-overs and see why these have not taken place, why these have not been consumated. If you have some examples which we can add to the paper we would be delighted.

Nobody, I think, picked up the request that Mr Jones made at the start. How do you realise the yield when the future profits from this merger are going to come well down the track? How do you get this "20% return" now, when next year's return will be a running yield of 5%? I know that in Australia the Life Assurance Commissioner has said that he does not mind a Zillmer appearing in the valuation of liabilities, but he will not have a deferred acquisition cost appearing as an asset in the balance sheet.

Mr Aitken closed the discussion. I would thank him for mentioning the "solvency margin"; that is one which we in Australia do not face. We have a statutory valuation basis, but not a solvency margin per se. It is yet another good reason for putting two big companies together; to get the synergistic benefit of the lower solvency margin. I think that has covered all the points.

The authors later added a few comments on Mr Kilgour's questions:

1. We would use the statutory or published valuation basis to determine the amount and timing of emerging surpluses.
2. In our experience the value of future new business is significant and often in excess of the value of existing business. This makes arriving at an agreed price very difficult as both parties may have very different views on the likely new business and its profitability.
3. The general profit levels for method 3 are derived from the usual profit testing models with the discounted value of the future profits being expressed as a percentage of the annual premium.