

DIGEST OF DISCUSSION AT CONCURRENT SESSIONS

CORPORATE FINANCIAL MANAGEMENT OF STOCK
LIFE INSURANCE COMPANIES

1. How have generally accepted accounting principles (GAAP) reporting, holding company complexes, inflation, and rapidly changing interest rates required management to re-examine profitability and existing planning?
2. What have been the results of this re-examination in cash flow? Participating business under GAAP? Management performance criteria? Monitoring of results?

Dallas Regional Meeting

MR. LEROY V. BOTKIN: First, I will share with you some of the problems and challenges that we at Continental Assurance have encountered with GAAP reporting within a holding company complex.

A brief description of our holding company organization will help give you a perspective on the environment in which we operate. CNA Financial Corporation (CNAF) has four main areas of responsibility. They are financial services, asset management, real estate, and insurance. The senior vice-president of CNAF in charge of insurance has also been the president and chief executive officer of the several insurance companies within the CNAF complex. The two principal insurance companies are Continental Assurance and Continental Casualty. This insurance segment of CNAF is called CNA/insurance or, in short, CNA/i. The president has a staff whose functions are to coordinate, prescribe standard formats, set time schedules, and so on, for the preparation and reporting of the financial statements for the various insurance companies in the CNA/i group. The influence of CNA/i has been substantial. For example, the Assurance and Casualty companies are now planning the installation of a new cost accounting system which will be compatible between companies and will greatly facilitate the processing of inter-company financial transactions.

Meeting the requirements of CNA/i was, of course, in addition to maintaining the standards and requirements set by our executive vice-president, the chief operating officer of the company. At the time the operating procedures were becoming stabilized, CNAF changed from a holding company to an active management company. The staff was

expanded to include a controller and directors of financial planning and control, internal auditing, and management information services. It soon became evident that they too were going to have substantial influence on the preparation of our financial statements, especially content, form, and timing.

The holding company had several worthwhile objectives. These objectives included improvements in our forecasting techniques, development of meaningful financial indicators, improvements in closing schedules, efficiencies leading to earlier publication of quarterly financial reports, and the like. The main thrust, however, was for monthly financial statements. This thrust will have a tremendous effect on our financial reporting processes, when you consider that it now takes us about five weeks to prepare a quarterly financial statement. We countered this proposal by enumerating the disadvantages of preparing monthly financial statements. Even though it may be beneficial to have monthly reporting for real estate, finance, and casualty companies, it is not necessarily so for life insurance companies. We had to counter the argument that, since reserves are based on assumptions, precision would not be warranted in calculating reserves for financial statements. We replied that after assumptions are agreed upon, they become essentially "locked in," and reserves thereafter become precise amounts. We also pointed out that rolling inventory methods, that is, the valuation of "ins" and "outs," are not suitable for life insurance because the value of the "goods on the shelf," our in-force, is continuously changing. We also maintained that it would be necessary to calculate most of the reserves on an exact basis if meaningful monthly reports were to be produced. An error of 0.1 per cent in our benefit reserves would create a 50 per cent error in our monthly net operating income. However good these and other arguments against monthly reporting may be, they are not going to be good enough. I am confident that we are going to have monthly reporting, and it is a question of "when" and not "if." A task force report is due soon which will delineate the manpower requirements, necessary system changes, implementation schedules, and initial and recurring costs to install and maintain the systems and procedures necessary to produce monthly financial statements.

So as not to be all negative about monthly reporting, I am sure we will reap benefits from it. Among other things, it is going to force us into certain operating efficiencies, perhaps automation of some inefficient manual procedures. It should make our operation a little less hectic at the end of each quarter or year end. Perhaps it will make some

improvement in the quality of our financial reports, probably more in some product lines or lines of business than in others. Surprises, if they occur, hopefully will be detected and remedial action begun at an earlier date. In any event, I will be happy to share our successes or failures with you a couple of years from now.

I will not predict that monthly financial reporting will become a trend for stock life companies within holding company complexes. I warn you, however, that the possibility is there.

It may be beneficial to summarize briefly the financial reports that we prepare quarterly. We are monitored by the results in these reports. Our first report is an income statement and balance sheet which is sent to CNAF for preparation of its consolidated statement. The next report is our Directors' Statement, which contains a balance sheet, income statement, net operating income by major line of business, and some operating and investment statistics. Next is a fairly extensive report, called the "Quarterly Report of Operations" which is prepared for CNA/i. This report from each of the various insurance companies is consolidated at the CNA/i level before being presented to the chairman and management of CNAF. This report consists of a narrative section and a financial statements section. The narrative section covers the following topics: an overview, net operating incomes for the major lines of business, selected sales and conservation factors, cash flows, revised projections, and major activities and current action plans. The financial statement section consists of income statements and revised projections for the company as a whole and by major lines of business. The GAAP income statement, in style similar to page 4 of the Convention Blank, contains year-to-date and quarterly figures together with previous-year figures and a comparison with the targets or goals established at the beginning of the year. The revised projections consist of income statements for the four quarters of the year. Past quarters are actual experience, while future quarters are revised projections and the sum of the four quarters is the revised projection for the year, which is compared with the original yearly target. The financial statements section of our Quarterly Report of Operations also contains cash-flow statements for both the general and separate accounts. These also have year-to-date and quarterly results for current and previous years and the yearly targets. These cash-flow statements with projections are used for making projections of investment income as well as for investment planning purposes.

Once a year we prepare an Annual Performance Report, which is a comparison with ten peer companies, five larger and five smaller than

ourselves. Comparisons are made on net incomes and selected items indicating levels or rates of change in sales, conservation, and expenses. Unfortunately our current peer company comparisons are limited to those on a statutory basis.

The Directors' Report and Quarterly Report of Operations provide information primarily for our shareholders and directors, CNAF, and others outside Continental Assurance Company (CAC). For the executive vice-president and senior management of CAC, two additional financial reports are prepared—the Quarterly Operating Statement and the Quarterly Expense Analysis.

Our Quarterly Operating Statement consists of income statements by line of business, within market segment. The income statements are presented either in an "earned premium" type of format, like Schedule H of the Convention Blank, or an "available premium" type of format, our own concoction, which I will describe later. At the bottom of each of these income statements, by line of business, net operating income totals by product line are indicated.

The expenses in our Quarterly Expense Analysis are presented in several ways. Commissions, general expenses, and taxes are given by line of business within market segment, operating expenses by organizational unit, and functional expenses by line of business within market segment. Our functional expenses follow the Life Office Management Association classifications, and we have participated in the LOMA Intercompany Functional Comparison Analysis for a number of years.

Our life company financial statements are read and shared by many who are not experts in life insurance accounting. This resulted in our developing a new income statement for distribution to CAC's management. Income statements for our group term life and health lines of business have always been prepared in an "earned premium" format. This format is easily explained and is understood by almost everyone. Prior to GAAP reporting, our presentation of earnings to management for our permanent lines of business had been on an "earnings by source" type of format. Thus income was shown as gains from loading, gains from mortality, gains from surrenders, gains from interest, miscellaneous gains, and so on. This method is not understood by everyone. Even actuaries might ask why an income statement would be presented on this basis when the actual numbers on a statutory basis would be meaningless. While this is true, we found that analysis of the trends from year to year was quite meaningful and much superior to an analysis of a revenue type of income statement like the one on page 4 or 5 of the Association Blank.

Our substitute for this "earnings by source" type of statement has been called our "available premium" income statement. It is similar in format to the "earned premium" statement. In essence, that portion of the current premium that provides for future benefits and is retained as a part of the increase in reserves has been eliminated from premium income. Also, that portion of investment income which is interest required to maintain the GAAP reserves has been eliminated from investment income. The "available premium" line in our statement can therefore be defined as that portion of current and past premium receipts that is expected to be paid in the current year as benefits and expenses or to appear as current profits. The line representing the excess of investment income over interest required to maintain reserves has been labeled "excess investment income" and is that which we normally think of as "gains from interest." This treatment, of course, eliminates the "increase in reserve" deduction from the income statement. The itemized deductions for benefits, such as deaths and surrenders, are the incurred benefits less the reserves released by those terminations. The GAAP reserves released, as utilized here, means the benefit reserves less the deferred acquisition expense asset item. For individual life business, surrender benefits less GAAP reserves released has been a substantial positive number in our company. On a statutory basis the opposite is true. Most of the remaining items in our "available premium" profit-and-loss statement are similar to those in a regular revenue or "earned premium" type of income statement.

We are just beginning to use our "available premium" income statement on a GAAP basis, so it has not yet stood the test of time. We hope that it will prove useful for analytical purposes, in addition to being readily understood.

Our desire is to go one step further with our "available premium" statement. If available premium is separated into its component parts, that is, the premium for the current year's death benefits, for the current year's surrender and withdrawal benefits, for current expenses, and for the current year's profit margin, then all the information necessary for the development of earnings by source on a GAAP basis is available. The actual magnitude of earnings by source on this basis should be meaningful along with year-to-year trends.

One additional comment about the development of GAAP reserves and financial statements. It was a two-year project for us, requiring full time for one actuary, part time for two or three actuarial associates, and substantial manpower and machine resources from the electronics department. It was a big job, but not with any major surprises. One

thing that we did not plan for properly was the obtaining of GAAP reserves released on terminations. We later found ourselves waiting for this information before we could complete our operating statements.

I would welcome an actuarial paper on earnings by source for GAAP financial statements. I feel that it would be beneficial and widely accepted.

What have been the effects of switching from statutory to GAAP financial reporting? For one thing, the income statement on a GAAP basis has become dominant in our organization. Few, if any, questions were received about our earnings on a statutory basis at the end of last year. In a supplement to our Annual Report we publish reconciliation schedules between the GAAP and statutory income statements and surplus accounts. We are concerned that the differences between GAAP and statutory statements are correct, reasonable, and explainable. At the end of 1972, our first year for reporting GAAP earnings, there was considerable interest, not only on the part of our management but also on the part of financial analysts, in the magnitude of the increase in GAAP net operating income over statutory. At the end of 1973 there was much less interest in this difference, and I believe that future interest and measurements of the company's financial progress will be determined solely from our GAAP income statements.

One thing that has not lost any significance, as far as I can detect, is statutory surplus. The two principal questions at statement time seem to be, What is our net operating income? (GAAP basis, of course) and What is our statutory surplus? I have no apprehension that statutory statements are going to lose any of their influence concerning their intended primary use, which is to measure the financial stability of companies or to ensure solvency for the protection of policyholders.

Our nonparticipating premium rates are currently established with a profit margin to yield a certain return on the investment made in the new business. This method, based on first-year statutory drain, complicates the difficulty of explaining, if not determining, what the expected level of profits should be on a GAAP basis. Our pricing actuaries are currently evaluating what our profit margins should be and how they should be expressed. A percentage of premium may well be one of the selected standards.

GAAP reporting on our participating business has caused some problems. Our shareholders are restricted to 10 per cent of participating profits before dividends to policyholders. Even with the 10 per cent restriction, the differences between participating net earnings on a GAAP and on a statutory basis will not be substantial if dividends to

policyholders are approximately 90 per cent of the net gains before such dividends are distributed. That statement is true only when the gains are considered on an after-tax basis. Unfortunately, our management was interested in the relative levels of GAAP and statutory earnings both before and after federal income taxes. While the relationship between GAAP and statutory earnings was satisfactory on an after-tax basis, the same could not be said about the before-tax basis. Why this occurs can be seen from a simple numerical example. Assume the following:

Net operating income before federal income tax and dividends to policyholders	\$24
Federal income tax	4
Dividends to policyholders	18
Net operating income	<u>\$ 2</u>

From the above we see that 10 per cent of net operating income before dividends is 10 per cent of \$20 (\$24 less \$4), or \$2, which is the same as net operating income. But 10 per cent of net operating income before federal income tax and the dividend deduction is \$2.4, which compares to net operating income before federal income tax of \$6 (\$2 + \$4). The conclusion is that with restricted participating business, net operating income before federal income tax most likely will be substantially less on a GAAP basis in comparison with the statutory basis, provided, of course, that total participating earnings after dividends to policyholders had been the method of reporting statutory earnings.

Participating GAAP accounting has led to other considerations, such as profits on group term life insurance. Group life is written in our company on both a participating basis with dividends and a nonparticipating basis with retroactive rating credit refunds. Which is more profitable to shareholders on a GAAP reporting basis? Again, the answer varies depending upon whether the return to the policyholder in the form of dividend or rating credit is greater or less than 90 per cent of the net experience on the case before the return.

Our experience with GAAP is new and limited. I am sure that as our experience widens and new relationships or insights are discovered, our analysis and utilization of GAAP financial statements will improve.

MR. PAUL A. FINKEL: The ITT holding company philosophy is to take an active rather than a passive role in the running of its subsidiaries. The holding company is structured to form a grid. The grid

is designed to prevent actions of a subsidiary from passing through the reporting system without drawing the attention of two or more of the holding company's departments—at least one department with over-all responsibility for the running of the subsidiary and one or more departments charged with specific functional responsibility. The ITT subsidiaries are divided into affinity groups of companies. Over-all management responsibility and monitoring of the groups is placed with three executives at New York headquarters. The first executive is the group executive, to whom the individual subsidiaries directly report; he is held accountable for the profit or loss of his group. The second is the product line manager, whose responsibility may cut across groups but is restricted to a single product line. The third is a member of the operations staff department, which monitors the over-all operations of all subsidiaries. These three individuals report through separate organizational chains until they reach the office of the president. The holding company also has functional experts assigned to review the group's activities from the comptrollers' legal, treasurer's, personnel, and public relations departments. These individuals review the activities that affect their functional specialties for their departments.

The ITT system requires the units to engage in full-time planning activities, beginning in February with a top-down outlook for the next five years; climaxing with a detailed business plan in September of the company's planned activities for the following year and, to a lesser extent, in the four years subsequent to that; and culminating in December with a detailed monthly budget by line of business for the coming year.

The units produce weekly and monthly letters and monthly financial statements. Actual results are compared with the budget, and deviations are explained. The prospect of producing monthly reserve figures, especially with the advent of GAAP, may seem horrifying to an actuary. In practice, it is not so. Units either produce monthly valuations or have developed reliable forecasting methods for predicting the reserve increase with only periodic recalculations. Most stock life companies, in any event, must produce quarterly statements. The need to produce a monthly statement and the need to explain variances from the planned activities forces the unit's actuary to look at the profit-and-loss statement in a manner different from that of his accounting counterpart. While the accountant puts together the individual lines of the statement of operations, the actuary simultaneously calculates the same bottom-line figure through a gain-and-loss or a profit-by-source analysis. This is a useful exercise, since it independently verifies the results for

the month and also provides an up-to-date forecast for the balance of the year.

The ITT system is not as formidable as this brief statement of it might indicate. The concept is to instill in the subsidiaries those proper management techniques that the holding company believes are appropriate and necessary for the sound running of a company. A company following the proper reporting and management procedures and having an approved business plan runs virtually autonomously, with reins rarely placed on its activities.

ITT's life insurance subsidiaries have been reporting on a form of GAAP since 1968. The experience gained over that period of time in many countries—Italy, Germany, England, Bahamas, Canada, and the United States—has made the conversion to the rules of the audit guide less painful than that of other companies. A strict interpretation of the audit guide was followed, with two exceptions. The insistence upon acquisition expenses being “both varied with and primarily related to the production of new business” was not followed. It was felt that a strong indirect relationship to production qualified the expense as an acquisition expense. The company also decided that it should defer the lesser of the actual acquisition expenses or the actuarial expense margins contained in the premiums while preserving the full profit objective. The audit guide allows a company to defer all acquisition expenses that are recoverable which could produce nil renewal profits.

In insurance, as in any business, a satisfactory return on capital is the sole means of justifying the amount of risk taken. If inflation substantially diminishes that return, the willingness to assume the basic insurance risk must be questioned. Similarly, as yields on alternative investment opportunities increase, the life insurance company's profit objective must be increased.

For eight years the country has been plagued by inflation, and yet it is doubtful whether we know specifically the rates of inflation that apply to the life insurance industry; certainly for individual lines of business we do not. We talk about inflation as if there were one rate with broad application. However, an over-all rate of inflation does not serve in forecasting the magnitude of the price increases for specific areas.

For instance, in the health care area, the surge in costs may bear little relationship to the over-all rate of inflation as measured by the consumer price index or the gross national product deflator. Today, when the rest of the economy is being deregulated, it is even more im-

portant for us to make some intelligent judgments, not necessarily based on rates and curves no longer applicable.

We have in this nation experienced rampant inflation at the beginning of our wars and at the end of our wars. We have known extreme deflation, and, as recently as 1960–65, price stability. For the better part of our history, however, we have enjoyed modest increases in prices. As measured by the consumer price index, we have moved from a 1.1 per cent rate of inflation in 1962 to 1.7 per cent in 1965, to 2.9 per cent in 1966, to 5.9 per cent in 1970, and, only if there is some deceleration from current levels, to 8–9 per cent in 1974.

The recent past indicates that growth is not inevitable and that it is difficult to achieve sustainable full employment without violation of price stability. The last two years have clearly demonstrated government's willingness to discipline the private sector while freeing itself from the restraints militating against expansionary monetary and fiscal policies.

Barring a prolonged downturn, which cannot be ruled out at some future date, we will live with inflation rates higher than rates ever acceptable in the past. With the specter of double-digit inflation, a 5 per cent rate will soon be characterized as modest.

The actuarial rule of thumb that two forces moving in separate directions offset each other may not be appropriate in the new world of high inflation. Increasing renewal expenses may very well not be offset by higher yields on an after-tax basis. Higher alternative investment yields and greater uncertainty of expense assumptions should require a higher profit projective.

Another major impact of inflation and interest rates will be on the mix of business sold. Nonparticipating cash-value insurance should prove less attractive in a highly inflationary environment. Variable insurance may not be the salvation of the industry, since successful marketing of it requires a positive response to two questions. The first is whether common stock total performance (yield and appreciation) will outpace inflation and interest rates; the second is whether the public will accept this premise. In my opinion, the answer to the first question, on a long-term basis, is yes; however, it may take a number of years of an improved investment climate to convince the public. Term insurance should produce an increasing percentage of sales in this inflationary climate, as will group insurance (with coverage automatically increasing as salaries rise). Participating insurance or plans with excess interest payments based on current yields and automatically adjustable

face amount plans will benefit from higher interest rates and the public skepticism of common stocks as an inflation hedge.

This shift in product mix compounded by the problem of increasing interest rates may produce severe cash-flow problems. Existing bond portfolios stand with large unrealized losses, and, if interest rates continue to rise, the situation may worsen. Increasing use of the policy loan provisions seems inevitable, since policyholders today can buy certificates of deposit at banks at higher interest rates than their cost of borrowing. The new product mix outlined above will generate substantially less positive cash flow than the historical product mix. Variable insurance requires investment of the reserve in a segregated fund; term insurance generates far less cash flow than permanent insurance; excess interest payments and "side fund" plans reduce the cash flow, especially if fully funded.

The prospects of a high inflation/high interest rate environment should force management to reconsider dividend levels to shareholders (conversely, the need for capital contributions), expansion plans, and profit objectives (products generating poor cash flow might require higher profit objectives), as well as the more obvious investment considerations.

Montreal Regional Meeting

MR. HOWARD T. COHN: I would like to comment on the advantages of using GAAP from the point of view of a monitor from either corporate headquarters or holding company staff. The obvious major advantage of GAAP reporting is the ability to compare in a more realistic way the results of a life insurance operation against those of other operations in the group. This is true whether the other operations are limited to financial services or include a broad spectrum of service industries and manufacturing operations. Therefore, in an organization such as ours at ITT, we were at a very real disadvantage measuring the results of our insurance companies against the other operations of the organization on a statutory basis. We have learned through experience that the use of GAAP is a meaningful way to draw realistic comparison of our operations. I would suggest that this would certainly be true of any other organization which has a mixed range of products. Obviously, many life insurance companies today are becoming involved in other forms of financial services. Even though at this point such involvement may represent only a small portion of the total interests of an operation, I predict that these services will grow in the future and,

therefore, the ability to have some common basis for measurement will become increasingly important.

The second point is that GAAP accounting provides a more realistic basis for looking at the financial impact of the introduction of new products, the development of new markets, or even the consideration of acquisitions. Back in the days before GAAP, when management was concerned about the profit-and-loss impact of a new venture on its results, it was very difficult in many cases to justify the new venture on the basis of its statutory impact. But if, in fact, you are in a position to report your net income on a GAAP basis, the whole view of a new venture is more realistic.

The third important point is that the use of GAAP has forced management to recognize the realistic assumptions that have been used in our own rate-making process and which affect the financial results of the corporation. I am referring to interest, lapse, expense, and mortality assumptions. All these factors have always been, in a sense, hidden actuarial mysteries. We have always been aware of the assumptions, and we have submitted reports to management indicating the variations between actual and expected. But I seriously doubt whether the members of management of most insurance companies, unless they themselves were actuaries, were fully aware of the financial implications of the deviations that developed against those assumptions. I do believe that GAAP accounting has forced a recognition of those assumptions and will allow management, as it becomes used to working with GAAP results, to understand the financial impact of the deviations. Once that is accomplished, the management of an insurance company will be much more enlightened and will be able to direct its attention to those factors which are vitally important to the financial soundness of the company. Management will recognize some of its problems at a much earlier date than it would have if those deviations had been less forcefully presented to them.

Finally, I would like to make one comment on the contrary side. Even though I am a strong endorser of GAAP accounting, I would like to point out that it is absolutely essential, as we go forward in looking at our results on a GAAP basis, that we never for a moment lose sight of our statutory results. I can tell you from experience that, especially if you are involved at a holding company or a corporate management level, it is easy to lose sight of the statutory results. Managers and comptrollers are beginning to focus on GAAP results and are looking at those results as representing the real financial position of the company. In fact, however, I think it is our responsibility always to be fully aware

of the statutory accounts and to make sure that management is aware of the statutory position. I would point out that this is not only important for the financial soundness of the company and the necessity of meeting regulatory requirements; it is also the final determinant in your ability to pay dividends to a parent company or to shareholders and in establishing the need for capital contributions. This is true whether you are looking at a life insurance company as part of a larger group or are looking at a division of a life insurance company, such as a group insurance or a variable annuity operation.

CHAIRMAN JOHN J. BYRNE: I find that hard to understand. Certainly, in ITT the primary financial monitoring device is consolidated earnings per share, and those earnings per share are GAAP. How, in fact, do you keep your attention on statutory results? Surely on your monthly monitoring reports you have a column for income for the current month, a column for income for the year to date, a column for how that compares with last year, and probably a fourth column for how that compares to plan. You do not duplicate all four columns on a statutory basis, do you?

MR. COHN: It is very simple if you keep in mind the necessity of having statutory results available. You can develop all your reporting systems so that they produce the statutory results and then show the adjustments from statutory to GAAP. The adjustment is brought down before tax, and then the tax implications are shown.

CHAIRMAN BYRNE: I think that we all told ourselves good words about continuing to focus on statutory earnings once we went to GAAP. From what I have seen, it is contrary to human nature, and I do not think it is likely to happen. I am not even sure that I understand why it is that desirable, except on the balance-sheet side.

MR. JOSEPH H. DOWLING: As most of us know, the Wall Street community was one of the prime motivating forces for the development of GAAP. It was also the Wall Street community that made the biggest hoopla when it came out. Those of you who like to look at indexes will find that the index for life insurance stocks hit its high the day that GAAP was made official. From that point on, analysts and investors had to take another look at the new accounting. I think most of you appreciate that statutory earnings are very high quality earnings. Prior to GAAP everybody had been saying that, since statutory earnings were

high quality, the adjustments were also high quality and the total adjusted earnings were high quality. But one day someone asked, "What have we done?"

What had really taken place was this. We introduced a new language in GAAP. All accounting systems are really languages through which we express points of view on a company. Companies and corporations, however, are much too complicated to be looked at on only a single facet. A business enterprise is like a diamond: you approach it in a number of different ways, and you get a number of different views. GAAP and statutory accounting are somewhat different points of view on the financial facet of the corporate diamond. When we went over to this new language, everybody wanted it and everyone believed that he knew precisely what this new language, GAAP, meant. What each of us did not know was that the other fellow's definition of GAAP was not the same as our own. So now we really have no such thing as GAAP. We have approximately 1,200–1,400 versions of GAAP in the United States, and we have near-chaos. The last few research reports that I have read on life insurance stocks do not even mention GAAP! The opening comment on one began: "Looking at the last five years' history of statutory earnings. . . ."

CHAIRMAN BYRNE: The reason we have GAAP is that the financial community kept nagging and influencing us. Now we have it, and the financial community does not seem to be very comfortable with it. They are going back and looking at statutory as if it were a prestige item.

MR. DOWLING: We finally have GAAP and have told management to write their company story in GAAP. Some have written a very credible story, and some have not! First, I am not sure that what we in the life insurance industry are calling GAAP is the same thing that is being called GAAP in other industries. I think that there are some variances in the basic theory between what the audit guide defines as GAAP for life insurance and what is applied to industry broadly. There is nothing quite so frightening as looking at a life insurance company's statement, for example, and seeing a 12 per cent corporate tax rate applied in the GAAP figure. One might become nervous about this, and become even more so after reviewing some of the treatments of capitalized expenses. I remember one balance sheet where the net worth of the company was about \$100 million and the capitalized deferred acquisition expense was \$134 million. That may be comforting to some people, but it is very disturbing to me.

I think that we are going through a procedure within the industry of reordering the analyst's view of integrity in accounting. Those companies which approach GAAP from a conservative point of view are now getting good marks from the analyst, and those who took the first chance to puff up their earnings are getting a different reputation.

CHAIRMAN BYRNE: Everybody says that they approached it from a conservative point of view. Have you ever talked to a comptroller who didn't start out the conversation by saying, "Of course, we approached the deferred acquisition cost from a conservative point of view"?

MR. DOWLING: Most of them believe what they are saying. I don't think that there was any deliberate malevolent intent to puff earnings by overcapitalizing.

The other part of the capitalism problem is the length of period over which the expenses are written off. I find it difficult to believe that business sold through the newspapers or through an unstable sales force has a thirty-year life.

I also find it difficult to believe that it is conservative, if you write participating business in New York State, to ignore the New York State limitation on stock company earnings on participating business. Yet this is being done. So conservatism and quality are very often in the eyes of the beholder, and fortunately, we do not all see the same thing.

I believe that those of you who can get a copy of some of the recent pronouncements on GAAP by the Canadian actuaries will see a more rigorous treatment built into their approach to GAAP. I would also suggest that you may want to go back and take a second look at your own company's statements. If you change your GAAP assumptions this year to a more conservative basis, and then let your old business run off, the quality of your GAAP earnings will go up, on the average, over time. I do think, from this point on, that those companies which continue a liberal approach of capitalizing large amounts of home office salary expenses are going to be ignored in the marketplace by the analyst. It is too bad, because, if you look at the average company, a very small percentage of the total earnings are actually the capitalized acquisition expenses. Yet, unfortunately, the company's entire earnings will be viewed as having the quality of the deferred acquisition item.

The concern is not what the numbers will be, because they are fairly predictable once standards are established. The concern bears more on the meaning behind the assumptions chosen, and what each company's choice means about management's expectations for the future. Now that

companies have some freedom in their accounting positions, we are getting some very interesting and disturbing views of how they see themselves.

If we had tried to line up the companies in advance and predict which would be conservative and which liberal, we would have been wrong more often than right. Again, malevolence is not involved. For example, I think that Wall Street has always treated the southern debit companies as well-run, conservatively managed companies. Yet some of these companies were quite liberal in their GAAP accounting. This surprised and embarrassed a number of analysts who were not expecting it. For the time being, the average analyst's opinion on GAAP is a somewhat muted one. I think that for the next year or so you are going to find Wall Street watching, waiting, and getting into it in detail. I would hope that as managements, analysts, and investors become more comfortable with GAAP, the quality will go up, and Wall Street can and will accept GAAP without today's fears.

The signature of a national accounting firm may not give comfort on this matter. Among the big eight accounting firms, there are wide variances in their approaches toward GAAP. One company with which I have been involved over the years had a fight with its accountants because the latter were relatively more liberal in their approach to GAAP and wanted the earnings to be higher than the company wanted to report. There is no uniformity among accounting firms or in some cases among offices of the same accounting firm.

CHAIRMAN BYRNE: I have had a contrary experience. I was impressed with the knowledge and disciplines that our auditors, Coopers and Lybrand, exhibited. I do not mean to single them out, since I have had little experience with the other big eight firms.

MR. DOWLING: When the use of GAAP is introduced in any industry, as has just been done in the movie industry and the building industry, there are differences between what was reported in the past and what the accountants now say should be reported. We have more companies in this industry and therefore more points of view. Thus, by definition it is more difficult to determine the amount of expense which should be capitalized as acquisition expense and to determine the proper amortization of that expense for life insurance companies than for companies in other businesses such as the movie industry where there are only a dozen or so companies. I do not think it is that much more diffi-

cult in this business, but we decided to make it that much more difficult. I think that we overdid the complexities.

MR. COHN: At ITT we paid a good deal of attention to applying the principles in the insurance industry consistently with their application in the other industries. We fought the battle of what expenses should be deferred with our own comptroller's department before it was ever exposed to our auditors. We have tried to take the position that we felt was consistent with GAAP as applied to other kinds or types of operations within our total corporate structure.

When you have noninsurance operations as part of an insurance company, such as a mutual fund operation, and you are using GAAP for the life insurance elements, you also use GAAP for the noninsurance elements of that profit center. ITT was on what was considered to be a GAAP basis for that business prior to the introduction of the audit guide requirements for life companies. Thus the precedents were set at an earlier date. In the mutual fund business we do not have deferred excess acquisition expense as we know it in the life insurance business. But we have given thought from time to time to creating compensation schemes that would develop a life insurance type of commission payout, which would have then focused attention on this problem. We have never, in fact, done it. I believe that there are a few funds that do it, but I frankly do not know how they account for it.

MR. ERNEST J. MOORHEAD: The actuarial profession as a whole has been involved in GAAP in two phases. The first was the response by the Joint Actuarial Committee on Financial Reporting to the original exposure draft of the AICPA audit guide, described by Mr. Corbett in *TSA*, XXIV, D730-D735. The second has been the work of the Academy Committee on Financial Reporting Principles, in furnishing information for the practicing actuary and also in discussing unresolved questions with the AICPA and the Financial Accounting Standards Board.

Now that the Academy committee has produced several Recommendations and Interpretations for use by actuaries who are preparing life insurance company financial statements, it is desirable that we learn what value these have been found to have and what work actuaries would like to see the Academy committee undertake. If these Recommendations and Interpretations are not useful, the actuary should make his specific criticisms and wishes known to the committee chairman.

MR. DOWLING: I would suggest as a first step that the Academy committee look at the accounting of other industries. I think that we are overcapitalizing and overdeferring. I do not believe that you can get the right perspective when your whole time is spent looking at your own industry and comparing seventeen hundred companies.

The basic concept of GAAP for life companies is parallel to "completion of contract" accounting. For instance, in the building industry, if one had a ten-year contract, one basically tried to smooth earnings evenly over the ten-year period. The contracts are basically bilateral contracts, so that the assumption of a set time period makes sense. In the life insurance industry we actually sell a unilateral contract, so there is the question in my mind whether or not we should be capitalizing as much or deferring for as long a period as we now do. It is not done in other unilateral contracts.

A second thing which makes me uncomfortable is having GAAP policy reserves below cash values. I would hate to see a bank come out with a financial statement which says that they know they have a hundred million dollars on deposit but they are only going to carry eighty million dollars as a liability because no one is going to claim it this year. We have a parallel situation in life insurance, but we do not have parallel accounting treatment. I would rather see us move more toward bank accounting, where, if we owe people a certain amount of money, we establish liabilities for that much.

Also, I would like to see a very strong statement by the Academy on deferred taxes and a very strong statement on participating business.

CHAIRMAN BYRNE: There are some things in the recent announcements of the Canadian Institute which seem like wishful thinking in terms of our situation in the United States. For example, section 1.1 states that only one reserve system should be used to meet the requirements of all users of financial statements. It is impossible to reconcile our systems into a single set of financial statements. There are too many audiences to satisfy: the NAIC, the New York Stock Exchange, the federal government, and so on. We will probably have two separate balance sheets forever, and it probably ought to be that way.

The other critical point in the Canadian release is section 4.3, which says that the choice of assumptions, including the amount of acquisition cost to be deferred, is the responsibility of the actuary. This is conventional wisdom with which it is hard to argue, but to me this is one of the cruxes of the matter. This responsibility is slipping away from the actuary. In fact, some people would say it has already slipped away

from the actuary. In fact, some people would say it has already slipped away from the actuary. Perhaps this is an area on which the Academy could focus. Perhaps the answer is some tighter definitions, so that we will not lose our credibility.

MR. DOWLING: One or two large companies which are Phase 1 companies and, according to the AICPA, need not set up a liability for deferred income taxes have decided to set up the liability to preserve credibility with Wall Street. The final result we are looking for is earnings available for dividends. In a case where taxes have to be paid before dividends are payable, I think there is the responsibility to include a deferred tax liability. Also, this is consistent with other industries which set up such a liability even when they are not currently paying taxes.

One thing that bothers me at the current time is the cash payout ratio of taxes paid versus GAAP earnings. It is really quite low. I would not be a bit surprised to see the Treasury Department look at us as a source of future revenue. If they do, companies that are not now showing a fairly high tax rate will have to show a decrease in earnings as the Treasury Department changes the ratio. I think that when you are at a 30 per cent tax rate, or above, you are fairly safe. But companies showing 10-12 per cent tax rates have a number of exposures, and one of them is this possible change in tax laws.

CHAIRMAN BYRNE: How do we at the Travelers use the management information that flows from a financial control system, what are the details of the reaction mechanism, and how does the reaction mechanism work?

We use monthly financials; monthly income statements. Many corporations are combined into four profit centers. It is incredibly detailed work, but it does get done. It is expensive; we have a huge team that does it crisply and with discipline. About fifty pages of detailed financial information on all the corporations in all the profit centers, coupled with about another thirty-five pages of narrative from each of the profit center heads and major activity heads, come out in a large document about twenty-one calendar days after the month is over. The reaction mechanism in our organization tends to be mostly one-on-one. That is, our chief executive officer, who is an actuary, studies that material carefully with his staff. Then we go back into the profit centers and activity centers on a one-on-one basis as opposed to large management review meetings.

MR. COHN: At ITT our whole financial control program is built around our business planning process. The business planning process is one which requires a great deal of effort within the ITT organization and is used by all the various companies in all the diverse fields within the corporation. One of our big challenges when we first entered the financial service area was to determine how we could apply that business planning process to an insurance company and other financial service operations. The biggest point which I want to make is that business planning for an insurance company is very much an actuarial process. Business planning cannot be successful without a very serious effort on the part of the actuarial people within the life insurance organization. The business planning process in our company begins early in the year when we set objectives for each of our operations. This is a top-down kind of view of the operation.

Then, once those objectives are accepted, we move into the business planning process. After a series of reviews and negotiations at various levels, this plan finally reaches a review with the corporation's top management and is ultimately accepted as that company's plan. It is a five-year planning cycle, but obviously the greatest emphasis is on the next subsequent year. Part of the business planning cycle involves the development of a very detailed budget by month for the company's operation for the next twelve months.

As we move into the planning year, we then have an elaborate system of financial and managerial reports which are designed primarily to measure the actual results against that budget. The two important reports are the comptroller's monthly report and the unit manager's report. The comptroller's monthly report lays out the actual financial results against the budget and shows the variations, explaining them to the best of the comptroller's ability. In the second important report the unit manager comments on major deviations in results. He develops programs to correct the problems or capitalize on the opportunities which are identified as a result of the reporting process. After these reports are received, they are reviewed in considerable detail by those people at corporate headquarters who are responsible for monitoring the operations of that particular unit. Toward the end of the subsequent month, we have a monthly operating review.

This is the point where, in contrast to the Travelers' approach of one-on-one reviews, we tend to have larger group reviews. The key management people from the operating unit, and the key headquarters people who are responsible for monitoring the operations of that unit, get together. They, having had the benefit of the previous reports sub-

mitted by the comptroller and the unit manager, discuss the programs that have been set forth by management to either correct the problems or capitalize on the opportunities.

I think that the basic key to success of this type of system is how you react to it. All the planning and all the financial reports are meaningless unless you finally get down to a point of action. In our operating reviews we always finish with what we call "action assignments." An action assignment is a program which was identified in the course of the review and which is directed toward the solution of a problem or the capitalization of an opportunity. The key elements that go into an action assignment are a clear identification of who is responsible for that assignment and the date by which it is expected to be completed. A very simple example is the identification of expense overruns. The action assignment would probably be accepted by the comptroller. He would be given the responsibility to carefully review all the expense items and identify which measures should be taken to get the expenses within budget. No minutes are taken at these operating reviews. Nothing comes out of them but action assignments.

The review meeting is by unit and is held once a month for each unit. Mr. Geneen does not sit in on any of these reviews. After the detailed operating reviews in each of the units within each of the groups, there is a summary review conducted by Mr. Geneen and other top management at ITT. This is a meeting at which the group executives report to ITT's corporate management the outlook for their group in total.

MR. DOWLING: One thing that Mr. Cohn did not mention, in discussing how ITT differs from many companies, is the fact that each of the comptrollers in the individual units reports to the corporate comptroller's staff. Their futures and their pay raises are a function of what the corporate comptroller thinks about them, not what the president of the particular company that they are involved with thinks about them. As a result, there is high integrity in the internal numbers in the ITT system.

Some of the companies I see have a reporting system whereby the company presidents get together and each of them tells what is going on in his own operation. It could almost be called a "cronyism" session. I think that shades of meaning may be added in those meetings that are not available in the ITT comptroller systems. You have to remember that from Wall Street's point of view there are two aspects to financial control. One is that *you* know what you are doing, and the other is that we as analysts also know. In the long run, of course, the more damaging problem is the situation where *you* don't know. I think those companies

that have lost reputation and credibility have done so not because somebody deliberately lied to an analyst but rather because a company official reported numbers which he had no real basis for reporting. For example, he says that he thinks sales are up, and he finds out later that sales are down.

There are four types of responses that can be made to the kinds of problems which ITT brings out in their action assignments. The first is to make some change in the method of operating the company. The second, unfortunately, which occurs in a few companies, is to change the budget. The third, which I have seen in only one company, is to change the accounting system. The fourth, and the most usual response to bad numbers early in the year, is procrastination: "It's only March, we've got nine more months to get this ironed out." The great thing about the ITT system is that it does not tolerate procrastination. The company gets instant responses. If you think of your own staff meetings, all too often I am sure you have heard the view that a problem will correct itself. Usually it simply does not work that way.

I would like to make two comments, which I think are pertinent, on control systems. One is that financial control systems can become fetishes in companies. If you think about it, the financial control system is a tool to help the people run the company. In some companies it appears to have reached the point where the people are tools to help the numbers. That is a total transposition in relationships. The second point is that a company that is well managed will be helped by a control system. A company that is poorly managed will be assisted somewhat by a good control system. But a poorly managed company will remain a poorly managed company if the company produces good control numbers but does not react properly to those numbers.

MR. COHN: All of our reports show the prior year's figure, the expected result, and the actual result. We do it for month and year-to-date. The variation from plan to actual gets the bulk of the insight. In setting the planned numbers, we have been careful to compare the planned results against the previous year's results. So we assume that there is some integrity in the planned numbers, and we are then able to focus on the planned results against actual results.

Where a comptroller does not report to his president but reports to a comptroller at headquarters we have a situation that is a controversial issue even within our own organization. When incidents occur, we obviously have to correct the situation. We have to find comptrollers who are compatible with their president and yet are always mindful that

they do have this direct responsibility back to the comptroller at headquarters. The comptroller simply has to serve two masters. This is a difficult road that takes a special type of person. We make a special effort to find the right people to function in this type of environment.

High interest rates and the corresponding inflation that goes along with them are certainly extremely important in all of our pricing philosophy and pricing practices. How many of us have recently reviewed the interest assumptions that were used in our last round of product pricing and considered the impact of current interest rates?

First we have to recognize the higher assumptions and the higher costs that are associated with those assumptions and find the effect of these changes on our asset share studies or model-office projections. More important, we need to focus on our corporate profit objectives. This is obviously true if we are using an internal rate of return as a measure for our profit objective for individual products. If we were using an interest rate for an internal rate of return, looking for a return on invested surplus, that rate might be woefully low in view of today's environment, considering the risk associated with that investment. You might very well conclude that, unless we had higher profits, you might find more attractive alternative investments. You certainly have to focus your attention on this factor and bring that consideration to the attention of your management.

It might be that this analysis would demonstrate that a higher rate of return would lead to higher prices for permanent life insurance rather than lower prices as is the current practice. The irony is that we seem to be intent on reducing the cost of delivering our services, while virtually every other product on the market today is at higher cost. I think very few people would be surprised if they saw insurance costs increasing rather than decreasing at this point in our economy.

In terms of establishing over-all corporate objectives, it is also important to consider higher interest rates, especially if you measure your results in terms of your return on equity. You have to question today whether or not your over-all operation is yielding sufficient return.

My final point is that high interest rates in today's environment are especially important if you are evaluating the use of corporate funds for capital expenditures. You have to evaluate that capital expenditure in terms of current interest rates and alternate investment opportunities.

MR. DOWLING: The identical decision being made in different departments of a company concerns the allocation and utilization of resources. The agency department head in developing a new agency, the

actuary in spending time and money on computerization or product design, and the bond or stock department making an investment are all basically taking the financial resources of a company and employing them. There should be a certain parity relationship between these decisions. A number of years ago, when high-grade bonds were yielding 3 per cent, it might have been reasonable to get 8 or 9 per cent on money invested in the life insurance business. But now you can get 10 per cent, without risk, in the bond market. You have to get a higher return on money to justify the risk inherent in developing new insurance. The concept of risk and risk premium for making management decisions probably should become part of your tools.

To give you a scale of numbers that may be appropriate at this stage of the game, if you can get 10 per cent on a bond, you might want to get 15–18 per cent on what looks to you like a pretty safe business decision. If the decision does not look particularly safe, you might want to build in an anticipated 25–30 per cent return. You have to do it. You are handling someone else's money, and you have to get a commensurate return on his investment—commensurate, that is, with the risk.

Some of you may want to go back now and look at your return on equity. There are a few life insurance companies today earning 6 or 7 per cent on shareholder's equity that, if you took the capital and put it in the bond market, could return 10 per cent. You can identify yourselves by the fact that your stocks are now selling at half of book value. It is natural when interest rates go up that the earnings yield you get on equity investments should also go up. Price-earnings multiples are the reciprocals of earnings yields. When interest rates go up, then the multiples should go down. Nine is a pretty fair multiple for this current interest rate environment, which is where the Dow Jones industrial average is this morning.

CHAIRMAN BYRNE: I have a real problem with just how valuable return on investment is as an operational tool. We try to use it. We have corporate objectives slated in return on investment. We try to break it all down through the profit centers and even the different product lines, and it is awkward. I think it makes a reasonable corporate objective, but to take it from there and make it into an operating tool becomes very difficult. I confess that I have not been successful with it.

MR. DOWLING: I do not think it is possible to do it on an absolute basis, but I think it is good discipline to consider it.

PENSION FUNDING ASSUMPTIONS

1. What are realistic assumptions, and what will the IRS approve concerning interest assumptions? Withdrawal assumptions? Salary scales? Social security benefits?
2. How does one relate the set of assumptions with the assumptions for benefit increases under social security or the Canada Pension Plan?
3. For salary scale and withdrawal, how much credibility is given an individual company/industry/geographic results?
4. What valuation is (or should be) used for assets of a pension plan?
5. How valid is the traditional assumption of stationary population?
6. How does the type of benefit plan affect the assumptions?
7. What differences in assumptions exist between corporate and public plans?

Dallas Regional Meeting

DARREL J. CROOT:

Asset Valuation Methods

Both House and Senate bills in the proposed pension legislation require recognition of the market value of pension fund assets. This generally has also been a requirement of *Accounting Principles Board Opinion No. 8* and, to some extent, of the Internal Revenue Service. I think it is generally accepted that the method of valuing assets for pension plan purposes should not in any way impede the management of those funds to achieve best results. A method in which the actuarial value is heavily dependent upon realized gains and losses means that trading in the portfolio can affect annual pension plan contributions. To avoid this, our firm (A. S. Hansen) has developed methods which are based solely on the market value of the funds. One which particularly appeals to me uses the fund market value except when the change in market value between successive years exceeds the assumed rate of investment return by a specified percentage.

Salary Scale

Traditionally, when actuaries think of using conservative assumptions, they generally mean using lower than expected rates of interest, mortality, and so on. In salary scales, however, conservatism means projecting future salary increases in excess of those which might be typically expected. How many of us have ever used a salary scale which we could truly say was conservative?

The best salary scales are developed from experience by studying

actual pay histories of individuals. In one study, we developed age rates for each year of the study. These were then adjusted by the effect on the increases of inflation in each year. The resulting rates were combined and a specific allowance added back for inflation. The same amount of inflation was anticipated in developing the investment return and social security increase assumptions.

Where data are not available, rates can be estimated by a three-step process:

1. First develop a scale which reproduces average pay levels at each age.
2. Add to this the expected increases attributable to productivity—approximately 2-3 per cent over the last forty years. The average annual increase in hourly wages from 1933 to 1973 based on Bureau of Labor Statistics data was 2.6 per cent after adjustment for inflation.
3. Add whatever level of inflation (if any) is considered desirable.

This generally leads to a scale equivalent to $4\frac{1}{2}$ – $6\frac{1}{2}$ per cent per year compounded.

Social Security

The effect of social security benefits can have a substantial influence on pension plan costs even though no future inflation is factored into the assumptions. I think it is unlikely that social security benefits would be unchanged even if there were no future inflation. There are sophisticated techniques for estimating social security taking into account the new law and projecting inflation and productivity increases. However, we often use a simple method that relates the benefit to the base.

An examination of the maximum social security benefit payable in each calendar year since 1951 shows that, for employees expected to earn at or in excess of the base during most of their career, benefits have fluctuated between a low of 24 per cent in 1951 to a high of 31 per cent in 1965—generally averaging 28-29 per cent of the base in the year in which the employee retires. Projections of the Social Security Administration are also consistent with this result. Other appropriate percentages can be derived for employees with earnings less than the taxable wage base.

We then project the rise in the base. Since 1951 the social security wage base has increased approximately 3 per cent per year after adjusting for the effect of inflation. Hence, if we were using a noninflationary salary scale and investment return assumption, we might simply project that the wage base would increase 3 per cent per year and the benefit would be 28 per cent of the wage base in effect in the year in which the employee retired. This is also consistent with projections of future benefits made by the social security system.

Turnover Rates

I suspect that turnover rates customarily used by many actuaries probably understate the true incidence of turnover by a large factor—particularly at the older ages. Turnover rates, of course, should reflect the relative weighting of the liabilities released and therefore properly should be lower than raw rates. We have found that the easiest way to reflect weighting is to use benefits rather than lives as the exposure unit in a turnover study.

I do not know whether turnover rates have always been as high as they appear to be today and simply have not been recognized or whether there has been an increase in recent years. Perhaps actuaries were not overly influenced by the hope that establishing a pension plan would reduce turnover. Nevertheless, we find that actual turnover rates are much higher than is usually assumed. A study we recently completed for one client shows that for a male salaried group we should expect only 8 out of 1,000 (eight-tenths of 1 per cent) to remain employed from age 20 to age 65. Five would become disabled, and 7 would die while employed. The remaining 980 can be expected to terminate prior to retirement—although a substantial number of these will have a vested benefit when they terminated. We had been assuming that 763 would terminate prior to retirement under the old assumptions.

However, at age 40, our study showed that 213 out of 1,000 expected to stay to retirement, 36 became disabled, 74 died, and 677 quit. I am embarrassed to admit what our prior assumption had been. In this case, the effect of change in assumptions which included a substantial increase in the salary scale to reflect an anticipated future inflation rate of over 3 per cent, an increase in expected investment income of $\frac{3}{4}$ per cent, and the change in turnover resulted in a 30–40 per cent decrease in annual cost. The effect of the salary scale rise more than offset the effect of the interest rate rise, so that the entire cost reduction was attributable to the increase in termination rates.

I think the important point here is that when we estimate the cost of vesting—and this will be of increasing importance if the new pension legislation comes into effect—assumed termination rates that are unrealistically low will result in our substantially underestimating the cost of vesting to our clients.

Most actuaries have felt that turnover rates were lower for salaried employees than for hourly employees. In the absence of better information, it was not uncommon to assume that the rate for salaried employees was half the rate for hourly employees. Recent studies that we have made show that turnover rates are higher for hourly employees at younger ages

and short durations as expected; at older ages and longer durations, however, turnover rates are higher among salaried employees than among hourly employees. Once an hourly employee has been with the company for ten years, he is likely to be there forever, whereas there seems to be more mobility among older and longer-service salaried employees. Perhaps this is a change in the working patterns of salaried employees, or perhaps it is something that has always been there.

Retirement Rates

In my opinion, prior experience rates of retirement are the worst possible estimates of future retirement rates. Past experience will result in substantial understatement of future experience. It was not uncommon fifteen years ago for the average age at retirement to be 67 or 68, even though the normal retirement age was 65, and this was assumed in projecting retirements for the employees retiring today when determining pension costs.

Retirement rates are affected by such factors as the level of retirement income, both relative and absolute; the availability of other employment after retirement; the type of job; the level of social security benefits at the time the employee retires (and the age at which they are payable); and the socioeconomic climate. Prior experience is generally of little help in evaluating these factors.

Variances

There are a variety of circumstances where different actuarial methods or assumptions may be appropriate. As a general rule, I believe that best results will be obtained by using the most realistic expectation of future experience for each assumption rather than trying to offset understatements in one assumption with overstatements in another. There are obviously situations, however, in which this practice has not been followed and may not be appropriate. As a result, variations in method or assumptions may be required.

First of all, it is necessary to determine the purpose of the actuarial valuation. Most of the time we do not stop to think about this. It is just something that needs to be done every year or so. When additional calculations are needed, for example, for estimating costs for a change in benefits, we simply dump the new formula into the top of the computer and the answer comes out the bottom—untouched by human hands or brain. As a result, we may overlook the fact that the actuarial method or assumptions that are appropriate for the present plan may be totally inappropriate for estimating the cost of the change.

As an example, one of our clients recently considered changing his career average plan to a final pay plan. The assumptions being used for calculating costs of the present plan generally gave reasonable results. The salary scale was a little low, but the turnover rate was much too low and the interest rate probably about right. When we estimated costs for establishing a final pay plan, it was obvious that the salary scale would not provide an appropriate estimate of this cost. We revised the assumptions to those which we felt to be realistic—not only the salary scale, but also the turnover and social security assumptions. The resulting costs for the present plan varied only slightly from those under the preceding assumptions, but the new salary scale was appropriate for estimating the cost of the final pay plan, whereas the preceding salary scale would have substantially underestimated the cost.

When *APB Opinion No. 8* was first issued, many of our clients were concerned about showing a large unfunded liability for vested benefits. A variety of methods were used to minimize this liability, and in planning benefit improvements consideration was given to the effect on vested liabilities. By now, it seems that most of our clients attach relatively little significance to it. Occasionally an auditor will question changes between successive years, but clients are not concerned.

However, where it is desirable to reduce the liability for unfunded vested benefits, there are several techniques that can be used. The simplest in some prior years—prior to the current market collapse—was to use the market value of the fund if a different actuarial value was used. Another method is to calculate the liability at the equivalent of single premium annuity purchase rates. The current market value of pension funds must be used if this is done. This means that bonds as well as stocks must be valued at market, even though book value is used in the regular valuation.

If a fund has a large bond portfolio, the unrealized loss on the bonds can partially offset the reduced liability resulting from a higher assumed interest rate, and I will not say anything about year-end 1973 stock prices. The effect is illustrated by one of our clients. Their pension costs are determined on an entry age normal basis. The actuarial value of assets was \$50 million. Their unfunded past-service liability based on a 5 per cent investment return was \$32 million. The unfunded vested liability based on 5 per cent was \$7.7 million. Increasing the assumed rate of return to 7 per cent eliminated the unfunded vested liability, even though the market value of their assets was \$3 million under the actuarial value.

It may be appropriate to value retired lives at a lower rate of investment return than active lives. If a company feels that pension funds

backing retired lives should provide for the emerging liquidity to meet benefit payments without relying on contributions, it might, for example, invest in bonds or other types of investments with a cash flow matching benefit payments. The rate of return on such investments could be lower than the remaining fund invested totally in equities, for example. In this case, if the retired life liability were determined on a lower rate of return, then the changing composition of the pension portfolio theoretically would match the changing interest requirements as employees retired. A lower rate of return can also be used where annuities are purchased from an insurance company at retirement.

Sometimes clients are reluctant to use a salary scale or investment return assumption that they feel is right because of problems in justifying it to other management members or the board of directors. Most of us assume, as a rule of thumb, that a 1 per cent interest gain will offset about a $1-1\frac{1}{2}$ per cent salary scale deficiency. This is like most other rules of thumb—good when one does not have anything better, but perhaps grossly in error in a given situation. If a conscious decision is made to balance off interest rate and salary scale, it is a good idea to test periodically the appropriateness of this rule of thumb.

There are many other instances in which variations in assumptions are needed, and I would like to hear some other ideas and experiences, but first let us look at changes in actuarial method or at least in techniques. When a company is selling a plant or division whose employees are covered under a larger plan, it may be necessary to allocate a portion of the assets to these employees. The easy way is simply to take the existing valuation and allocate costs. However, if the plan is fully funded on an entry age normal basis, assets will exceed substantially the liability for accrued benefits. Hence the company may only want to transfer assets sufficient to fund accrued benefits. The accrued benefit liability may be less than 50 per cent of the entry age normal liability.

Another reason for using different actuarial methods may arise where a plan has had substantial gains over a period of years. If a funding method is used that recognizes gains immediately, the maximum tax deduction must be reduced by each year's gain. For accrual purposes, gains must be averaged or amortized in accordance with *Opinion No. 8*. One client wanted to keep accruals down but, because of a surplus of available cash (this was obviously some years ago), wanted to make a much higher contribution to the plan than his accrual. Hence we used a unit credit method with gains averaged for accrual purposes but a frozen initial liability entry age normal method for contributions and tax deductions.

Another client had an unusual situation in which different amortization

periods were used for gains from funding past service. This client has large recurring but unpredictable gains. Under *Opinion No. 8*, such gains can be spread over a period of ten to twenty years. Because of profit considerations, we decided to spread gains over a ten-year period even though continuing to amortize the unfunded past-service liability over forty years.

We use a projection valuation method for a number of our clients. In most cases the clients do not use the projection valuation for filing tax deductions, although it has been used and accepted for some clients. It is usually easier to simply make a second valuation on a conventional method for tax purposes.

The projection method does require additional assumptions which affect the future characteristics of the work force—entry age and salary distribution and size of work force, for example, as well as funding objective. Traditional actuarial methods do not lend themselves to projecting the effect of future changes in the population, but these will have an effect on future costs. Hiring policies may change because of changes in the nature of business. For example, new employees may require college education, whereas in prior years most employees only had a high-school education. Starting salaries may be upgraded to reflect hiring a higher-caliber person. We made a study for one of our clients who uses a projection method which showed that the average starting salary increased 5.6 per cent per year over a ten-year period, whereas general wage levels increased only 3 per cent, all of these being adjusted for inflation. Subsequent analysis revealed a substantial shift in hiring policies, and this required adjustments to the assumptions which increased costs. The entry age normal method costs which are used for tax deductions did not show this change, but we expect that they will if the company's hiring practices continue as they have in the past.

Changes in the size of the covered group also can have significant effects on costs. For example, tests were made for one client valuing a typical flat dollar plan. The cost was \$533 per year per employee if we assumed a constant work force. If we assumed that the work force would grow at a rate of 7.35 per cent, which was the average annual increase in work force over the last five years, the cost decreased to \$356 per employee. Projection of a decline in work force of 2.5 per cent per year resulted in a cost of \$579 per employee. The client is now wrestling with the problem of how his company will grow—and probably wishing we had not brought up the subject.

I will close with the comment that the unit credit or accrued benefit cost method may produce more nearly level costs as a percentage of pay-

roll than the entry age normal method, even if experience follows assumptions, because the past-service cost is usually amortized as a constant dollar amount but payroll is continually increasing. Even though unit credit normal costs rise, the increase is offset by decreases in past-service costs when total costs are expressed as a percentage of payroll.

JERRY L. BROCKET:

Inflation-related Factors

The actuary providing services in the pension area in both private retirement systems and public retirement systems probably will have his work influenced in the future more by inflation and the expansion of social security benefits than by any other factors affecting pension funding assumptions.

The combination of an offset retirement plan and the 1972 social security amendments that provide for an automatic increase in benefits triggered by increases in the consumer price index suggests that an investment return, a salary scale, and social security projections be set in an inflationary environment. However, it is primarily the social security projection that requires an introduction of inflation in these assumptions. By an offset plan I mean a retirement plan that is integrated with social security benefits in effect at the time of retirement of a participant.

Determining pension costs by projecting social security benefits up to thirty years into the future requires salary scale and investment return assumptions that are decidedly different from the traditional actuarial assumptions of several years ago, wherein salaries might have been projected to increase at the rate of 1–2 per cent per annum and investment returns projected at the rate of 4–5 per cent per annum. Inflation causes the difference.

The actuary is then faced with deciding what inflationary rate to implement that might be applicable for the next thirty years. Salary scale and interest rate assumptions also need to be selected. In any event, I believe that actuarial assumptions should be considered in the aggregate which in combination give realistic costs with a margin for conservatism.

The establishment of the inflation-related factors is, in the final analysis, a decision for the client to make, and it is the actuary's job to communicate to the client what may result from various sets of actuarial assumptions which are to be established. In my experience, a client prefers to have retirement plan costs stable as a percentage of payroll.

We then find the actuary in a position of projecting rates of inflation up to thirty years into the future, and this has a bearing on the investment

return, salary scale, and social security projection assumptions. What might some of these combinations of assumptions be?

If we adopt a premise that in a noninflationary environment the salary increase of approximately 2 per cent per annum and an interest rate of approximately 4 per cent per annum might be realistic, we can then add factors that recognize inflation. For example, a long-term inflation rate of 3 per cent per annum would result in a combination of actuarial assumptions of 5 per cent on salary scales and 7 per cent on interest rates. A year or so ago economists were predicting an inflation rate of 3 per cent per annum; however, now an inflation rate of from 4 to 5 per cent per annum may be more realistic.

We have completed tests on various combinations of actuarial assumptions and find that the greater the factor for inflation that is introduced, the lower the retirement plan costs will be, assuming that all other variances continue unchanged. Where there is a constant difference between the interest rate and the salary scale, the costs in a typical plan will decrease as a percentage of payroll as the interest rate increases. For example, retirement plan costs computed on the basis of salaries increasing at the rate of 2 per cent per annum and an investment return of 4 per cent per annum will be higher than if the assumption is made that salaries will increase at the rate of 6 per cent per annum and the assets in trust will earn 8 per cent per annum.

Another critical factor in pension costs levels is the spread between the salary scale assumption and the interest rate assumption. A spread of $1\frac{1}{2}$ per cent or less may be considered to be a conservative spread. A spread of 2 per cent may be considered to be realistic with a margin of conservatism, while a spread of 3 per cent or more probably removes all elements of conservatism in the actuarial assumptions and probably will result in the pension plan's showing costs that increase in future years as a percentage of payroll.

How might the Internal Revenue Service view these inflation-related assumptions? It is our understanding that the guidelines of the National Office with respect to interest rates and salary scales provide that either a salary scale greater than $3\frac{1}{2}$ per cent per annum or an interest rate less than 5 per cent per annum is subject to question. Presumably, the more conservative factors are acceptable if they can be defended successfully. However, another pension reviewer has stated that salary scales with a built-in margin for inflation would not be acceptable. I question the validity of this pension reviewer's position and wonder about the basis for it. It could be that this pension reviewer is relying upon a sentence found in a paragraph entitled "Increases in Compensation and Salary

Scales" in the *Bulletin on Section 23(p) . . . of the 1939 Internal Revenue Code*. This sentence reads as follows: "In no case will a salary scale reflecting changes in the compensation of a group of employees during a period of abnormal increases be acceptable."

Table 1 shows some assumptions that could be implemented. Also

TABLE 1
ENTRY AGE NORMAL COST AS A PERCENTAGE OF PAY
Current Salary, \$15,000; Entry Age, 30 Years; Date of Hire, 1974;*
Retirement Age, 65 Years (Year 2004); Retirement Benefit =
(Final Compensation $\times 1\frac{1}{4}\%$ - PIA $\times 1\frac{1}{4}\%$) $\times(35)$

Example	Social Security PIA Increases Annually According to CPI	Social Security Tax Base Increases Annually According to Wage Base	Salary Scale Increases Annually According to:	Investment Return	Pension Cost as a Percentage of Pay†
(1)	(2)	(3)	(4)	(5)	(6)
1.	0 % ¹	2% ²	3% ³ ‡	6% ⁴ ‡	3.46% (mfc)
2.	2 $\frac{1}{2}$ ¹	5	5	7	3.43 (mfc)
3.	3 ²	3	4	7	2.68 (nm)
4.	3 ³	4	5	8	2.64 (nm)
5.	3	5	6	8	3.41 (mfc)
6.	4	5	5	6	3.97 (vc)
7.	5	5	6	7	3.65 (mfc)
8.	5	7	9	11	1.76 (nm)

* Dates of hire prior to 1974 do not affect results.

† "mfc" refers to actuarial assumptions with margin for conservatism; "nm" refers to actuarial assumptions with no margin for conservatism; "vc" refers to actuarial assumptions with very conservative margin.

‡ Probably most suitable to IRS.

¹ Official social security assumptions, no merit increase. The annual PIA amount is \$20,064.

² 0% productivity, 1% merit. The annual PIA amount is \$17,323.

³ 1% productivity, 1% merit. The annual PIA amount is \$19,669.

etc.

CONCLUSIONS

The observation of the results in column 6 in regard to the relationship of a salary scale in column 4 and the actuarial interest rate assumption in column 5 enables one to draw the following conclusions:

1. The lowest pension cost on this table results from a 9 per cent salary scale and 11 per cent interest rate assumption.
2. The highest pension cost on this table results from a 5 per cent salary scale and 6 per cent valuation interest rate assumption.
3. A 2 per cent spread in the two sets of assumptions at the lower levels gives higher pension costs than the 2 per cent spread of the two sets of assumptions at the higher levels.
4. A 3 per cent spread in assumptions gives lower pension costs than a 2 per cent spread in assumptions.
5. An appropriate set of inflation-related factors may be given by example 2, 5, or 7.

shown (col. 6) are abbreviations which denote the over-all effect of each assumption: (vc), very conservative; (mfc), contains margin for conservatism; (nm), contains no margin.

Variances

In the discussion of the variances of pension funding assumptions, the actuary probably will base his assumptions in the aggregate on the type of retirement plan and the environment in which investments are made. Where a retirement plan does not tie in directly with movements in social security benefits or is not a final pay plan, the establishing of actuarial assumptions is a relatively easy task. The use of the more traditional actuarial assumptions, such as interest rates ranging from 4 to 5½ per cent per annum and salary scales ranging from 1½ to 3 per cent per annum, will in many situations give satisfactory results, in that retirement plan costs will remain stable as a percentage of payroll.

On the subject of pension funding assumptions for municipal as opposed to corporate clients, I have found generally that the combination of interest rate assumptions and salary scale assumptions is higher in the municipal area than in the corporate area, that is, it is more common to find interest rate assumptions from 6 to 8 per cent per annum and salary scale assumptions from 4 to 6 per cent per annum in the municipal area. There are a number of reasons for this. One is the pressure for benefits being made available on the higher interest rate assumptions. Also, where an actuary is working with a board of trustees composed of many individuals with varying opinions rather than with one president or one chairman of the board, and where many municipal retirement systems employ a professional investment counselor, the lines of communication seem to be less confusing if an interest rate assumption (with compatible salary scale assumptions) varies within the range from 6 to 8 per cent per annum in lieu of lesser rates. I believe that the spread between interest rate assumptions and salary scale assumptions may be even more critical in the municipal area than in the corporate area. That is, where the interest rate assumption exceeds the salary scale assumption by at least 3 per cent per annum, there is a near-certainty that pension costs as a percentage of payroll will increase in future years—a happening which may not be desirable.

Municipal retirement systems involve turnover and retirement experience which is uniquely different from that of corporate plans. I have found that studies to determine the turnover and retirement experience applicable to individual groups given helpful insight into the true underlying experience. Frequently, decisions must be made as to withdrawal

and retirement rates on the basis of data considered too sparse in the corporate area. On the other hand, rapid employee expansion and plant closings, which are not unusual in the corporate area, do not normally occur in the municipal area.

Setting actuarial assumptions so as to achieve pension costs that are stable as a percentage of payroll may or may not involve the introduction of a factor for inflation. I have observed over a period of years the results of actuarial valuations on numerous retirement plans wherein the actuarial assumptions were established without an element of inflation and the pension costs are stable as a percentage of payroll. However, as previously discussed, where a retirement plan has its benefits tied to the moving social security benefits, which in turn are increased as a result of inflation and in turn feed inflation—that is, social security benefits are now and will continue to be inflationary—actuarial assumptions probably will emerge in a makeup different from that of the traditional assumptions established during the 1950's and 1960's.

Complications—Countries Other than the United States and Canada

In company pension plans frequently encountered in many foreign countries, there are many plan provisions which are quite different from those which are typical in the United States and Canada. These plan provisions give rise to the need for making actuarial assumptions in the pension plan costing which are not required in the typical plan in the United States and Canada. For example, in many European pension plans, not only are disability benefits payable in the case of total and permanent disability but very often a proportionate benefit is also payable upon the occurrence of partial disability. Therefore, the normal disability rates that might be used in the situation involving only benefits payable on total disability would not necessarily be applicable in the case where benefits are payable both on total and partial disability.

Another example of difference in plan provisions is that in many foreign pension plans it is customary to provide under provisions of the pension plan for pensions payable on the death of the employee (either preretirement or postretirement) to his widow and dependent children (orphans). In order to value the expected cost of such pensions, it of course is necessary to make assumptions as to the family composition at the time of death.

These are two major differences in pension plans which give rise to variation in actuarial assumptions; there are certainly others. One is in the retirement age: men very often have a normal retirement age which is higher than that for women. This requires that assumptions as to rates of

decrement at the various ages be appropriately adjusted to reflect this difference in retirement ages.

It is the prevailing practice in most foreign countries to have the pension benefit formula allow for a 100 per cent deduction of the single person's social security pension. Also, it should be borne in mind that in many foreign countries, especially in Europe, social security pensions amount to a considerably higher percentage of final salaries than do social security pensions in the United States and Canada. Generally speaking, the social security pensions in many foreign countries amount to 50 per cent or more of final pay taken up to a relatively high covered earnings limit. This has implications in the selection of assumptions as to future levels of social security benefits.

Generally, in most of the foreign countries in which private pension plans are prevalent, little restriction is placed on the choice of assumptions made by the actuary in performing pension valuations. However, there are certainly exceptions to this general rule. For example, a pension plan funded by the "pension reserve" medium in Germany must not have its actuarial costs determined on an interest assumption which is any lower than $5\frac{1}{2}$ per cent per annum.

The nature of government regulations in foreign countries is, if anything, the opposite of the regulations in the United States. Whereas in the United States some pension contributions have been challenged by the IRS on the grounds that they were based on unduly conservative actuarial assumptions, this is not the case in other countries. If anything, there is a concern in the other direction—namely, that the pension contributions be sufficient and, therefore, based on relatively conservative assumptions. Also, there seems to be no restriction on building into the actuarial valuation assumptions a direct allowance for inflation.

Proposed Pension Legislation in the United States—Effect on Assumptions

Minimum funding requirements of a fully trustee private pension plan have been included in both the United States Senate and House versions of the proposed pension legislation. The provisions are generally the same in both bills and, therefore, will probably emerge intact in the final bill.

Each employer must make annual contributions that satisfy minimum funding standards. These standards are determined by the employers' "funding standard account." In particular, an "accumulated funding deficiency" is avoided if the "funding standard account" is greater than zero at the end of each year. The funding account is maintained on a cumulative basis, so that an employer may build a cushion by making

contributions that are greater than necessary in earlier years, thereby requiring lesser contributions in later years. Each year the normal cost and the required installments to amortize unfunded past-service liabilities (and experience losses) are subtracted from the funding account, and each year the employer contribution (and installments on experience gains) will be added to the funding account.

No long-range problems are foreseen for a typical, well-funded plan advised by a competent actuary. However, marginal plans, plans that are improperly managed, and plans that are not funded in accordance with the proposed law will be severely penalized by taxation and, in extreme cases, by outright termination. In this case, situations can arise where the assets of the company may be tapped to fund minimum pension benefits.

One of the more interesting implications of minimum pension funding requirements will be in the municipal retirement system area. A strong possibility exists that the next step of the legislative committees that work in this area will be to review municipal retirement systems. Where they find municipal retirement systems being woefully underfunded, the next round of federal legislation may be to force the compliance of municipal retirement systems with minimum funding standards. This will be an interesting event to observe.

THOMAS H. DANCY:

Mortality, Disability, Turnover, and Retirement

The assumptions presented and the approaches used are based on our own experience and on some discussion with other Toronto consulting actuaries. The decrements of mortality, disability, withdrawal, and retirement are perhaps less affected by Canadian conditions than are most of the other factors we are discussing.

There is a pattern of approach common to all four decrements which is somewhat dependent on size of case:

1. Does one examine the experience of the particular plan to determine the decrements?
2. Does one use convenient standard tables?
3. Does one ignore the decrement if this is conservative or make a broad approximation if the benefit is minimal?

Let us consider the decrements in order of likely occurrence. First, on this basis, would come withdrawal.

WITHDRAWAL

The effect of withdrawal is dampened to some extent in Canada by the existence in four provinces of mandatory vesting and locking-in of bene-

fits upon attainment of age 45 and completion of ten years of service. The same restrictions apply to a number of interprovincial industries governed by the federal Pension Benefits Standards Act.

In view of the fact that most salaried pension plans in Canada and many of the hourly plans involve an employee contribution of 5 per cent of pay per year, the termination assumption is of little consequence except for final average plans. This is because the employee pays for all of his pension benefit on a unit credit basis well into his forties, by which time most plans provide for vesting. Theoretically, for final average salaried plans, withdrawal after age 45 should be taken into account because of the difference between earned and projected benefits for service to the date of withdrawal. This is rarely done in practice.

Significant variation in termination rates can be expected for groups with at least 500 lives, and this might be considered a starting point for actual experience if the effect on funding would be significant. Below 500 lives and down to about 100 lives, standard assumptions would probably be utilized. A common basis is to take termination rates from the report for the Ontario Committee on Portable Pensions of 1961. There is a choice between light, medium, and heavy.

Just a few figures to illustrate. The light scale starts at age 25 with a withdrawal rate of 10 per cent, which drops by age 30 to 5.6 per cent, by age 35 to 3.2 per cent, and by age 40 to 2.2 per cent. Up to age 35 the medium termination rate is double the light termination rate and the heavy termination rate is about double the medium, that is, quadruple the light rate. Above age 35 the differential narrows steadily, so that by age 45 they all have a rate of about 2 per cent, which recent practice has modified to zero because of the vesting requirements. Typically, the light termination rates might be used for male lives and the medium termination rates for female lives, with a possible shift of one scale to heavier termination rates for hourly employees or for an industry with generally rapid turnover.

A very light scale is also utilized in practice for smaller cases where some recognition of the chance of turnover should be made. Such scales tend to start at about a 5 per cent chance of termination, that is, about half the light scale at the younger ages grading to a zero rate of termination at age 45. The very light scale might seem an unnecessary refinement, but when it is considered that experience deficiencies must be funded over a five-year period, there is additional impetus for the actuary to be conservative.

This same factor tends to encourage omitting allowance for turnover for smaller plans even, say, up to 200 lives, because the termination rates

will be erratic and the gain may well be needed to offset losses from salary increases greater than expected.

It is interesting to note that, although terminations are very much dependent on both service and age, the scales generally used in practice are functions of age only.

MORTALITY

A second most likely decrement prior to retirement is by death. In the absence of a widow's benefit, the effect of the mortality table chosen is relatively minimal. This is largely, of course, because of the fairly minor variations in mortality rates over the active employee age spans; also, the effect on the employer is considerably diminished because of the necessity of returning employee contributions plus interest. While it is common to use a projection scale after retirement or even to study the pensioner mortality for the largest clients, a static table such as the *GA-1951* would generally be used prior to retirement. For convenience, females would be rated down five years.

On some plans, widow's benefits are included, but these are limited in Canada by the Department of National Revenue regulations to a percentage of the pension earned to the date of death (60 per cent is generally acceptable). The financial effect is heavily weighted to the older ages, and for this reason, although benefits commonly cease upon remarriage, such a contingency is not taken into account in the valuations.

The question of discrimination by sex is, of course, under review by the authorities and may lead to insistence on a spouse's type of benefit. This, together with the growing survivor income benefits field, may well lead to even fewer pension plans having a widow's benefit.

DISABILITY

The third decrement prior to retirement is disability, which in Canada is limited in amount to the pension benefit for service to retirement but based on salary to the date of disability. Most plans do not provide disability benefits or limit the benefit to accrued pensions. Thus the benefit is substantially limited at the younger ages, and at the older ages the disability benefit has about the same value as an early retirement benefit. Accordingly, where there is a disability benefit, it may be covered by an arbitrary increase such as 10 per cent.

For larger plans, say a thousand lives and up, where some stability in experience can be expected, somewhat more accurate calculations are made. Two common bases are the 1952 intercompany insurance experience and the Railroad Retirement Act 1962 experience. After disability, recovery tends to be ignored in practice and the heavier mortality is

recognized by an age rating scaling down as the age of disability advances to the normal retirement age.

RETIREMENT RATE

The fourth decrement, namely, retirement, has in recent years become the most challenging one to actuaries. The effect of the auto industry pattern plans is not really known, and for this reason reliable experience still is not available. There is considerable financial effect to the employer, since a relatively safe retirement assumption might cost \$1.00 per hour, while a less conservative but still reasonable assumption might cost only 50 cents per hour.

In one settlement an experimental sliding scale was developed as follows:

Age	Utilization	Age	Utilization
50-54.....	15%	58.....	50%
55.....	25	59.....	55
56.....	40	60 and over.....	60
57.....	45		

On the salary side the picture is somewhat clearer and can generally be handled by the use of a single age based on a weighted average from past experience tempered by any changes in policy. Age 62 is commonly used with an age as high as 64 if it is not expected that an early retirement benefit would be taken regularly. Another rule of thumb is that 50 per cent of those eligible for early retirement will make the election, with the balance going at age 65.

Subsidies in a favorable early retirement calculation factor are generally ignored because any reduction tends to discourage utilization. For example, the common $\frac{1}{2}$ per cent a month is fairly accurate for an interest assumption of $4\frac{1}{2}$ per cent but is inadequate by today's standards.

Retirement beyond age 65 is generally not counted on in calculating retirement rates.

DONALD S. GRUBBS, JR.:

Actual termination rates vary substantially by both age and length of service. Most actuarial valuations are done with termination rates based upon age alone rather than with select and ultimate rates. Since relatively little reserve is released on termination at earlier durations compared with the amount of reserve released at later durations, any termination rates based upon age alone should approximate the ultimate rates of a select and ultimate table.

A growing minority of insurance companies and consulting actuaries are using select and ultimate termination rates in pension plan valuations. Most of these are not based upon the actual experience of the particular group. A relative handful of pension plans have made actual select and ultimate studies of their termination experience. Several select and ultimate tables based upon such studies are included in my *Study of the Cost of Mandatory Vesting*, published by the United States Government Printing Office for the Senate Committee on Labor and Public Welfare.

Use of termination rates based upon age alone rather than select and ultimate rates may give reasonable results for determining the total cost of a pension plan but may give very misleading results about the incremental cost of vesting under such plans.

A number of actuaries determine the current cost and the accrued liability for disability benefits for active employees as a stated percentage of the current cost and the accrued liability for normal retirement benefits for such employees. Considering the magnitude of the item, such an approximation appears warranted, provided that it is clearly described in the statement of actuarial method and assumptions.

Studies have been made of the actual incidence of retirement under negotiated plans offering exceptionally liberal early retirement benefits. The Committee on Retirement Plans may be able to arrange for publication of the results of such studies in the near future.

Montreal Regional Meeting

DUDLEY FUNNELL:

I am glad that our discussion concerns itself specifically with "realistic assumptions," because I believe that the profession has now fully realized the difficulties it gets itself into in communicating valuation results to clients if we use compensating but unrealistic assumptions. Indeed, it has been my experience that the practice of using low interest rates and ignoring inflation in the salary scale often leads to strange results when compared with the use of realistic assumptions which one would expect to produce the same answer. Experience shows that, although two bases may show similar results under some circumstances, they can produce extremely different results under others, that is, the assumptions will not compensate under all circumstances. Furthermore, our work loses credibility with the client if he thinks that our basic assumptions are unrealistic.

I would like to emphasize that we are making assumptions as to the future, and that these assumptions should not be determined solely by

looking at past history. In these times of accelerating change, it is extremely difficult to forecast the future with much confidence, but certainly to do so purely by reference to past experience is a practice which we as a profession cannot endorse.

As an example, I have often heard it said that very few employees take advantage of early retirement conditions and that therefore we should assume that there will be virtually no early retirements in the future. I contend, however, that although inflation may reduce the attraction of early retirement, the introduction of indexing of pensions on a significant scale will remove much of the sting from this factor.

I believe personally that it will be the normal practice for a considerable proportion of the population to retire prior to age 65 within the next ten, or even perhaps five, years. This aspect of course is important not only in actuarial valuation but also in union negotiations and in manpower planning.

We should recognize similarly that the rate of turnover in staff has increased greatly in the past few years. This certainly is true in Canada, where the introduction of generous unemployment insurance benefits has had considerable impact. Clearly, it could be misleading in Canada to use withdrawal assumptions which reflect the average experience over, say, the last ten years. But I understand that the experience in the United States has been different and that turnover is low.

It seems to be generally accepted that there is a strong correlation among bond yields, cost-of-living increases, and earnings indexes. Experience over many years has suggested that bond yields on new money exceed increases in the cost-of-living index by 3 per cent or more per annum, and it is generally believed that the difference is likely to be as much as 4 per cent per annum in the future, because of the anticipated continuing shortage of capital—particularly if we assume some credit for bonds other than government bonds.

Experience also has shown that increases in the earnings index have on the average exceeded increases in the cost-of-living index by approximately 2 per cent per annum. However, this difference has apparently been decreasing in the United States, where I understand that the average difference over the last twenty years has been 2.2 per cent per annum but over the last five years only 1.4 per cent per annum. It has been demonstrated that the projections of costs and benefits under social security are very volatile when such an apparently small difference as these two assumptions are used.

It is certainly understandable that this difference should decrease, because the improvement in productivity has gradually been whittled down

and, furthermore, the greater part of the increasing productivity has gone not to increasing real levels of pay but rather to improving the environment. There seems to be a larger difference in Canada than in the United States. It seems, therefore, that the bond yield may exceed increases in the earnings index by, say, 2 per cent per annum.

In a paper presented to the Canadian Institute of Actuaries last year, Peter Morse and I suggested that one might expect an average yield on future investments of perhaps 7 per cent per annum, if we ignored the additional yield that could be obtained through superior investment performance. This rate may look low by today's interest rates, but we believe that there is likely to be, in due course, some reduction in interest rates and in rates of inflation. This would lead us to believe that we should make allowance for inflation of salaries to the extent of perhaps 5 per cent per annum, in addition to the normal basic salary scale. It would suggest that, where the plan provides for indexing of pensions, an allowance should be made for increases in the cost of living at the rate of 3 per cent per annum.

These last two factors would also have to be used for projecting the benefit to be obtained from government plans, and I understand that there has been considerable discussion in the United States concerning what should be thought of as a realistic projection of social security benefits.

It is also vital that the actuary value the assets of a pension fund by a method which is consistent with the valuation of liabilities. This means that a value must be placed on the assets which represents fairly *the present value of the future proceeds of the present investments*, discounted at the valuation rate of interest. That is to say, we should project the future proceeds and then discount them to the present time at the valuation rate of interest.

This will mean that, when fixed-income securities are considered, only by chance will the value equal either book or market value. Indeed, the use of market value would mean that the valuation rate of interest is equal to interest rates currently available on the market. At the present time, I would certainly expect to use a value above market value, because my valuation rate of interest would be below current market rates of interest.

In valuing equities, it seems to me that we should start with market value but adjust it (1) according to whether the market is high or low at the valuation date when measured against a trend line and (2) according to the sensitivity of the particular portfolio to changes in the market,

which is usually referred to as the beta coefficient. For instance, if the market at a point of time is 10 per cent below the trend line and if the beta coefficient is 0.9, then I would suggest valuing the equities at 9 per cent above market value. The rationale for this is that we would expect the market value of these equities to increase by 9 per cent and, over and above that, to yield at least the valuation rate of interest into the future. This procedure has the advantage of smoothing out variations in the market, although a long-continuing upswing in the market, for instance, would be reflected because it would affect the trend line.

I would like to make one more point. I have a feeling that by using, in the valuation balance sheet, a simple term like "the fund," which automatically seems to suggest the use of book value or market value, we have tended to mislead not only our clients, the auditors, and government authorities, but also ourselves, as to what the figure is intended to represent. I suggest that we should use a phrase such as "present value of future proceeds from present investments." I would like to emphasize that the resulting value could well exceed both book and market value.

A. C. MC CALLUM:

Traditionally actuaries have made assumptions regarding the future based on the experience of the past. This process has worked well enough for mortality rates. It used to work well for the interest assumption, if we go back far enough in history. It never worked very well for the withdrawal assumption, but actuaries solved this problem by deliberately erring on the conservative side and allowing gains to emerge on this score.

Let us now examine more critically how this process has worked out in the past. What major errors have resulted from it? What are its prospects for success in the future?

The approach resulted in some actuaries' being overconservative in their mortality assumptions during the 1950's. The rates of decrease in mortality set forth in Messrs. Jenkins and Lew's paper of 1949, when they introduced the 1951 Group Annuity Table, were based on the experience of the 1920's, 1930's, and 1940's. Later experience revealed that these rates of decrease were too high for the 1950's and 1960's. However, this error in forecasting now appears trivial in comparison with the margins existing for other assumptions.

Since World War II the rates of interest available on fixed-income securities have risen dramatically. Actuaries, basing their assumptions on the past, have lagged behind this trend and understated future yields by wide margins. This tendency was accentuated by higher and higher

proportions of common stocks appearing in pension fund portfolios and by their good experience until recent years. The underestimating of future yields turned out to be fortunate. By the same process actuaries had underestimated future salary increases, and the two underestimates were offsetting—at least insofar as plans of the final pay type were concerned.

Now I believe we are at another crossroads, having recently entered a period of much higher inflation than we have been accustomed to. Assumptions such as 5 or 6 per cent for interest and 3 or 4 per cent for salary increases are not realistic for this new era—unless we dismiss inflation as a very temporary phenomenon. Here we come to the first problem. Is it a part of the actuary's role to be an economist and predict such things? Or is it his role merely to examine the past and predict the future from it? I think that his best role is neither of these.

In order to give his client more insight into the problem, the actuary makes multiple valuations on a variety of assumptions. He might demonstrate that the present contribution rate could support the plan if salary increases ran at 10 per cent per annum and the interest earnings were 9 per cent per annum. Possibly, at that particular time, fixed-income securities could be purchased to yield that return, and the recent experience on equities had been poor. Is it the actuary's role to make recommendations regarding changing the mixture of fixed-income and equity securities in the pension fund? Again, at least from my understanding of established North American practice, I believe the answer is no. And, if the fund is heavily invested in equities and the experience of investment return, at least when measured to recent dates, has been low, the actuary is unable to satisfy himself that a high yield assumption is justified. An examination of the correlation between yields on equities and inflation gives him no comfort. An examination of reasons why the equity market is presently low leads to something of an impasse—is the actuary in a position to assess whether current investors are giving too much weight to these factors?

In conclusion, it is my feeling that the actuary can best solve these actuarial assumptions problems, and play a role for which he is qualified, by making himself a part of a team consisting of a representative from the client's financial branch, the fund's investment manager, and the actuary. In this way all the necessary skills can be brought to bear simultaneously on the problem and the client placed in the position where he can make the necessary decisions, and assume the necessary risks, based upon the best possible advice.

JOHN R. WILLIAMS:

I would like to discuss the questions of what assumptions are realistic and what the IRS will approve concerning interest assumptions, withdrawal assumptions, salary scales, and social security benefits.

First, looking at interest rates, there is an IRS ruling (Revenue Ruling 63-11) to the effect that the rate should be at least $3\frac{1}{2}$ per cent if used in conjunction with a mortality table not less conservative than the GA-1951 Table projected to 1960. (Several other tables were specified.) The ruling also states that the interest rate used should not be substantially below the average rate credited by an insurer during recent years in the case of deposit administration group annuity contracts.

The same revenue ruling, however, states that it is not essential that each individual assumption used be reasonable but that the combination should produce reasonable results.

This seems to give the actuary a wide choice of assumptions. Currently my company uses $5\frac{1}{2}$ per cent interest as being a comfortable rate. We are using 6 per cent in a few cases but resist going above this rate. About six months ago we had a discussion with the IRS concerning the use of $3\frac{1}{2}$ per cent interest on a large case. We demonstrated that gains and losses over the last five years had about offset each other, and the IRS withdrew its objection. Evidently it is continuing to look at the total result rather than at any one assumption.

Since withdrawal rates tend to decrease the maximum tax deduction, the IRS is not overly concerned about high termination rates. The IRS will question the absence of withdrawal rates when a high salary scale is being assumed. We use withdrawal rates from the *Actuaries Pension Handbook* and generally use T-3 to T-5 scales for normal industrial companies, with the female rate often being one table higher. We use rates as high as T-7 to T-9 for foundries and canneries, where abnormal turnover is the rule.

Currently, the most vexing problem is choosing the proper salary scale. The sharp inflation of recent years has caused a correspondingly sharp increase in salary levels. Hopefully, the current high level of inflation will subside, but I believe it to be unrealistic to hope that inflation will decrease to its previous historical level. We tend to compromise and use a salary scale of around 3 per cent. Current salaries are used in our valuations. This gives some effect to inflation, and the final result seems to work out pretty well.

Most of our plans integrate with social security on an offset basis at the social security benefit being paid at the time of retirement. We have not

attempted to do projections of social security benefits under the new cost-of-living clause as far as valuation of liabilities is concerned. We probably will not program this into our calculation systems until we receive final IRS regulations.

D. S. RUDD:

It was only twenty years ago that we in the insurance industry were concerned over a rate of return of assets which have dropped down to almost $3\frac{1}{2}$ per cent in Canada. In looking at pension fund valuations in my role as an actuary representing the Pension Commission of Ontario, I therefore find it hard to accept high interest rate valuations which assume the indefinite continuation of these high interest rates. This would presume also indefinite continuation of inflation. In the fully insured individual and group annuity field, we are accustomed, when setting premiums, to make use of high select interest rates in the neighborhood of 8 and 9 per cent but feel thus constrained to go to a much lower ultimate interest rate. These same techniques are applied, however, with somewhat lower rates in our reserve calculations of such annuities. I think that actuaries, when dealing with uninsured pension funding, have been neglecting the use and development of costing and valuation techniques which make use of the concept of select interest rates in conjunction with select salary scales.

CHARLES B. H. WATSON

I am in full agreement with Mr. Funnell's comment that, if the yield on investments were to be consistently less than the increase in the cost of living over an extended period of time, inevitably there would be profound changes in the entire social and economic structure of our countries, and these would far outweigh the impact of such a development on pension plans.

The likely impact on pensions has been clearly illustrated by the experience in Latin America. We have long heard that inflation has been extremely high in many Latin American countries for a number of years. This is true, but the really important fact has been that during those years the rate of inflation exceeded the yield that could be realistically obtained on even the most dynamic investments. Consequently, in these countries most employers have concluded that it would be disadvantageous, and in fact might be almost an act of folly, to fund in advance any pension benefits that they provide to the employees over and above the governmental benefits. At the most, they might fund these benefits by purchasing an annuity contract at the time of retirement or other termination. At the least, they pay the benefits directly out of pocket.

With respect to the impact of inflation on the funding of pension benefits, I would like to enter one word of caution. Very often one hears an argument made against allowance for future compensation increases, on the grounds that this should not be done because it is undesirable to use today's dollars to pay for tomorrow's costs. This may well be true, but I believe it is equally important to avoid the obverse danger—that of using tomorrow's dollars to pay for today's costs. I believe that this is equally a mistake, since the cost of benefits accruing currently should be allocated against the current income. Otherwise, the true cost of the current year's goods and services will be understated, to the long-term detriment of the employer.

Finally, I would like to touch on the question of how to fund past-service benefits. It has been suggested that there are a number of arguments, some regulatory and some raised by accountants, against the determination of the cost of past-service benefits as a level percentage of pay, as opposed to a level dollar amount. The force of these arguments could be weakened if we determined the cost of the past-service benefit as a level percentage of the pay of those persons with respect to whom past-service benefits were being provided. In other words, this percentage would run off, proportionately, as those persons with past-service benefits retired. The effect of this would be to "front end" the cost of past-service benefits with respect to the entire covered employee group and hence possibly produce a more satisfactory over-all funding level.

DIRECTIONS AND GOALS OF ACTUARIAL RESEARCH

1. What is being attempted and/or accomplished in actuarial futures research, particularly in the following areas?
 - a) Financial projections and analysis
 - b) Premium components (mortality, interest, withdrawals, distribution expenses, administrative expenses, etc.)
 - c) Portfolios of insurance and assets
 - d) Corporate and financial environments
2. What are or should be the goals of actuarial research?
3. What are the directions of actuarial research?
4. What practical considerations are or should be recognized in performing or applying actuarial research?
5. What areas appropriate for actuarial research are not now being explored?
6. Are the Society's mechanisms adequate to encourage research into new areas?

Dallas Regional Meeting

MR. ROBERT L. COLLETT: My first comments are in the area of financial projections and analysis. Like most actuarial firms, mine has been doing projections of life insurance operations for a number of years in one form or another. For the last six years or so we have had a computer tool, which is based on model and profit studies and generates a financial projection approximately representing a summary of operations for either individual life or individual health insurance.

With generally accepted accounting principles (GAAP), we have revised both our profit-testing programs and our projection program to offer GAAP versions; that is, we wanted to be able to generate emerging profits using either statutory or GAAP reserves. The revisions were made to enable us to illustrate separately the expense and benefit components and, further, to subdivide the expense component into as many as three pieces. Another change we have added to the current version of our program is the capability of projecting deferred premiums and collected premiums separately.

As I see it, these continue to be many areas relating to financial projections which warrant additional research. A number of companies and consultants have investigated the wisdom of a monthly projection system. Some have developed working versions. In my experience, companies which do monthly statements have considerable interest in monthly projections.

A concern I have is whether monthly results are subject to so many fluctuations as to impair the value of month-by-month projections. Perhaps someone from a company which projects on a monthly basis and which has a year or more of experience "under its belt" will comment on the actual-to-expected results.

We continue to do research on ways to reduce the time required to develop a projection. We are researching a terminal or time-sharing version that will be sophisticated in a degree which is comparable to our batch-processing model.

There are some dangers to projections, dangers of which accountants are well aware. No matter how loudly one states the qualifications relating to a projection, still, in the ears of many hearers, it comes across as a prediction. In such case, the recipients are apt to exhibit much dissatisfaction when the actual results turn out significantly different.

I prefer to think of a projection as a base from which future results can be more adequately explained. I do not expect mortality to turn out to be exactly as projected, but I do expect the projection to yield a measure, so that subsequently I can say whether I had a better or a worse year, mortality-wise, than I expected. I also can point to the dollars-and-cents effect on the net operating results attributable to the mortality experience.

I also have had some concern that projections done concurrently with conversion to GAAP greatly increase the possibility of a company's programming its earnings. With sufficient testing of various assumptions through projections, in theory at least, company management is able to choose, from several possible sets of assumptions, that set which most favorably reflects on management.

What are or should be the goals of actuarial research? In my opinion, there are many valid reasons for research. Not all would be present in any one situation, but in many cases a single reason is sufficient. Some of the motivations for practical research, which I would define as research specifically directed toward an identified problem, may differ from pure research, which is an attempt to push out the frontiers of actuarial science.

A lofty goal of research is enhancement of the profession and enhancement of self on a professional level. Recognition from one's peers can often be achieved through professional research and circulation of the results. Circulation of research findings is a primary reason for the existence of the *Transactions* and probably the sole reason for *ARCH*. It follows that, in addition to enhancing the profession, successful research can lead to personal enrichment through on-the-job recognition and job advancement or additional clientele for the consultant.

A discipline or profession must have research if it is to expand its own borders. It must also have research for defensive reasons, to protect against encroachment by other disciplines. In our case, close relatives include the statisticians, demographers, econometricians and certain other economists, operations researchers, and, possibly, casualty actuaries. Over time, new fields and areas will develop which logically could fall within the province of the life actuary. If he is not among those doing the basic research, then he starts at a disadvantage and is likely to be left behind.

Last, but certainly not least, much research is done to benefit directly one's employer. Such research, incidentally, usually results in benefits to the individual as well. An ideal example would seem to be the already classic paper on variable life insurance by three New York Life actuaries.

What are the directions of actuarial research? I am not sure that my own exposure is sufficiently broad that I am really aware of a majority of the current directions of actuarial research. I sought a partial answer in a review of the last four years of the *Transactions*, the various issues of *ARCH*, and my recollections of recent actuarial conferences.

From the *Transactions* of the last four years, I have tried to group articles into various categories. A number of articles pertain to current life problems, including three articles on GAAP and an article on interest-adjusted cost indexes. Also ranking high were a number of articles on equity products and the stock market. About six articles could be grouped under this heading. Another popular subject was risk theory. It would appear also that actuaries are becoming more and more interested in the assets side of the balance sheet. I found articles on interest assumptions and on asset maturity patterns.

The only conferences I could call to mind from the past several years and the current year were the one at Waterloo on risk and ruin theory, the demographic conference at Harvard, and the credibility conference to be held at Berkeley this year. As I understand it, *ARCH* is intended for those articles of less obvious general interest. Coincidentally, the purest of research seems to be found there.

The above does not exhaust the areas of actuarial research currently in process. It is apparent that much is going on in actuarial futures research. Many companies have under way continuing studies of their mortality, morbidity, and other experience. Research in a number of other directions will probably be pointed out during this discussion.

What practical considerations are or should be recognized in performing or applying research? I have tried to imply, up to this point, that I

think research to be an important ingredient in the life of a typical actuary. In some cases the actuary may be a contributor in some degree; in other cases he may draw on or derive benefit regularly from the research of other actuaries.

It is appropriate to mention one practical consideration to be recognized in actuarial research—that, for most of us, research is a secondary or extracurricular activity. Nearly all of us have primary responsibilities to our employers to do our basic jobs. There are a few in this Society whose primary responsibility is research, but the overwhelming majority do not fall into that category.

For most of us, to do good research, but at the expense of our basic job responsibilities, probably would result in failure to receive the recognition that research can bring. Such an approach possibly could cause one to fail altogether with respect to his current job.

A final area that I would like to discuss relates specifically to consultants. I believe it is generally assumed that consultants as a group make relatively fewer contributions to research than do company actuaries. If research is defined broadly enough to include the work that goes into such semipromotional articles as those that appear in *Best's* and similar publications, then the accusation might be not entirely accurate. However, I suspect that the charge has been more or less true with respect to much of the more basic vital actuarial research.

In any event, true or not, our firm has, as I am sure others have too, felt the related guilt and has sought ways to increase measurably the flow of research from the firm as a whole. Our traditional approach may have involved Wendell Milliman leaning gently on someone, suggesting that they expand on something they had already become involved in and that they translate it into something readable and of general interest. While such an approach did indeed result in a couple of books and some articles, it mainly produced magazine articles, speeches, and discussions of other actuaries' papers.

About four years ago we identified a couple of particularly important areas and appointed specific research committees for two areas—GAAP and variable life insurance. As far as these particular problems were concerned, this approach seemed to be a significant improvement. Each broadened considerably the technical competence of our firm, and several articles saw the light of day as a result of these committees. A problem of this “special assignment” committee approach is the lack of continuity. When the basic problem was under control (or, in the

case of variable life, dormant), the committee either died out or ceased to function.

We came to the conclusion last year that we had to have some standing research committees with significant financial bases. This latter ingredient had been largely missing from prior research committees. We now routinely earmark a fractional percentage of our fee income to three permanent committees: life and health insurance, pensions, and casualty insurance.

We do not know yet whether this approach will be the final stage. Perhaps the final stage will be full-time permanent or rotating staff assignments to particular research problems or rotating terms on the three research committees.

MR. JOHN A. MEREU: I would like to discuss the subject of actuarial research from the viewpoint of a model builder, a role with which I have been occupied in recent years. I owe my particular role to the computer and the desire to expand the function of the computer from that of data processing to that of management support.

It is evident to me that a revolution in actuarial research is taking place in the life insurance industry, prompted not only by the laudable aim of better utilization of the computer but also by the necessity to plan more effectively in a rapidly changing and complex environment.

The traditional actuarial research functions continue to have their place. The monitoring of mortality rates, expense rates, and withdrawal rates will always be essential prerequisites to sound pricing and equitable profit distribution. The calculation of asset shares continues to be an important activity in product pricing and design.

A significant amount of research activity is being dedicated these days to building corporate planning models or components thereof. Some companies are of course buying such programs instead, but even these companies must devote a considerable amount of energy to see the successful implementation of such models.

I am involved presently in the design and implementation of a policy projection model. The objective of this model will be to project our individual insurance business for a period of five years into the future, subject to given assumptions as to mortality, voluntary terminations, future sales, and dividend scale parameters. The output from the model will consist of projected premium income, benefit payments, dividends declared, insurance in force, and statutory reserves.

The input to the model will consist of the individual policies in our master file gathered in cells which are reasonably homogeneous as far

as anticipated attrition or future growth rates are concerned. For each policy we propose to calculate a key using a program that permits key definition to be flexible. The key naturally identifies the cell into which the policy is to be accumulated.

One concern at this stage, when we have completed our design but not the programming, is to have a model which can be run in a reasonable time so that the user will not hesitate to run it several times and test the effect of different assumptions. An important variable will be the number of cells that will be generated. As a contingency measure we plan to have available a program which will reduce the number of cells by combining neighboring cells to eliminate cells with contents less than some specified minimum.

A policy projection model helps meet the need to study the life company as a system. Russell Ackoff has stated that we are moving from the machine age into the systems age. The machine age was characterized by an analytical mode of thinking in which the analysis of a problem consists of breaking it down into a set of simple problems, solving each, and assembling their solutions into a solution of the whole. The systems age is characterized by a synthetic mode of thinking in which something to be explained is viewed as part of a larger system and is explained in terms of its role in that larger system. Ackoff noted that a system is more than the sum of its parts. It is an indivisible whole, and it has been observed that when each part of a system performs as well as possible the system as a whole seldom performs as well as possible. I am sure that Ackoff is not suggesting that analytic approaches are outmoded. I believe he is saying that they are insufficient and should be supplemented by synthetic approaches.

I feel certain that there is much fruitful research to be done in which computerized models can play an important part. I would like to refer to two models which have been implemented at London Life and which have been of valuable assistance to decision makers.

The first of these is our annuity pricing model which simulates the cash flow generated by the sale of a block of single premium annuities at some proposed prices under controllable assumptions as to mortality, investments, expenses, and reinvestment. The model can be run in either a deterministic mode, which produces a single projection into the future, or a stochastic mode, which produces a frequency distribution of variables of interest, such as surplus after twenty years. The results of a stochastic running are useful in showing the sensitivity of results to varying assumptions.

The model has altered our approach to setting prices for single premium annuities. Formerly these were arrived at by deciding on the mor-

tality and interest assumptions and on the loading. Now, using the model driven by agreed-upon input parameters, we arrive at a price which will meet a desired profit objective.

The second model I would like to touch on is our group life dividend strategy model, which is similar to that described in Mr. Bolnick's "Experience-rating Group Life Insurance," which is being presented at this meeting. Under this model we simulate the mortality experience of a group life contract with defined information by certificate over a number of years, determine the dividend to which the group is entitled under a proposed dividend strategy, and then proceed to simulate whether or not the group will lapse, using a subjective measure of the extent to which it is likely to be dissatisfied with dividend return or feel it advantageous to abandon a deficit position. The model permits a number of strategies to be tested, and eventually one with a stop-loss feature was selected and implemented. It would have been more difficult to revise our dividend strategy without the model.

In his book *Decision and Control*, Stafford Beer likened scientists to the wedged bear in *Winnie-the-Pooh* who was stuck in the honey tree. Scientists, he noted, are stuck in their stereotypes. They are stereotyped both by their managers and by themselves. The problems they tend to tackle are stereotyped problems, the techniques they tend to use are stereotyped techniques, and the solution they propose are stereotyped solutions. Actuaries also bear the risk of being stereotyped and of not utilizing their full problem-solving potential. One of the goals of actuarial research should be to escape from those stereotyped bonds and to tackle problems that face the organization as a whole.

The most important practical consideration to be recognized in connection with actuarial research is the cost-benefit aspect. The cost of any project should be estimated in advance and should compare favorably with the benefits to be enjoyed. Of course, the placing of a price tag on the benefits must usually be done subjectively.

The Society in recent years has introduced a number of mechanisms for encouraging research. There are the continuing education committees and the special meetings and sessions which they have held. There are new publications such as *The Actuary* and *ARCH*. It seems to me that many actuaries are not sufficiently aware of these activities. Before creating new mechanisms, I think we might give more publicity to the mechanisms for continuing education and research that already exist.

MR. JOHN M. BRAGG: As background, I should mention that at the time I was on the Society of Actuaries Executive Committee, I was responsible for persuading the Research Committee to become one of

the seven committees in the continuing education group. Continuing education became a general committee, and its name was changed to the "Committee on Continuing Education and Research." This has resulted in all seven of the continuing education areas becoming more interested in research than was formerly the case. I understand that this year, under the presidency of Mr. Lew, several of these subcommittees have been assigned specific research duties. To refresh your memories, the seven area subcommittees are as follows:

- Committee on Computer Science
- Committee on Economics and Finance
- Committee on Health Insurance
- Committee on Life and Health Corporate Affairs
- Committee on Life Insurance and Annuities
- Committee on Retirement Plans
- Committee on Research

I consulted *Webster's Seventh New Collegiate Dictionary* about the meaning of the word "research." Here is the definition: "studious inquiry or examination; *esp*: investigation or experimentation aimed at the discovery and interpretation of facts, revision of accepted theories or laws in the light of new facts, or practical application of such new or revised theories or laws." Two facts struck me about this definition. The first was that opening word "studious." To me this means that research is a serious matter requiring much time and effort; it is not an offhand sort of thing. The second was the phrase "or practical application." I am inclined to feel that we in the actuarial profession on this continent should try to keep our research geared to practical applications. For years we have had this reputation, and we differ from European actuaries somewhat in this respect. I do not mean that we should abandon purely theoretical research, because it certainly has its place. But I do mean that we have not done as much practical research as we should have.

To me, actuarial research should consist of (a) finding practical areas where answers are not available and (b) discovering theories and practices so that the needed answers are given. Usually in the actuarial realm, but not always, the answers will involve mathematics, although some of it may be elementary. I can give you a list of some such research projects, to give you some better idea of what I mean. This is a list of items I have been interested in personally, and I am sure that any of you could come up with a different list of your own. My list is as follows:

1. A paper in the 1968 *Transactions* dealing with price and profit theories, which takes the probability of competition into account and discusses a new method of allocating expenses for pricing purposes (*TSA*, XX, 44).
2. The variable life insurance paper published in the 1969 *Transactions* (*TSA*, XXI, 343).
3. The paper concerning life insurance tied to the consumer price index appearing in the 1970 *Transactions* (*TSA*, XXII, 333).
4. The paper concerning the release from risk methods, contained in the 1971 *Transactions* (*TSA*, XXIII, 391).

To me these are all areas which were completely unexplored but quite practical, and for which answers were found. This is the type of thing that should constitute the goals and directions of actuarial research.

The first step, of course, is to identify those unexplored but reasonable practical areas. Anyone could come up with his own list. For example, I think that some of the items in our discussion outline could be on such a list. Here are a few more which appeal to me:

1. What is the correct strategy of an insurance company toward an insurance broker, in terms of price, commission, and sales quota requirements?
2. More research is needed on claim reserves and liability theory, particularly for health insurance, and most specifically for coverages such as long-term disability; in this I think we could get help from the true mathematical researchers.
3. Further research is needed in connection with expense allocation philosophy, for *pricing purposes*, which ties in with the expense allocation philosophy which has been adopted for GAAP purposes.

The next two subjects are somewhat "offbeat," but they should appeal to actuaries as a group. The first is futurism. There is an organized science of futurism, and we should become interested in its methods. After all, the lay public does believe that actuaries foretell the future! The second is conflict control. I think you would all agree that this is a practical area in which there is a great need. I also think that a small dedicated group of actuaries, working on this somewhat as a sideline, could make some contribution.

I like the words "alternative projections." The futurists mean the same thing when they say "canonical variations." One advantage of alternative projections is to make us ready for anything which might happen. Another is to give us the opportunity of steering a course which might bring about the future which we desire.

The Nineteenth International Congress in Oslo had three major subjects on its program. One of them was "Methods of Forecasting the Development of the Insurance Company during the Next Ten Years."

There is a book containing a large number of papers on this subject. All are summarized in English for those interested in making projections.

I do not know whether the Society's mechanisms are adequate to encourage research into new areas. Historically, I believe that our mechanism has been to rely on interested individuals to come forward voluntarily with the answers. This may continue to be our principal mechanism, although it is clear that we should move more in the direction of "urging." The recent step-up in research effort by the seven continuing education committees should help.

MR. MEREU: I would say that you do not need a stochastic model to look at the possible futures. Running a deterministic model several times under different assumptions can also give you a look at the possible futures. I do not know of anyone who is really trying to project the whole company with a stochastic model. I do not think that would be practical. In our annuity pricing model the amount of input going in was not that great and the stochastic model was practical.

MR. HERBERT J. BOOTHROYD: Two examples of research needs come to mind in group health, a field which is probably considered least susceptible to confident projections.

The first example pertains to the earlier question on the value of projections when so many developments cannot be anticipated. This was the case when price controls over health insurance were allowed to expire on three weeks' notice. Insurers were then confronted with estimating the impact of two kinds of changes on future claim levels—first, the size and timing of a potential one-time catch-up in health care provider charges, in reaction to suppressed costs during the four phases of price controls, and, second, estimates of the new annual trend in charges. Actuaries have long recognized in rating structures the existence of trends in both medical costs and utilization, but most simply have assumed a constant annual rate with fluctuations in trend rates adjusted after they occurred. The company which had constructed a model (in this case for short-range planning) which allowed the testing of the effect of one-time and continuing variations in these trend factors on claims under various types of benefit provisions would be in a much better position to respond to the uncertain impact of removal of price controls—even though, admittedly, this event could not have been foreseen for advance planning.

The second example relates to the need for actuaries to be concerned

with futurism. Very little attention seems to be given to recovery rates at higher durations under long-term disability contracts. These recoveries will occur under conditions of the 1980's, nearly half a century after the recoveries incorporated in the commonly used reserve tables. Changes in medical practices, employment opportunities, the work ethic, court attitudes, and other factors can change recovery patterns with significant financial effects. While it is impossible to quantify each of these cause-and-effect relationships, it is vitally important that actuaries identify every respect in which the future may differ from the past and do the very best they can to estimate the possible magnitudes of financial effect and appropriate risk charges for these uncertainties. If actuaries do not deal with these realities, some other discipline will step in.

MR. C. L. TROWBRIDGE: I have long felt that the actuarial profession is not adding to its body of knowledge at a fast enough pace. We publish perhaps five to ten papers a year in our *Transactions*, and a book now and then; but we should be doing much more.

The Society is trying to do something about encouraging new actuarial literature. Our various committees on continuing education are charged specifically with reviewing present actuarial literature, finding out where it is weak, and making the necessary arrangements to fill in the holes. I can't say that they have accomplished a great deal to date, but I still have confidence in this approach. We must keep emphasizing it.

More recently the Society has invited other actuarial bodies to take part in a joint effort to study the possibility of an actuarial research fund. The concept is to sponsor actuarial research wherever the need is greatest. Financial resources must be tapped, and a good choice of projects is important. So far this effort is in its infancy. The joint committee is chaired by Dwight Bartlett.

Probably any actuary who has thought about it recognizes certain places where our state of actuarial knowledge is weak. I feel strongest about the lack of attention that actuaries have given to the problems arising from price and wage inflation. We have based most of our actuarial calculations on a static model, while the real world is one of continually increasing prices and wages, with the relationships between the two far from stable. Some of the areas for research include:

1. What is a sensible pattern of contributions to a pension plan where benefits for retired lives are adjusted in accordance with the consumer price index

- but potential benefits for those still working are closely tied to earnings? How do assumptions as to price and wage increases affect the result?
2. Can we do a better job of life insurance design, preserving the purchasing power of the death benefit?
 3. What are the implications of inflation, or particularly inflation expectations, on interest assumptions? On investment strategy? On social insurance?

All of these matters have been discussed at one time or another in the course of past meetings. Nevertheless, actuaries simply have not faced up to these issues. Until we do, we are not meeting our professional responsibilities.

As President-Elect of the Society, I am encouraging the continuing education Committee on Economics and Finance to get its teeth into these inflation-related problems. Perhaps we can have a special-purpose meeting in this area before too many years go by.

Montreal Regional Meeting

CHAIRMAN IRWIN T. VANDERHOOF: Research for the actuarial profession is of three varieties. First is the relatively familiar investigation of mortality and morbidity that constitutes a kernel of interest for our profession. The second is the theoretical development of ideas that are our special province. There are many examples of this. The *Transactions* are devoted mostly to publishing this kind of research, elaborating upon the foundations of our field. The third is less easily defined. This consists of the great new ideas that transform a field by providing a new view of the entire subject. These are the great paradigms that future generations will expand by elaboration. Many of us are still developing the original concepts of Dr. Sprague and the other members of the English Institute of a hundred years ago. The most recent new area of study has been risk theory. This has given us a whole new way of looking at the problems of companies and pension funds.

Encouragement of the first kind of research is really in the hands of our committees, and annually we see the results of their labors. The second kind of research is encouraged through the desire of many of us to publish our thoughts in the *Transactions*. However, the third kind of research, perhaps the most fruitful and needed, has no special vehicle. Perhaps the opportunity for publication is enough. However, I would hope that the profession would look for ways of obtaining more of this especially fruitful kind of thinking—the ways of expanding the profession. We certainly need it. The profession has permitted con-

siderations relating to earnings of life insurance companies to slip away from us and over to the accountants with GAAP. We lost our influence on consumerism when we failed to take action on cost comparisons. If we do not find and develop new areas, we may not have our unique profession to pass on to future generations.

One problem always is that of delimiting the scope of the profession. I like to think that the scope includes anything involving the valuation of the financial effects of events subject to chance fluctuations where no additional information is needed to determine the nature of the risks involved. This kind of definition certainly would include our brothers in the casualty and property area and would probably include many more. In the case of an oil-drilling problem, this definition would include those parts of the problem that did not deal with the actual engineering. It would also include all of statistical decision theory—which I think is proper. My definition would also encompass the problem of the expected profitability of a gambling casino, along with the question of how much money was needed as a risk reserve to avoid the ruin problem. I doubt that the *Transactions* would solicit papers dealing with the running of the new Playboy casino momentarily expected in New Jersey, but I think that we are best qualified by training to solve this kind of problem. If it is a legal activity and we are best fitted to serve it, then it should be part of our profession. The same argument applies to some extent to the entire area of security analysis—especially bond analysis and portfolio theory.

MR. JOHN E. BAILEY: Two schools of thought immediately confront one when an attempt is made to define what constitutes actuarial research. The strict view would be that the work must involve new theory or new approaches to existing theory—new to the practitioner or to the situation, at least. Using one of my own specialties as an example, this construction would exclude most mortality studies from actuarial research—the underlying theory is certainly well established.

The more liberal view is that *any* serious use of actuarial theory constitutes actuarial research. Under this school of thought, mortality studies definitely would be considered actuarial research, as would most of the nonadministrative work done by most actuaries. Which view is correct? One dictionary defines research as “careful systematic patient investigation in some field of knowledge, undertaken to establish facts or principles.” In this definition, the purpose—to establish facts or principles—is the key. The motto of our Society (Ruskin) also seems appropriate: “The work of science is to substitute facts for appearances and

demonstrations for impressions." If one is to accept the premise that research is the work of science, then the purpose—to establish facts—is again emphasized.

Considering the two alternative schools of thought regarding actuarial research in light of these definitions, the more liberal view must prevail. That is, most of the vocational work done by actuaries is for the purpose of establishing facts or substituting facts for appearances. Hence I would conclude that research includes both the formulation of new theory and the re-evaluation of parameters associated with existing theory. This view is consistent with the purposes of the current discussion, and I would propose that it be used. There certainly are various degrees of sophistication in actuarial research, ranging from the calculation of an average premium rate to some extremely useful work which has recently been done on time series analysis, the development of the actuarial framework for variable life insurance, and the projection of population under various assumptions, to name a few.

This conclusion also suggests that there are two types of research, which might be called theoretical and parametric. Theoretical research involves the formulation of new theory, while parametric research involves the re-evaluation of parameters associated with existing theory.

Furthermore, two types of theoretical research may be distinguished. One involves the extension of theory within recognized areas of actuarial competence, and the other involves expansion of the boundaries of the profession. While this distinction may be difficult to make in some cases, it certainly is valid. An example of the former type might be the application of new statistical techniques to mortality results, while an example of the latter is the further development of risk theory. The adaptation of existing theory from another discipline to focus on an actuarial problem will usually, if not always, fall in the former category.

With these definitions in hand, it is still difficult to draw the line between research and mere "performance of duties." As an example, consider the activities of an actuary who is responsible for the dividend scale of a mutual company. It would appear that this individual is not a researcher—he is a practitioner of actuarial science. But let us look more closely. The basic ingredients for that dividend scale will come from mortality studies (parametric research), expense analyses (parametric research), and interest earnings analysis (parametric research). The object of this activity is to establish facts. Projections of the company's net gain will also be an important consideration, and these would generally be considered research. The determination of average net costs of principal competitors (interest-adjusted or otherwise) is another im-

portant consideration, and that is research, as we noted previously. The next step is to modify the existing dividend scale factors to reflect changes observed in the latest period and to determine the dividend payout which would be involved in the net costs which would ensue. This is certainly the determination of facts and thus must be considered research. If it does not come out right the first time, it will be necessary to modify the various factors to balance the desired payout and net cost position. Maybe this is research and maybe it is not, but it does involve determination of the effects of various changes in basic assumptions. Once it is all done, it must receive the boss's approval—something which should have involved some earlier research.

From this example, it must be concluded that many components of "performance of duties" really involve actuarial research. This suggests that, for discussion purposes at least, another dimension should be added to the definition of research. We really want to discuss "transferable research" or "public research"—that is, work which develops data and/or techniques which are potentially useful in other situations. This limits the scope of the discussion somewhat. In the example, the development of factors, net gains, and average net costs might be considered transferable research, but the rest would not.

In a discussion of research in a professional group such as this, some mention of standards seems appropriate. Any research published or performed by one who holds himself a professional must be done accurately and labeled completely so that the results will not be misconstrued. To do otherwise would be to bring discredit to the individual and to the profession. The emphasis here is on parametric research, for, as Darwin pointed out in *The Descent of Man*, "False facts are highly injurious to the progress of science, for they often endure long; but false views, if supported by some evidence, do little harm, for everyone takes a salutary pleasure in proving their falseness."

MR. THOMAS S. BELL: What is being attempted and/or accomplished in actuarial futures research? I will approach this subject from a Canadian vantage point, discussing in turn the nature of projects done in my own company, research activities done by the Canadian Institute of Actuaries, and finally the situation in Canadian universities.

When I first started to review this subject, I had not thought of the company I worked for as being overly research-oriented. However, as I talked with my various colleagues and gathered information on different projects, I was quite impressed with the list I had come up with.

I. FINANCIAL PROJECTIONS AND ANALYSIS

One of the most useful actuarial or financial tools that we have is a corporate model. This model is written in APL (a programming language), and, because of the particular features of this language and also the fact that it is available on terminal, the model can be used with a very short turnaround time to answer a great variety of questions. A pragmatic approach was followed, the purpose being to develop a model which would provide useful answers to management rather than a model which is highly sophisticated. The model is deterministic.

Although financial projections are being made increasingly by the use of the financial model, there are of course simpler projections for shorter periods of time, using the more traditional methods and less sophisticated equipment.

II. PREMIUM COMPONENTS

Perhaps our most ambitious premium-related model was developed in conjunction with a dividend review which was being undertaken. We have a computer model in the FORTRAN language which can be used in performing a completely exhaustive calculation to determine what theoretical dividends should be in the future, taking into account what dividends have actually been paid, what dividend should be payable on new issues, and so on. Appropriate assumptions are made for each of the numerous variables, including rate of return desired on surplus. Although designed primarily for dividend work, by suitable adaptation the program can be used for all sorts of plans, including nonparticipating plans such as term insurance.

A couple of years ago we did quite extensive work in the area of cost of equity guarantees. The work was of the same nature as that described in papers in the *Transactions* but was approached from a slightly different vantage point. We tried to familiarize ourselves with what the distribution of the fund might look like at the end of the various time periods. Since interest in equity products, at least in Canada, has diminished, no further work has been done, but I can see that in the future perhaps we might want to return to this topic.

We have constructed various model offices for different bits and pieces of business. As an example, we currently have one for variable annuities which studies the effects of our use of a subsidiary company.

On the group side, we have for several years had a program which enables us to calculate stop-loss premiums on new life cases. Initially this would fall into the area of actuarial research. Now, however, the

programs are used as an everyday working tool and perhaps are no longer properly classified as research.

III. PORTFOLIOS OF INSURANCE AND ASSETS

We have some work under way on the question of immunization of assets. Initially we will be thinking about the group annuity business and individual annuity business, but conceivably, if the results of the first research prove fruitful, we will broaden our horizons to a general look at our over-all portfolio.

IV. CORPORATE AND FINANCIAL ENVIRONMENT

We have had various projects in which we looked at either the interest rate environment or the taxation environment. To date, the most critical area for interest rates has been annuities. We have various models which we use for either group annuities or individual annuities to enable us to obtain a better feeling for what sorts of problems arise on reinvestment under conditions of increasing, decreasing, or level interest rates. Also, there is a question of a split of assets between mortgages, real estate, and bonds.

In the area of taxes, we have worked on a model for our United States business which will enable us to calculate the effect of the income tax payable if changes are made in different variables. Also, because we are a Canadian company we have a special situation with respect to United States annuity business, and we have a model which enables us to determine appropriate interest rates which we can afford to pay, taking into account the special circumstances of a foreign insurance company.

Although we have done considerable work in the area of Canadian taxes, no all-encompassing sophisticated model has been devised. However, the income tax situation in Canada is a relatively recent phenomenon, and conceivably when things stabilize further we will take a more thorough look at the underlying situation.

V. MISCELLANEOUS

Numerous actuaries have been interested in computer languages suitable for actuarial work. I believe we were one of the first companies, certainly one of the first Canadian companies, to use APL for actuarial work. In fact, one of our people devised an actuarial language, ACT, based on APL, which itself has been talked about in several actuarial and electronic data processing meetings. We personally find the use of

APL very satisfactory, as it lends itself well to the types of calculations actuaries do and is readily acquired as a tool by incoming actuarial students.

VI. RESEARCH DONE BY THE CANADIAN INSTITUTE OF ACTUARIES

The Canadian Institute of Actuaries has various committees similar to those of the Society, although perhaps not quite so extensive, in view of the smaller size of the organization. Until the past few years I could not have described the Canadian Institute as being particularly a research-oriented group. Until that time research consisted of studies in areas such as expense and mortality, but a couple of years ago an attempt was made to start a program of having people prepare formal papers. I personally am most encouraged by this and think that such a program is an essential ingredient of a professional body. To date, I believe the procedure has been for the Institute to ask various people to prepare papers on topics within their area of expertise. While very thoughtful and useful, these papers have not been of a particularly complex mathematical nature. However, papers by Canadians on more mathematical topics have been submitted to the Society. I am optimistic, however, that the research activities of the Institute will become better and better as time goes along.

VII. RESEARCH DONE BY CANADIAN UNIVERSITIES

I am not aware of much research being done in Canada. Admittedly a few papers by Canadian academic people have been printed in the *Transactions* or the *Journal of Risk and Insurance*. For the most part, at the Canadian universities where there are actuarial courses at all, much more teaching than research is done.

CHAIRMAN VANDERHOOF: I think that I have done as much work on the relationship between portfolios of insurance and assets as anyone. I am not involved in anything in this area right now, but I do understand that one of the "giant mutuals" is involved in the interesting problem of determining the way to handle charges between lines of business for the different kinds of interest rate risk involved. The particular problem that they are researching is what charge should be made by the individual lines to the group lines for the risk to the individual lines implicit in the interest rate guarantees made in group pension contracts. I doubt that the company has any current plans to publish the results of its investigation. This is a wide-open field in which considerable progress can be made if a few of our bright young people take

an interest. In the area of financial environments the continuing education committee covering this area has recommended that some research be undertaken by the Society on the question of long-term interest rates.

MR. BAILEY: The goals of actuarial research as perceived by individual actuaries will inevitably be related to their own professional responsibilities and goals. These may involve (a) development of products and information to serve the public need; (b) provision of insurance benefits at the lowest possible cost; (c) determination of equity among various classes of policyowners or individuals; (d) protection of the solvency of companies, pension plans, or social systems; and (e) determination and maximization of profits through appropriate accounting systems, distribution systems, the minimization of taxes, and other devices.

The goals of actuarial research could probably be summed up by (a) determination whether problems do exist in uncertain areas, (b) exploration of possible solutions to existing problems where no known solution now exists, (c) improvement of applications of existing concepts and techniques, (d) monitoring data sets to determine current parameters for known solutions to existing problems, and (e) communication of the results of these activities to the appropriate decision makers. Depending upon the situation, the decision makers may be members of higher management, a client, other professionals in the same organization, or the public, as voters and/or consumers.

Generally, such research should be future-oriented—the determination of what will happen in the future rather than mere reporting of what has happened in the past. It should emphasize changes which can bring better results rather than merely reporting results which cannot be changed. The stimulation of interaction with other actuaries is a side benefit of this activity and may well be a major goal of some researchers.

I shall confine my remarks on current research to premium components, primarily to the area of re-evaluation of parameters for existing techniques. The Society's mortality committees are responsible generally for the annual standard ordinary mortality study and have recently completed or are currently contemplating mortality and/or lapse studies involving term conversions, guaranteed insurability options, build and blood-pressure impairments, large-amount mortality, life income settlements, and immediate annuities. The standard ordinary study probably will recognize insurance underwritten paramedically as a separate category in the near future. New individual annuity and group annuity mortality tables were developed in 1971, and a new basic table for life insurance was developed to reflect 1965-70 experience. A waiver of premium morbidity study is planned within the next year. The Life Insurance

Marketing and Research Association has recently initiated a lapse study somewhat paralleling the Society's standard ordinary mortality study.

Another development related to the determination of parameters is an increased emphasis on collection of impairment data. The Society of Actuaries and the Association of Life Insurance Medical Directors are working jointly with the Medical Information Bureau to establish a permanent program of impairment studies, beginning with the build and blood-pressure study, to which participating companies are currently in the process of preparing contributions. A more or less standardized format has been established, and individual companies are encouraged to re-examine their methods of collecting impairment information.

While allocation of interest income by line of business is hardly new, the current interest climate is forcing some companies to consider the impact of policy loans on the net earned rate of various lines and blocks of business. The impact of the federal income tax law on various blocks of business is another pricing consideration which is receiving considerable current attention in some quarters. The impact of the standard nonforfeiture law on some of the newer unconventional policy forms is receiving intense consideration from a Society committee. These latter areas involve techniques rather than parameters and are more future-oriented than the parametric researches.

The most obvious practical consideration with respect to actuarial research involves the resources available—time, money, people, data, and equipment. This hardly needs mention.

Another practical consideration for parametric research is the applicability of the data. Are they already out of date before the research is undertaken? This would be true of some impairment studies where new medical treatments or techniques have been recently developed. Do the data have any relevance to the real world? A good example here is given by the Public Health mortality data on smokers versus nonsmokers. Presumably most actuaries accept the accuracy of these results for the groups to which they apply. But it is not possible to make a clean distinction between smokers and nonsmokers on the basis of an insurance application, and thus most life insurance companies have not differentiated on this variable in their usual underwriting procedures. (The application must contain a specific question pertaining to use of cigarettes, the answer to which cannot be verified in an economical way, and there is nothing to prevent either smokers or nonsmokers from "switching rather than fighting" once the insurance is in force.) Many of the smokers in the HEW studies probably would not qualify otherwise for standard insurance. A related problem is the appropriate classification

of data. In order to determine lapse rates on minimum deposit business, for example, it is necessary to identify such business, preferably at the time of issue. This may be very difficult, particularly in companies which seek to discourage such business.

It is conceivable certainly that some very valid research may be quite impractical at the moment, but this should not be considered an absolute barrier to its completion. This research may be impractical because of legal restraints, lack of an apparent market, the necessity for technology which is not available or not economical, or lack of necessary capital. These certainly are practical considerations for the individual organization but are not necessarily restrictive in the long run, since the restraint may not exist at some point in the future or for some other organization.

One of the more important questions to be considered is that of deciding which areas are appropriate for actuarial research. I have a number of suggestions which, for simplicity, I have grouped in ten areas which are not necessarily mutually exclusive. These are parametric studies, application of statistical techniques, mortality projections, development of projection techniques, surplus studies, equity to policyowners, consumerist responses, governmental relations, products, and impact of computers.

Under parametric studies, research is needed to determine current rates of disablement and termination rates for waiver of premium and disability insurance benefits, particularly reflecting the relationship of long-term disability to occupation clauses. There is some need for additional studies to indicate the difference in mortality and lapse experience between permanent and term contracts. In many companies the appropriate allocation of expenses by premium dollars, number of policies, and amounts of insurance requires further research. Current mortality data relating to various medical impairments are very inadequate.

The opportunity is wide open, it seems, for the application of new statistical techniques to mortality rates, interest yields, and surplus positions. That is, what is the degree of reliability which may be associated with the estimates currently obtained?

What mortality changes will occur in the future as a result of currently emerging environmental problems, energy shortages, population pressures, future shock, the new medical techniques of organ transplants, research into the secrets of aging, and other potential breakthroughs? What impact will such changes have on insurance portfolios, annuity portfolios, and pension plans? On the public retirement and health insurance systems?

What new projection techniques can be developed, not only for mortality results, but also for interest rates and yields, populations and markets, and surplus? Can these techniques be transferred to other areas?

Surplus studies constitute another area ripe for actuarial research. What are the likely levels of future surplus under various assumptions, and what levels of surplus should be considered necessary? What is the optimum growth rate for a life insurance company? How can existing surplus be allocated accurately to various blocks of business, and what portion has arisen from excess interest earnings, mortality and expense savings, early terminations, and so forth? What is the profitability of various lines of business?

Maintenance of equity among various blocks of policyowners is a related topic. What impact does the recent increase in policy loans have on the equity among various blocks of policyowners and between borrowing and nonborrowing policyowners? Are appropriate charges and credits being provided for acquisition and maintenance expenses, mortality, interest, withdrawals, and other factors?

Determination of appropriate responses to consumerist questions is another area appropriate for actuarial research. The development of uniformly accepted standardized cost methods and appropriate accounting techniques is obvious. Determination of basic information on how well the industry serves the public is another area of research for which actuaries should be responsible. This might involve the kinds of information included in the widow's study, expanded to include disability insurance and hospital and medical insurance. It might also include an analysis of the ultimate uses of life insurance premium dollars, which might be quite enlightening. If the results of such studies are not satisfactory, what can be done to improve them?

Other consumerist areas appropriate to actuarial research include public statements about the impact of inflation, its causes and cures, and the cost and economic impact of social insurance programs. Some additional items which do not fall within the strict definition of actuarial research but which are areas actuaries can be involved in are the determination of appropriate services to policyowners and of corporate social responsibilities.

Actuarial research can be applied to governmental relations. The development of appropriate solvency, disclosure, and related techniques to facilitate uniformly effective regulation is certainly an appropriate goal for actuarial research. What will be the regulatory climate in the future, and how can companies best cope with it to the benefit of policyowners and stockholders?

Obviously, actuarial research can be devoted to product development. Is a high rate of inflation here to stay, and, if so, what insurance products are best for such an economic climate? What distributional system can achieve the lowest acquisition costs consistent with favorable mortality and persistency? What products are most profitable or provide the lowest cost in view of the existing tax laws? What new product needs will develop as a result of changes in life styles?

The final area of suggested research involves the impact of computers, particularly in modern life companies. As computer systems become more and more integrated, what are the positive and negative results? Is there a point of diminishing returns for computer systems resulting from the loss of flexibility, the increased vulnerability of integrated systems, and the development of nonessential information? How can the computer be used to cut costs further and provide better service? What is the financial impact of placing computer terminals in field offices?

How adequate are the Society's mechanisms for encouraging research in new areas? Before considering new areas, it might be useful to note that the results are fairly good for some parameters, particularly mortality and lapses. For other parameters, such as expenses, the results are not good, but this is primarily because of company variation rather than lack of cooperation or mechanisms.

However, the fact that the results are favorable does not necessarily mean that the mechanisms are that good. It is not immediately obvious that the studies by the Committees on Mortality and Morbidity Experience can determine accurately the desires of the membership of the Society. As the Society is currently structured, the committees apparently must rely on their own wisdom to evaluate the worth of specific suggestions received. The questionnaire technique is always available; the Committee on Aviation recently used it in regard to vocational and avocational hazards. It should be noted that the Society does pay for the costs of nonactuarial people and for equipment used by compiling companies. I believe it has even gone somewhat beyond this in the impairment study area, sponsored jointly with the Association of Life Insurance Medical Directors.

With respect to research on techniques, as opposed to parameters, Society mechanisms are nearly nonexistent. Is this a necessary state of affairs? The possibility of publishing a paper is a relatively strong incentive, however, for someone already disposed to do some specific research.

It would, of course, be possible for the Society to fund specific research projects, but this immediately raises many questions. Who

would decide what is important to investigate, and who would actually do the investigating? What restraints should be imposed? A possible area for research of this nature involves the impact of inflation or of public insurance systems, but here the question is raised of conflicts between Society-sponsored results and those of Congress or the Social Security Administration. Should the Society speak out on such matters? I think that the membership should at least have the opportunity to debate this point.

In summary, actuarial research has much to do with the vocational activities of many actuaries. Quality research is important in maintaining the vitality and integrity of the profession and in expanding its areas of competence. The Society sponsors much parametric research, although more is possible. The greatest needs seem to be in the area of techniques, where a number of suggestions have been made. One of the purposes of this discussion is to gather a cross-section of views of actuaries regarding areas of research which should receive more attention and possibly to encourage formal research programs in those directions.

MR. BELL: The chairman of this discussion summarized very well the primary goal of actuarial research when he stated in one of his papers, "We have a professional duty to develop and adopt improved techniques in all areas of our profession."

Since we have always had the nagging problem of not knowing precisely what actuaries are, inevitably it is a little difficult to define precisely what actuarial research is. The Committee on Research of the Society has chosen four areas for their concern: (a) the theory of risks, (b) the application of various operations research techniques, (c) new methods of statistical analysis, and (d) such other scientific disciplines as may lead to new and better methods of performing the work of the actuary. All of these are highly technical, highly mathematically oriented activities. Perhaps, then, actuarial research really consists of technical mathematical research. However, we, as you know, argue vociferously that actuaries are more than just mathematicians, so that perhaps more properly our research should be in other areas as well. Presumably this is the purpose of the subcommittees of the Committee on Continuing Education and Research, where areas of computer science, economics and finance, health insurance, life and health corporate affairs, life insurance annuities, and retirement plans are studied.

I think that we have a duty to update and keep up to date various techniques. With advances in computer techniques and even with faster calculating machines, the relative importance of certain techniques

changes. While the information in Jordan's textbook on life contingencies will remain the standard heart of actuarial work for a long time to come, the need for such things as commutation columns has diminished with the advent of new computing techniques. One of the difficult things in learning life contingencies is the vast amount of new notation to be acquired—the various subscripts, superscripts, and so on. The actual concepts included are relatively few once the student has mastered the concept of a mortality or a continuance table. From there on, everything follows in a fairly straightforward fashion. I think we have a duty to keep our perspective in terms of learning our old techniques as they will be applied in a new environment.

We have a duty to extend to other areas of work some of the techniques which we have developed. It has always amazed me how much the actuary's work has been developed in a void. For example, actuaries have been using present-value techniques for a hundred years or so, but it has been only in the past several years that the investment community at large has adopted the concepts of discounted cash flow, present values, and so on. We may have other little tricks which should be more widely applied than is presently the case. The study of human lives in the mortality table and for pension purposes probably has analogues in the study of the breakdown of machines, personnel studies, and the like. In other words, multiple decrement tables could be applied to a variety of different disciplines.

It is our professional duty, as well as in the interest of our jobs, to predict, anticipate, and lead public thinking in areas of new-product and other consumer demands. We do quite well on this score, but we could be criticized for reacting rather than leading. Actuaries have known for years that traditional net payment and net cost figures were less than perfect indicators. Yet only relatively recently has much of our time been devoted to this topic.

Another example would be the distinction in the level of commissions paid on various individual products. Sooner or later consumer pressure will cause us to change our system. Actuaries could be criticized for not actively seeking change on the basis of sound research. A similar case of reacting rather than leading could be made about the question of financial statements.

In summary, our duty is to maintain and improve our existing techniques and to enlarge upon both the techniques and the areas to which they are applied.

What are the directions of actuarial research? I take the question to mean "in what direction are we headed?" We are headed definitely

in the direction of more sophisticated models. More than ever the actuary is going to have to be a competent mathematician, probably skilled in one or more computer languages.

Certain papers in the past few years have suggested that actuaries are starting to think in a more statistical way than they have before. We have always tried to think of ourselves as knowing about statistics, but the proportion of our membership who do know that much about statistics is quite small. In the vast majority of the models which are used, we are dealing with expected or mean values, with no reference at all to possible variance in the statistics. Interest in risk theory and related topics, and more recently in the question of guarantees of equities, has led to work in the area of simulation and consideration not only of mean values but also of distribution curves and so on.

It seems inevitable that research, as it becomes more complex, will be restricted to only the larger companies or will take place in a university environment. Smaller companies perhaps will not be able to devote the time and manpower to solve problems on a more sophisticated level.

Actuarial research seems to proceed in spurts of activity in various directions. A few years ago the current interest was in equities, and considerable research was done in the area of equity guarantees, variable life insurance problems, and the like. This seems to have subsided temporarily, in the United States perhaps because of legislative problems, in Canada, and perhaps in the U.S. too, because of current disfavor in which equities find themselves.

What practical considerations should be recognized? In actuarial research as in any other research, the expected cost should be weighed in relation to the expected benefit before a project is undertaken. The cost can be in time, materials, dollars, and manpower. Usually the cost can be reasonably closely estimated. It is always more difficult in actuarial-type projects to estimate the expected benefit. (What is the benefit of calculating term rates in a more sophisticated manner?)

Another consideration is that, because the life insurance business is such a long-term business, there is less need to be first with a product—we are not manufacturing Hula-hoops. There is a temptation to let other people do the research and to let them have the experience of finding out which products the public likes and which it does not like, and duplicate their winners. Apart from the ego satisfaction of being first, you do not gain very much by being the first company with a new product in the life insurance business. If you are going to sell the product for twenty-five years, then whether you sell it for twenty-five years plus six months or not is a bit immaterial.

The problem I see with actuarial research is that, as it becomes more and more sophisticated and complex, a smaller proportion of the membership will truly understand what is going on. Because the members of today's top management learned their actuarial work several years ago, there has always been a lag between what management understands and what is currently available in the state of the art. This means that, for the results of any research to be implemented, the findings of a few people are going to have to be accepted by many decision makers who do not understand fully what they are agreeing to. I can see that a lot of educating will be required before top management will make decisions based on information which they do not feel comfortable with.

Work which is done in a company environment will probably never be as fully discussed or written about as work done by university people who are studying projects purely for the intellectual satisfaction of solving problems. Thus one never knows whether the full fruits of research are being broadcast to everyone.

One problem which the increasingly complex mathematical models bring is that usually there is only one person, or perhaps two, fully conversant with how to operate them. There is a tremendous risk that models which will be devised and utilized by one person will become completely obsolete if that person leaves the company's employ.

In all research problems using mathematical models, there is the problem of how sophisticated a model to use. There is no unique answer. Experience, judgment, and other factors come into play. I am sure we have all experienced a project which grew and grew beyond its original definition, where solution of one problem led to another question.

What areas are not now being explored? I think that we can learn much more about risk theory than is presently understood by most of us. Apart from a fleeting glance at a study note in Part 10 or Part 5, depending on when you studied this theory, most of us do not know very much about this topic. If we pretend to be experts in this area of assessing risks, then surely this should become more of a common everyday tool than it is at present.

I think that more work in the future will probably be done in terms of frequency distributions and fluctuation in values of variables rather than only in terms of mean values as at present.

Human nature being as it is, we like to measure things which are measurable and count things which are countable. In this regard we do pretty well with mortality and morbidity studies on the more common types of insurance and disability plans.

Having some information, even if it is not statistically reliable, is

usually better than having none at all. On this thesis, it would be useful to have better information on such things as mortality on term policies, more complete studies on the rates at which certain options are exercised, and more complete information on lapse rates, such as variation by age and amount. These are difficult to obtain because experience will vary considerably from company to company, but the alternative of doing nothing seems equally unacceptable. If a particular company chooses to study one of these topics, it may find that it has a sparsity of data which makes results useless anyway.

By tradition, actuaries are more involved in investment work in Great Britain than in North America. While there is a certain justification for the difference, I think it is primarily the tradition of the situation rather than the financial conditions in the country which has dictated the split. I think that the North American actuary can be of much value to his investment confreres.

I think we should be more willing to adopt technical approaches to problems, for use particularly in life insurance companies, on topics which are not specifically actuarial. Sometimes I think that we are too confined by our insistence that actuaries do only actuarial work. Often an actuary's training can enable him to devise or utilize various operations research techniques or other quantitative techniques which are not otherwise being used in a company. The actuary is at least as well qualified as anybody else in many cases to undertake such activities.

Are the Society's mechanisms adequate to encourage research? I have been very impressed over the years with the caliber of the papers in the *Transactions*, and, although I am not familiar with the mechanisms used, the end result seems acceptable. I do not know what proportion of papers submitted to the Society are rejected, but inevitably there must be some which are not accepted. It is unfortunate, since these papers, though perhaps not of outstanding quality, might still be of definite value to some of us. The newsletter *The Actuary* has been of considerable value in this regard.

The various subcommittees under the Committee on Continuing Education and Research can make a very useful contribution in keeping us informed about insurance-related research being done by other groups, such as actuaries in other countries, the Life Insurance Marketing and Research Association, and the Society for Insurance Research.

In the area of financing research, a committee of the Society has been charged with investigating the feasibility of this.

MR. WILLIAM K. KRISHER: The term "research" often conjures up visions of cloistered intellectuals conversing in esoteric language about

obscure issues that no one really cares about anyway. Adding the term "actuarial" too often serves to reinforce that image—at least in the minds of many of our associates in the life insurance industry.

The validity of this image of actuaries can easily be refuted. One has only to look at the agenda for this and other recent Society meetings to sense the relevancy of the issues being discussed. Add to this a growing sense of urgency as economic, political, and social factors change at an increasing pace, and it is clear that we are not living in an ivory tower.

Should we, then, assume that all is well with the special kind of research that we, as actuaries, are performing? In my opinion, the answer is no, and the purpose of my remarks will be to probe for some of the areas where I think improvement is needed.

For example, consider the recent and continuing controversy over how life insurance companies should report their earnings and financial condition. For many years we have been heavily involved as technical experts in preparing financial statements that conformed with the various rules and regulations of the NAIC. We were aware that, for some purposes at least, this form of reporting left much to be desired. But change did not occur until the impetus was provided by the accounting profession. And, even though many actuaries were involved in creating the audit guide, we still question some of the principles and practical effects of GAAP accounting.

Another example of unapplied actuarial knowledge is the debate over how to tell someone how much his life insurance policy is going to cost. The shortcomings of the traditional method of adding premiums and subtracting dividends and the n th-year cash value have been known for a long time. But, again, the impetus for change did not come from the actuarial profession—and again the debate still rages over which is the "right" method.

Admittedly, these are only two examples of action being taken by others in areas where actuaries have specialized knowledge. But they may be indicative of a more general performance gap in the conversion of actuarial knowledge into action.

My concern is not with the intellectual quality of what we will learn in this area but rather with the problem of communicating the knowledge so that it becomes part of management decisions—especially those being made by or requiring the support of members of management who do not have an actuarial background. There is no simple way to do this, because the issues we deal with are complex and the task of translating our knowledge into terms others can relate to is difficult. But there may be some basic factors operating that inhibit our effectiveness as communicators and motivators.

Specifically, one area I think we should question is whether the content and the mechanics of our educational system are giving us the background and skills required to influence the actions of other people. I will try to illustrate this line of thinking by posing a few very general questions:

1. Does our educational system—mathematically based, self-study, “all or nothing” written examinations, and so on—give us the best foundation for the give-and-take necessary in the business world? Or would a formal M.B.A. base with specialization in actuarial topics be better?
2. How effective is our continuing education program in keeping those of us with aging certificates up to date and able to cope with the new developments in our own and other fields? Should we require proficiency tests or seminars at periodic intervals in our chosen specialties?
3. Do we develop a professional attitude that prevents us from accepting the viewpoints of other disciplines—for example, those of accountants, financial analysts, consumerists, and marketing officers?
4. Do we tend to talk to each other in a specialized language and fail to respond to the needs of others to understand what we are talking about? Perhaps the GAAP controversy would not have been necessary if the mystique of asset shares had been translated more effectively into terms others could relate to.
5. Should part of our training be devoted to developing our skills in the process of two-way communication and other “nontechnical” disciplines?

I would be the first to agree that my remarks do not apply to all actuaries, and that they are not particularly action oriented—which, incidentally, may be why I am taking the license of making them at a panel on research. But I do hope that there is at least the seed of an idea here that, if nurtured, would lead to a new direction of “research” that has not, to my knowledge, been adequately explored.

MRS. ANNA M. RAPPAPORT: I would like to suggest some research areas in which actuaries should be interested.

The product approaches and recommendations as to individual insurance needs are usually based on a rather simple single model of the family. In fact, however, there are many diverse patterns of life cycles and styles. In addition, the commonly accepted model is based on a one-income, two-adult family. In fact, there are now three prevalent patterns—a one-income, two-adult family; a two-income, two-adult family; and a one-income, one-adult family. All of these family types may have varying numbers of dependents. Furthermore, little is done to understand the earnings patterns of families. An understanding of family

earnings patterns seems essential to an understanding of the needs of our customers. The tools of the actuary would be most helpful in analyzing this type of information, and in building suitable models as a background on which to impose product research.

The Institute of Life Insurance in its research and studies has pointed to the life-cycle product as the solution to meeting varying needs and family patterns. However, the concept has been developed only to a very minor extent, and a great deal of actuarial research is needed for its development.

The life insurance business depends on distribution mechanisms which have complex compensation and incentive systems. There is a growing recognition that the incentives built into the compensation systems often do not match the objectives of the companies. Actuaries should be doing research on objective-oriented compensation systems and how they fit into company objectives.

MR. RICHARD SQUIRES: Some comments have been made about reducing sales of equity-linked products when the share market is not acting well. In the United Kingdom this has not been our experience. I am associated with the Save and Prosper Funds, which are the largest unit trust in the United Kingdom. We have found that our sales force has been able to continue its normal rate of sales under adverse market conditions, but some flexibility is required. When common shares are not attractive to the public, we have switched our sales efforts to unit trusts using stocks—I believe you call them bonds—and the sales can continue. In other circumstances we will link with real estate or mortgage trusts. When all these are no longer attractive, we found that common shares were again the preferred linkage. As I said, some flexibility is needed.

On the general question of research, the Institute of Actuaries has several mechanisms that might recommend themselves to your consideration. For one thing, when a student becomes a Fellow, he is sent a letter indicating that he is expected to make some contribution to the profession. One of these ways would be to serve on committees or to work on our examinations, writing questions or checking. Another way is for the student to commit himself to doing research for the profession and the writing of papers. The system has worked very well. I feel that reaching the new Fellow and letting him know what is expected of him early is an important ingredient of the success of the system. One other facility that we have might be of interest to you. That is the Student Society and its *Journal*. The Student Society was originally formed to

help the aspirants toward Fellowship find the best material for their studies. Over the years they developed their own *Journal*, in which they published material on a variety of subjects. This *Journal* is now used as a testing ground for new ideas—papers that the author is not yet ready to submit as his final ideas on the subject. Papers printed there are a somewhat less serious matter for the author, and, if the ideas expressed are not first rate, no censure attaches itself to the originator. This is often a place for preliminary runs of material and is very useful for that purpose.

MR. C. S. MOORE: I would like to make three brief points. The first is to echo Mrs. Rappaport's remarks by expressing my agreement with Mr. Richard Squires's suggestion to give new Fellows a choice of serving on a research committee or on a tutorial committee of some sort. I have written down his suggestion and will bring it to the attention of the Canadian Institute of Actuaries council. Of course, we already have an informal procedure along these lines, wherein new Fellows are approached on a very low-key basis and asked to serve in one way or another. On this basis, of course, there is a very obvious third choice open to our new Fellows—to do nothing at all.

My second point is directed toward the panel's references to recent experience of Canadian variable products. Contrary to the remarks made, we have found that our sale of variable insurance and annuity products is fairly independent of stock market performance, at least in the short run. In fact, our sales have continued to improve in spite of periods of poor stock performance during recent years.

Finally, I would like to make a point concerning the goals of actuarial research. In recent years we have seen a great deal of valuable research, but what I feel has been missing from this research, in some cases, has been a practical follow-through. For example, for several years we have had available a number of excellent procedures for measuring the profitability of an agency, including, among others, the LOMA study. In our own company we had reason to use the latter approach, since we were studying the feasibility of opening a new branch office in the Toronto area. What disturbed us was the tremendous swing in results that arose from very small changes in our assumptions. On the one hand, the branch office could never become profitable, whereas, on the other hand the branch office broke even after a fairly short period of time—five or ten years.

As a result, I mentioned my company's lack of success at two different actuarial workshops and asked whether there were any members

present who had been satisfied with the results of any attempts to measure agency profitability. So far, the experience of other companies appears to be similar to our own. But I must try again; has anyone here had what he would consider reliable and useful output from his company's efforts to measure agency profitability?

MR. E. J. MOORHEAD: A possibly useful list of research projects for actuaries can be found in a document issued by the Institute of Life Insurance in January, 1974, entitled *Issues Emerging from the Project II Effort as Seen by E. J. Moorhead, Project Director*. Nine different items calling for additional research and study are listed and briefly described; most of these originated in the deliberations of the several study groups involved in the Project II undertaking. A copy of this document is obtainable on request to the Institute or to me.

MR. STEVE D. SCHULTZ: Little has been said at this session about who should pay for actuarial research. I would like to know whether any members of the Society have done actuarial research under government grants. In physics and chemistry most of the more basic research is done under government financing. Physicists decide what experiment they want to run or what part of theory they want to build up; then they apply to the most appropriate government agency for money. Of course, the government would not pay for just any research, but it is not difficult to imagine actuaries gathering pertinent data regarding, and making important insights into, some of the problems facing Americans that United States senators, local congressmen, and key men in United States and local government agencies are trying to solve.

Many actuaries would not consider the search for cures for cancer and heart disease to be fields in which actuaries should do research, but company actuaries have access to large policy application files containing information about the physical qualities of people who have bought life and health insurance; they have access to individual cause of claim records; and they have experience in making statistical studies upon which to base rules for medical underwriting. Another way in which actuaries could make themselves useful to the public is by projecting numbers of school-age children in school districts and projecting local taxes collected, and federal government aid received, in the school districts.

Making a statistical study of cancer symptoms is not a job that a company actuary would do to gain information about his company's financial position, and it would be a fairly expensive health and welfare

project for his company. For this, and for a projection of public school financing, government should pay.

MISS MARGARET A. TREVARTHEN:* I would like to answer the question concerning the United States government's participation in actuarial research. The Unemployment Insurance Service in the Department of Labor has had, in the last few years since the 1970 amendments were made effective, an annual research budget of approximately three-quarters of a million dollars. Part of this is spent on program research and part for actuarial research, primarily in benefit financing and benefit cost estimating. Some of the research is done in house by our staff; some is done by state agencies (the program is a cooperative federal-state one), some by universities, and some by private organizations and companies. For instance, at present five states are working on cash-flow models to project tax income, benefit payments, and resulting reserve balances so that they can play the "what if" game to evaluate certain proposed changes in benefit formulas or tax structures. Also, we are planning to do some basic research on exposed-to-risk theory in cooperation with the Unemployment Insurance Commission in Canada.

There is a joint Committee for an Actuarial Education and Research Foundation or Fund, including representatives of all the actuarial societies, which has had one meeting. The committee hopes to have some recommendations formulated in time for the fall annual meetings of the various societies, so that this project can be started next year. We plan another meeting soon to discuss the advantages and disadvantages of using either a foundation or a trust fund and to formulate a list of proposed studies.

MR. DAVID W. BUDDINGTON: In my opinion, the actuarial profession has suffered not so much from a lack of research as from the failure to make effective use of the research that has been done in bringing it to bear on the problems of our business.

However, to the extent that there are barriers to the performance of actuarial research, I feel that the environment in which the actuary operates is a much more important factor than any lack of encouragement by the Society. Indeed, I think that the Society does a reasonably good job of stimulating interest by providing forums for the discussion of the important problems facing our profession. I have in mind here

* Miss Trevarthen, not a member of the Society, is a member of the Conference of Actuaries in Public Practice and of the American Academy of Actuaries.

the panels and workshops at Society meetings and, especially, *The Actuary*.

Once the seed for researching a particular area has been planted, however, it needs to be fostered by a favorable environment. In many cases the research role is subordinated to the need to deal with day-to-day problems; this, in my experience, is probably the major deterrent. In other cases, research projects may be sidetracked because of the emphasis by management or by ourselves on projects with a favorable cost/benefit ratio or on activities that are expected to produce a particular result within a certain period of time. To the extent that we feel the actuarial research activity is receiving insufficient attention, I suggest that we attempt to bring about a change in our working environment.

I would like to review the mechanisms now existent for encouraging research. First, we have a Committee on Research that is particularly charged with exploring new mathematical techniques and new methods of doing the work of the actuary. Second, we have the continuing education committees that have recently been charged with the work of research also—they are to encourage literature in their various areas of interest. I think that the research charge is so recent that it is not yet possible to make a valuation of the results of their work. Finally, we have a joint Committee for an Actuarial Education and Research Foundation or Fund that is exploring the possibilities of setting up such a fund or foundation. In addition, we give the Triennial Award for a paper by a recent new member of the Society. Perhaps no further encouragement is necessary. On the other hand, perhaps there should be a committee to encourage exploration into new territory—for example, a group offering a prize for the best paper on selected subjects that are of possible future interest. Mr. Krisher mentioned the way we let adjusted earnings get away from us. While all the controversy was going on, there was no special effort by the Society to encourage members to investigate the matter. The same was true of new ideas of cost comparisons. In addition, there might be considerable pressure on the part of an actuary's employer against his getting into these subjects.

VARIABLE LIFE DEVELOPMENTS

1. Recent regulatory developments in the United States and their implications
 - a) The SEC
 - b) The NAIC and state insurance departments
 - c) The Life Insurance Company Income Tax Act
2. Recent developments in product design
 - a) The impact of regulation
 - b) The impact of recent economic developments
 - (i) On investment objectives
 - (ii) On other pricing considerations
 - c) The emergence of alternatives to variable life insurance
3. Special problems in VLI
 - a) Minimum guarantees
 - b) Asset share analysis
 - c) Cash-flow considerations

Dallas Regional Meeting

MR. IAN M. CHARLTON: I would like to identify the ways in which the various regulations might impact upon the development of variable life insurance (VLI) products.

I. COST COMPARISON INFORMATION

One area of impact would seem to be disclosure for cost comparison. The suggested guidelines for the registration statement proposed a table illustrating premiums, death benefits, and cash values for a \$10,000 initial sum policy, the figures being reduced to a per \$1,000 of initial sum basis. The response from the Securities and Exchange Commission staff studying this question asked for several additional tables.

A. *Equal Premiums*

One such basis uses a prescribed premium of \$300 annually, with hypothetical rates of return of 0, 5, and 8 percent (see Table 1). It would seem that, while the equal premium concept may shed some light on comparisons of one plan with another, the way in which either plan operates may well be clouded by the figures. There is a need to see the relative change in benefits and the incidence of the changes, which can be perceived more readily on a per \$1,000 basis. In addition, since companies may be gearing for larger (or smaller) policies than the average, the level of the premium chosen is critical. Also, illustrations at high issue

TABLE 1
 ILLUSTRATIVE PREMIUMS, DEATH BENEFITS, AND CASH VALUES
 (Per \$300 Annual Premium; Age 25; Initial Sum Insured = \$20,695)

END OF POLICY YEAR	TOTAL PREMIUMS	DEATH BENEFIT ASSUMING HYPOTHETICAL ANNUAL GROSS INVESTMENT RETURN OF			CASH VALUE ASSUMING HYPOTHETICAL ANNUAL GROSS INVESTMENT RETURN OF		
		0%	5%	8%	0%	5%	8%
1.....	\$ 300	\$20,695	\$20,717	\$20,809	\$ 0	\$ 0	\$ 0
2.....	600	20,695	20,768	21,070	0	0	0
3.....	900	20,695	20,834	21,415	0.40	0.42	0.43
4.....	1,200	20,695	20,902	21,773	190.52	204.21	212.72
5.....	1,500	20,695	20,970	22,144	379.50	416.04	439.33
6.....	1,800	20,695	21,040	22,527	567.15	636.04	680.99
7.....	2,100	20,695	21,110	22,923	753.48	864.45	938.70
8.....	2,400	20,695	21,182	23,334	938.47	1,101.68	1,213.60
9.....	2,700	20,695	21,255	23,758	1,121.98	1,347.78	1,506.49
10.....	3,000	20,695	21,329	24,197	1,304.12	1,603.30	1,818.89
15.....	4,500	20,695	21,716	26,624	2,181.29	3,016.35	3,698.07
20.....	6,000	20,695	22,128	29,478	2,977.96	4,640.91	6,182.42
Age 65..	\$12,000	\$20,695	\$23,998	\$46,455	\$5,109.69	\$12,838.69	\$24,852.96

ages would be placed in a poorer position compared with illustrations at lower issue ages.

B. Interest-adjusted Cost

A response was requested on the interest-adjusted method, assuming 5 per cent per year and using hypothetical investment rates of 0, 5, and 8 per cent (see Table 2).

Three approaches are open: (1) subtract the appropriate cash value from accumulated premiums and identify the result as the interest-adjusted net cost for surrender at time t ; (2) follow the same approach but divide by an annuity factor; or (3) perform a further division using the average of the variable sum insured for the period.

The major question to be addressed is the one concerning the amounts of insurance when the results are to be reduced to a per \$1,000 basis. The initial, the final, or the average could be used. Since plans have differing objectives with respect to the emergence of benefit, utilizing amounts of insurance seems to add a complexity which could make the results deceiving.

The following methods and assumptions were used:

1. The premium was calculated assuming a \$10,000 policy.
2. Cash values were calculated annually using the variable sum insured at the

end of each year and using the 1958 Commissioners Standard Ordinary 3½ per cent minimum cash value factors.

3. Cost is the gross premium less the ratio (i)/(ii), where (i) is the cash value at time *t* and (ii) is $\frac{3}{2}$ at 5 per cent for all gross investment rates (GIR's).
4. The average cost per \$1,000 variable sum insured is the cost as described in item 3 divided by the average variable sum insured at year end for *t* years.

C. Yield Method

A further request involved using a closed group of persons of a specific age and applying lapse and mortality factors to the group. For specific

TABLE 2
ILLUSTRATION OF INTEREST-ADJUSTED COST
(Age 25; Gross Premium per \$1,000 = \$15.53)

TIME	0% GIR* Cost	5% GIR Cost	8% GIR	
			Cost	Cost/\$1,000 VSI† at Year End
1.....	15.53	15.53	15.53	15.45
2.....	15.53	15.53	15.53	15.35
3.....	15.52	15.52	15.52	15.23
4.....	13.50	13.35	13.26	12.90
5.....	12.37	12.06	11.87	11.46
6.....	11.69	11.23	10.92	10.45
7.....	11.27	10.64	10.22	9.70
8.....	11.01	10.22	9.68	9.11
9.....	10.85	9.91	9.24	8.61
10.....	10.76	9.66	8.88	8.21
15.....	10.88	9.10	7.64	6.74
20.....	11.39	9.07	6.93	5.81
25.....	11.98	9.29	6.46	5.14
30.....	12.57	9.66	6.17	4.64
Age 65.....	13.58	10.64	6.06	4.03

* Gross investment rate.

† Variable sum insured.

hypothetical investment rates the series of benefit payments and premium payments then could be determined. A calculation then could be made to determine what yield rate must be earned on the premium series to meet the benefit series. Figures were requested using 1958 CSO mortality, with no lapses until specified periods were completed (namely, five, ten, and 20 years and to age 65), at which time all policies are assumed to lapse.

An illustration of the method is as follows:

1. Assumptions and methods
 - a) 1958 CSO mortality.

- b) Death claims paid at end of year of an amount equal to the ending variable sum insured.
 - c) Lapses occur only at the end of the t th year (e.g., lapse rate is zero until the end of the test interval).
 - d) Premiums were based on the gross premium plus policy fee for a \$10,000 policy.
 - e) Cash flow for every year, except the end of the test interval, was the total premiums collected at the beginning of the year minus death claims paid at the end of the previous year.
 - f) Amount payable to policyholder at the end of the test interval was death claims for year t plus surrender value at end of year t .
2. Results
- a) GIR = 8 per cent.

DURATION	YIELD RATES	
	Age 25	Age 40
5.....	-33.7%	-19.6%
10.....	- 7.4	- 3.4
20.....	+ 1.5	+ 2.6
Age 65.....	+ 4.6	+ 3.6
Age 100.....	+ 5.1	+ 4.7

- b) GIR = 5 per cent.

DURATION	YIELD RATES	
	Age 25	Age 40
5.....	-35.4%	-21.3%
10.....	-10.0	- 5.8
20.....	- 1.4	- 0.15
Age 65.....	+ 1.7	+ 0.7
Age 100.....	+ 2.2	+ 1.9

In the equating of two series, a nonunique solution can occur. But, beyond that, can it be meaningful to an individual to review figures using mortality assumptions which may be appropriate neither to himself nor to the assumptions under which the policy was constructed? Although the use of this yield method may be of value to the company, where "averages" can be achieved, it would seem better to view the illustra-

tions from the viewpoint of the individual purchaser, who cannot be "averaged" to death.

D. *Component Method*

The request for figures continues to one identified as the component method of Professor Belth. In this method there is identified a "protection element," which consists of the present value of death benefits for specified periods of time, using interest, mortality, and lapse. A second component is the "savings element," which consists of the present value of assumed surrenders during the period and possibly the present value of future death benefits beyond the period specified. Differing results would be achieved depending on the difference between the cash-value calculation and the present value of future death benefit calculation.

For a participating policy a dividend component is identified. The final component is identified as the *E*-component, representing the company retention, and is obtained by subtracting the other identified components from the present value of premiums.

The sensitivity of the assumed interest rate for the present-value calculation can be demonstrated (see Table 3). Comparison of Table 3, A, with Table 3, B, shows the results of using $3\frac{1}{2}$ and 5 per cent discounting rates. The GIR is 5 per cent for these tables. Inspection of Table 3, C and D, where an 8 per cent GIR is used, reveals more substantial differences.

When Table 3, A, is compared with Table 3, C, ($3\frac{1}{2}$ per cent present value) or Table 3, B, with Table 3, D (5 per cent present value), substantial differences are also revealed if the GIR varies while the discounting rate is held constant. If the discounting rate and the GIR's are held the same, as in Table 3, B and E, only minimal differences are revealed.

In order to obtain a reasonably clear picture, it would seem that several tables would have to be presented to the prospective purchaser. Unless the prospective purchaser has a knowledgeable adviser, it would seem that more confusion than clarity would be created by the component method. With the additional question of the appropriateness of specific lapse discounts or mortality assumptions and the impact thereof, it would seem that this method would produce more confusion than illumination.

II. OTHER DISCLOSURE INFORMATION

Another question relates to the percentage of each year's gross premium which is utilized for sales commissions and for other sales expenses.

TABLE 3
BELTH METHOD: CALCULATION AGE, 25; NUMBER OF YEARS
IN CALCULATION, 40; ANNUAL GROSS PREMIUM INCLUDING POLICY FEE, \$15.53
A. GROSS INVESTMENT RETURN, 5%; INTEREST RATE FOR
PRESENT-VALUE CALCULATION, 3½%

t	i-1/2%	q _x	LAPSE RATE	VARIABLE SUM INSURED*	PRESENT VALUE AT ISSUE OF COMPONENTS FOR FIRST t YEARS*			
					Protec- tion	Savings	E	Premium
1.....	1.00000	0.00193	0.10400	\$1,001	\$ 1.87	\$ 0.00	\$13.66	\$ 15.53
5.....	0.74538	0.00208	0.04700	1,013	7.70	12.97	41.48	62.15
10.....	0.59673	0.00240	0.03600	1,031	13.11	37.74	51.13	101.98
20.....	0.40025	0.00492	0.03600	1,069	21.78	66.04	60.46	148.29
40.....	0.13229	0.02904	0.20000	1,160	36.48	79.18	63.58	179.25

t	SUMMARY RATIOS FOR THE BELTH METHOD		
	Protection/Premium	Savings/Premium	E/Premium
1.....	12.0%	0.0%	88.0%
5.....	12.4	20.9	66.7
10.....	12.9	37.0	50.1
20.....	14.7	44.5	40.8
40.....	20.4	44.2	35.5

B. GROSS INVESTMENT RETURN, 5%; INTEREST RATE FOR
PRESENT-VALUE CALCULATIONS, 5%

t	i-1/2%	q _x	LAPSE RATE	VARIABLE SUM INSURED*	PRESENT VALUE AT ISSUE OF COMPONENTS FOR FIRST t YEARS*			
					Protec- tion	Savings	E	Premium
1.....	1.00000	0.00193	0.10400	\$1,001	\$ 1.84	\$ 0.00	\$13.69	\$ 15.53
5.....	0.74538	0.00208	0.04700	1,013	7.40	12.07	41.11	60.58
10.....	0.59673	0.00240	0.03600	1,031	12.23	32.87	51.59	96.69
20.....	0.40025	0.00492	0.03600	1,069	19.18	51.23	64.23	134.64
40.....	0.13229	0.02904	0.20000	1,160	28.78	53.60	73.37	155.74

t	SUMMARY RATIOS FOR THE BELTH METHOD		
	Protection/Premium	Savings/Premium	E/Premium
1.....	11.8%	0.0%	88.2%
5.....	12.2	19.9	67.9
10.....	12.6	34.0	53.4
20.....	14.2	38.0	47.7
40.....	18.5	34.4	47.1

* Per \$1,000 of initial sum insured.

NOTE.—Numbers may not add to totals because of rounding of individual items.

TABLE 3—Continued

C. GROSS INVESTMENT RETURN, 8%; INTEREST RATE FOR PRESENT-VALUE CALCULATIONS, 3½%

t	1-1/2%	8%	LAPSE RATE	VARIABLE SUM INSURED*	PRESENT VALUE AT ISSUE OF COMPONENTS FOR FIRST t YEARS*			
					Protection	Savings	E	Premium
1.....	1.00000	0.00193	0.10400	\$1,005	\$ 1.87	\$ 0.00	\$13.66	\$ 15.53
5.....	0.74538	0.00208	0.04700	1,070	7.91	13.69	40.55	62.15
10.....	0.59673	0.00240	0.03600	1,169	13.86	42.57	45.56	101.98
20.....	0.40025	0.00492	0.03600	1,424	24.58	85.04	38.66	148.29
40.....	0.13229	0.02904	0.20000	2,245	48.15	125.16	5.94	179.25

t	SUMMARY RATIOS FOR THE BELTH METHOD		
	Protection/Premium	Savings/Premium	E/Premium
1.....	12.1%	0.0%	87.9%
5.....	12.7	22.0	65.2
10.....	13.6	41.7	44.7
20.....	16.6	57.4	26.1
40.....	26.9	69.8	3.3

D. GROSS INVESTMENT RETURN, 8% INTEREST RATE FOR PRESENT-VALUE CALCULATIONS, 5%

t	1-1/2%	8%	LAPSE RATE	VARIABLE SUM INSURED*	PRESENT VALUE AT ISSUE OF COMPONENTS FOR FIRST t YEARS*			
					Protection	Savings	E	Premium
1.....	1.00000	0.00193	0.10400	\$1,005	\$ 1.85	\$ 0.00	\$13.68	\$ 15.53
5.....	0.74538	0.00208	0.04700	1,070	7.59	12.74	40.25	60.58
10.....	0.59673	0.00240	0.03600	1,169	12.90	37.06	46.72	96.69
20.....	0.40025	0.00492	0.03600	1,424	21.49	65.72	47.43	134.64
40.....	0.13229	0.02904	0.20000	2,245	36.74	82.15	36.86	155.74

t	SUMMARY RATIOS FOR THE BELTH METHOD		
	Protection/Premium	Savings/Premium	E/Premium
1.....	11.9%	0.0%	88.1%
5.....	12.5	21.0	66.4
10.....	13.3	38.3	48.3
20.....	16.0	48.8	35.2
40.....	23.6	52.7	23.7

* Per \$1,000 of initial sum insured.

NOTE.—Numbers may not add to totals because of rounding of individual items.

TABLE 3—Continued

E. GROSS INVESTMENT RETURN, 8%; INTEREST RATE FOR
PRESENT-VALUE CALCULATIONS, 8%

t	$t-1p_x$	q_x	LAPSE RATE	VARIABLE SUM INSURED*	PRESENT VALUE AT ISSUE OF COMPONENTS FOR FIRST t YEARS*			
					Protec- tion	Savings	E	Premium
1.....	1.00000	0.00193	0.10400	\$1,005	\$ 1.80	\$ 0.00	\$13.73	\$15.53
5.....	0.74538	0.00208	0.04700	1,070	7.02	11.08	39.60	57.70
10.....	0.59673	0.00240	0.03600	1,169	11.28	28.28	47.96	87.52
20.....	0.40025	0.00492	0.03600	1,424	16.85	40.08	56.41	113.34
40.....	0.13229	0.02904	0.20000	2,245	23.48	38.73	61.26	123.47

t	SUMMARY RATIOS FOR THE BELTH METHOD		
	Protection/Premium	Savings/Premium	E/Premium
1.....	11.6%	0.0%	88.4%
5.....	12.2	19.2	68.6
10.....	12.9	32.3	54.8
20.....	14.9	35.4	49.8
40.....	19.0	31.4	49.6

* Per \$1,000 of initial sum insured.

NOTE.—Numbers may not add to totals because of rounding of individual items.

It might be questioned whether all commissions and sales expenses are related to the gross premium for the year, since the company, in all probability, will experience negative asset share contributions in early years and recoveries in later years. To the extent that such negative early positions are capitalized, possibly it is more reasonable to relate sales commissions and expenses to the gross premium, adjusted for the change in the capitalized amounts, thereby recognizing that not all sales costs are intended to be equated to the gross premium for the same year. In addition, there are several other items of disclosure which I have not discussed.

III. CERTIFICATION

Consideration is being given to requiring actuarial certification representing that the policy is not designed to create more favorable results at disclosed ages than at others, that the policy design is actuarially sound, and that the figures in the registration statement are correct. Further, request has been made to define "generally accepted actuarial principles" and "actuarially sound."

Since companies' efforts are geared to the markets they feel best qualified to serve, it might well be expected that premiums will be gauged to enhance competitive aspects of the plan for that marketplace.

Since the actuary would have to qualify his certification along the lines that there are no discontinuities from one age to the next, it would not seem feasible to require a certification that illustrations do not result in more favorable data for one specific age when compared with another some years apart.

With respect to the definitions, I quote from our "Guides to Professional Conduct and Interpretive Opinions":

- b) The member will exercise his best judgment to ensure that any calculations or recommendations made by him or under his direction are based on sufficient and reliable data, that any assumptions made are adequate and appropriate, and that the methods employed are consistent with the sound principles established by precedents or common usage within the profession [Guide 4]

and

1. "Actuarial soundness" is neither an absolute nor a unique concept, but must be considered in relation to the problem at hand and the accuracy with which future experience can be predicted. Therefore, the Committee believes that general opinions as to "actuarial soundness" should be avoided, wherever possible, and that an opinion as to the adequacy of a given financing arrangement with respect to specifically defined objectives, assumptions or requirements should be substituted, where appropriate, or otherwise be appended [Opinion S-4].

IV. NAIC PROPOSED MODEL REGULATIONS

Points to be addressed concerning effect of the National Association of Insurance Commissioners proposed model regulations on policy design would include the following:

1. *Design limitation.*—Article IV, Section 2(e), all but limits product design to the paid-up approach or the approach where investment experience must be used to provide coverage identical with that provided by the base plan. Other plan designs have met with difficulty.

2. *Premium limitation.*—In addition to the "free look" provision—Article IV, Sec. 3(a) (5)—which allows the policyholder to return the policy within forty-five days of the application date (but at least ten days after receipt of the policy), Article IV, Section 3(f), requires that a table be placed in the policy showing maximum premiums for each age which, if exceeded, may require adjustments in cash values. The effect of this mandatory provision is to make it very undesirable to exceed this premium table.

3. *Maximum asset deduction.*—Article VI, Section 7(a), establishes a graded

maximum deduction of 0.75 per cent, grading down to 0.30 per cent of assets for "investment expenses," plus a 0.50 per cent deduction for mortality and expense guarantees. Along with the gross premium, these asset deductions provide the only income items to cover benefit costs, expenses, and margins for contingencies. The actuary may find it necessary to change cash-value scales to less liberal levels in order to reduce benefit costs. An increase in the valuation rate of interest can accomplish this, and have the probable effect of reducing the size of future death benefits.

4. *Benefit base.*—Article VI, Section 2, requires that the separate account contain assets with a fair market value at least equal to the greater of the valuation reserves or the benefit base. It appears as though it will be required that liabilities also be held to this extent. Thus it appears that the use of the Commissioners Reserve Valuation Method for the reserve base will require an additional earmarked liability equal to the difference between the benefit base assets and the policy reserves. Therefore, if there is pressure on surplus funds, the formula for the benefit base may have to be adjusted to reduce surplus strain. Moving from a net level basis to CRVM is one example. Changing the base will have implications for the variable sum insured.

MR. HENRY K. KNOWLTON: I would like to begin by making a few brief comments with respect to recent developments in product design.

The impact of regulation seems to be strangulation, and, from a personal viewpoint, I cannot see much hope for relief at this point. The impact of recent economic developments could have substantial negative effect on VLI as a viable product, at least to the extent to which one considers VLI to be tied to investment in equity securities. Specifically, the economic developments to which I refer are the following:

1. The energy crisis.
2. Worldwide inflation.
3. The level of current interest rates.
4. Predicted long-range shortages of certain raw materials and increased costs related to the unilateral nationalistic action of countries having these materials. A specific example is the recent increase in the price of bauxite for making aluminum.

If one examines these stimuli, and refers to Mr. Vanderhoof's paper presented last year at the annual meeting of the Society of Actuaries (*TSA*, XXV, 417), it is easy to see why the stock market currently acts as it does; in fact, it is difficult to understand why the market is not even lower.

Mr. Vanderhoof's paper included equations for predicting the long-term interest rate and for predicting the level of stock market prices relative to this long-term interest rate. According to the interest rate

equation, the long-term interest rate increases 1 per cent for each 1 per cent of inflationary expectation based on recent history of price increases. If inflation cannot be brought under control, as some pessimists seem to feel, then it is likely that we will see interest rates continue at their current levels and perhaps even higher.

The second of Mr. Vanderhoof's equations relative to stock market prices, specifically to the Standard and Poor's index, has a large negative element related to the current level of interest rates which reflects the inverse correlation between common stock prices and the level of interest rates.

If, in fact, long-term interest rates are going to stay at high levels, and the stock market does not "go anywhere" for an extended period of time, a company considering VLI must decide whether or not it wants to fund a VLI separate account with common stock investments. In looking for alternatives other than common stocks, our hands are tied somewhat by the NAIC model regulation, which specifically prohibits investment in commodities and real estate. While the answer may appear to be to have a separate account which is a balanced fund or even largely a bond account, if we are dealing with a separate account where assets are valued at market, long-term bonds exhibit the same inverse price relationship with interest rates as do stocks and, consequently, when valued at market, give us little protection from substantial negative earnings in times of rising interest rates.

In a nutshell, the current economic developments do not appear very favorable to the introduction of VLI. Perhaps if the regulators succeed in delaying our entry into the VLI market by five years, they will have done us a favor in allowing us to enter the market at a time when the economic situation may be more favorable toward equity-oriented products.

I. MINIMUM GUARANTEES

There are two types of minimum guarantees suitable for VLI policies, and these should be thought of separately. The first is the minimum death benefit guarantee, which is required in all VLI policies by both the SEC exemption and the NAIC model regulation. The second is the minimum guarantee in the event of survival, which may be a guarantee of the cash value at some point in time or the cash value at all points in time, or may be a guarantee of the monthly income which can be provided by the cash value, provided that the cash value is used to purchase an annuity from a specified VLI separate account. In practice, this third type of cash-value guarantee, that is, that of an annuity, might be difficult or impossible to provide, except under a qualified pension plan, without mak-

ing the VLI policies subject to the 1940 act under which the variable annuity is registered.

The cost of guarantees for either death benefits or cash values must take into account the valuation basis; the incidence and level of separate account yield and the anticipated fluctuations in separate account yield; the amount of the benefit; the design of the policy; the age and sex of the insured; and the anticipated lapse rates.

Considering death benefit guarantees first, some questions are the following:

1. Should the guarantee be limited to the original face amount?
2. If the guarantee is not limited to the original face amount, should an increase in guarantee be tied to the consumer price index, a stipulated rate of increase, or some other standard?
3. How should the cost of the guarantee be provided for in the case of participating policies—in the premium level, in the asset charge, or in the dividend scale?

It has been demonstrated that the change in value of a portfolio of common stock from year to year has many of the characteristics of a random variable. The Standard and Poor 500 common stock index, for example, shows this characteristic. The cost of the guarantee for a given valuation basis, age, sex, and benefit design can be simulated using the past performance of this index as a data base. If a large number of simulations are made and the results tabulated, the statistical distribution shows a substantial skew. For a large percentage of the simulations, or in most cases, the cost of the minimum death benefit is zero or negligible, while for a relatively small number of cases the cost of the minimum death benefit may be substantial. In pricing the minimum death benefit, the company has to decide what risk it will take, and in this area there is substantial room for judgment and for difference in opinion as to the price of this minimum death benefit.

For example, a large, mature company may decide that it can set the price of the minimum death benefit assuming that the price will be sufficient in 95 per cent of the cases, while a smaller company may need a cost for this benefit which will be sufficient in 99 per cent of the cases. Because of the steepness of the curve at this particular point, the premium required to be 99 per cent safe may be 10 or 20 times as great as the premium required to be 95 per cent safe. Thus the opportunity exists for wide differences of opinion with respect to cost, notwithstanding the use of common underlying statistics.

In an attempt to reduce the cost or risk inherent in the minimum death benefit, the company does have the option of attempting to modify its

investment policy to reduce this risk. However, this may result in a reduction in investment return and a reduction in anticipated policy benefits. For example, the company might decide to hold 30 or 40 per cent of the separate account assets in fixed-dollar securities to reduce the investment risk. It should be remembered, however, that as far as short-term fluctuations of value are concerned, fixed-dollar securities are subject to the same type of vacillation in value as are equity securities, since the company is not permitted to value assets in a separate account at other than market.

With respect to survivor or nondeath guarantees there is an almost

1. The cash value can be guaranteed at all points in time. While this sounds a bit like heresy, it may be possible to superimpose a scale of minimum cash values at the maximum interest rate (e.g., 4 per cent) on a scale of cash values that are somewhat higher than minimum. For example, if the policy contained cash values which were equal to CRVM reserves on a 3 per cent basis, the policyholder would have available at any time the greater of the CRVM reserves on the current amount of insurance or the 4 per cent minimum cash value on the initial amount of insurance. At most ages there is a wide enough margin between CRVM reserves and minimum cash values to permit this type of guarantee at a fairly low cost, assuming that a 90-95 per cent adequacy of premium is used as a cost basis.

With respect to the pricing of this type of benefit, the price or cost of the benefit at any point depends on the market level relative to the minimum guarantee and the probability of lapse. As far as I know, relatively few people have attempted to price this benefit, but the ones with whom I am familiar have all assumed that the surrenders would be 200-300 per cent of the normal rate if the guarantee came into play. The cost determination is subject to the same sort of simulation as the minimum death benefit with respect to the investment returns, but the determination of the rate of surrender probably involves mostly strongly subjective feelings on the part of the actuary.

2. The cash value may be subject to a minimum of the tabular cash value in the policy multiplied by the initial amount of insurance at some single point in time, for example, the later of age 65 or twenty years. Assuming any sort of reasonable long-range return, the cost of such a benefit (assuming a 95 per cent sufficiency test) can be determined by simulation and will be found to be quite low. The benefit does, however, present some design problems as far as the cost is concerned, namely, whether or not the benefit should be provided to continuing policyholders as well as surrendering policyholders, and in what form. For example, at age 65 the benefit could be cash payable on surrender only, cash payable in any event, or cash payable on surrender plus paid-up additions (fixed or variable) to continuing policyholders.

3. Another possible form would be to guarantee that the death benefit under a variable reduced paid-up policy would be at least equal to the reduced paid-up insurance based on the initial amount of insurance and the period the policy has been in force. This is another form of minimum death benefit, but one available on termination only. The cost of this benefit may be determined using the same techniques that were used for a policy during the premium-paying period, although a more refined profit test approach will be required to include experience under the variable paid-up amounts after lapse. Since the benefit base normally will be the paid-up reserve, and since the policy will not be premium-paying, the cost of the minimum paid-up benefit, considering only experience after the policy goes on reduced paid-up insurance, will be the same under a New York Life as under an Equitable design.
4. Variable settlement options or annuities equal to a guaranteed annuity rate multiplied by the tabular cash value of the policy based on the initial insurance amount could be provided on qualified pension plans. As far as I know, no company has made this type of guarantee, but from a mathematical viewpoint it appears that the guarantee could be priced using a double decrement technique and simulation. In the pricing, no doubt it would help if the same separate account were used for the preretirement and postretirement benefits, which would not be permitted under the NAIC regulation but might be possible under a qualified pension plan.

II. ASSET SHARE ANALYSIS

It is possible to use a conventional asset share analysis for VLI policies, assuming a level return on the separate account and making a level charge against experience for the cost of the minimum death benefit and other minimum guarantees. If the rate of return to the separate account is chosen to reflect the anticipated long-range rate of return, and if the minimum death benefits and guarantees are reasonably priced, then this method will give the actuary a fairly accurate picture of the average profit to be expected on a given block of variable life business. The method will not, however, provide any data relative to the probability of achieving this average profit. Another method of handling asset share analysis is to make multiple simulations of asset shares on the basis of simulated investment experience and actually to reflect the costs of the minimum death benefits as a result of the variation in these simulations. In practice this is quite a valuable technique, since a company can develop a frequency distribution of its probable profit from VLI.

When this type of technique is used, there are a number of interest rates, or rates of return, to be selected, which the actuary must keep careful track of. These include (a) the investment return on the separate account, (b) the investment return on the general account, and (c) the

general account discount rate which is used for discounting future profits to their present value. When simulation techniques are used, the actuary must decide also whether to increase his lapse or termination rates in periods of unfavorable investment return.

Another problem which faces the actuary with respect to asset share analysis, or at least with respect to variable life pricing, is the relative price between variable and fixed-dollar products. From an examination of the first fifteen registration statements filed with the SEC, it appears that the initial pricing has been quite conservative, perhaps overly so. In pricing VLI, it seems to me that frequently we lose sight of the fact that, even though the policy contains a minimum death benefit and the company is taking this risk, the company has substantial investment risks under its fixed-dollar products which, under VLI, are borne entirely by the policyholder. I do not know whether or not many of you are experiencing right now a run on policy loans as a result of the current level of the prime rate, but, if this has not happened, it certainly could. This "run" on cash backed by fixed-dollar investments is a substantial expense for which we are probably not now charging, because of the fact that we value our fixed-dollar assets at amortized value rather than at market value. The lack of guaranteed investment return can be a significant savings to the company; should we not take this into account in pricing our variable products?

III. CASH-FLOW CONSIDERATIONS

The fact that the general account transactions with the policyholder are on a cash basis while the general account transactions with the separate account are on an accrual basis will cause some cash-flow problems or at least some potential problems.

Since premiums normally will be held in the general account and transferred to the separate account on a timely basis as they come due, the general account will have net cash equal to the premiums it is holding for future transfer to the separate account reduced by the total due premiums which it has not received but has already transferred to the separate account. The cash status of the general account with respect to the separate account will depend almost entirely on whether premiums are transferred to the separate account on an annual or more frequent basis. If premiums are transferred on an annual basis, then the separate account will be a debtor to the general account to the extent of the net due and deferred premiums.

If, on the other hand, premiums are transferred to the separate account on a monthly or daily basis, it would be impossible for the separate ac-

count to be a net debtor to the general account unless all gross premiums were paid monthly and were paid on an average of more than thirty days or fifteen days following their due dates, respectively. To cite another example, if all gross premiums were paid on an annual basis and paid on their due dates, and if net premiums were transferred to the separate account on a monthly or daily basis, the general account would, on the average, hold for future transfer to the separate account between five and a half and six months' premiums.

In actual practice, at least on the basis of the projections we have made, it appears that the general account will hold money due the separate account for future transfer as long as net premiums are transferred to the separate account on a monthly or daily basis. The investment earnings on funds held by the general account for transfer to the separate account (or advanced to the separate account on a net basis) can be determined on the basis of a projection by mode of premium payment, by assuming a given number of days between due date and date of payment and taking into account the frequency of transfer to the separate account. These investment earnings can then be taken into account in asset share calculations.

If policy loans are made from the general account at a fixed interest rate, without adjustment of the separate account interest rate for a given policy according to the amount of loan, then a substantial block of VLI business could, at a time when yield rates are high, result in substantially increased cash flow from the general account, for which the general account would presumably not be receiving adequate compensation. It seems to me that the greatest cash-flow problem in the separate account is likely to be in this area of policy loans. Hopefully, the normal positive cash flow occurring as a result of premium income will, in most instances, prevent substantial liquidation of separate account assets as a result of downward market fluctuations.

The model NAIC VLI regulation permits transfers into the separate account "to support the operation of the policies with respect to the separate account to which the transfer is made." I do not know the purpose of this language, but apparently this would permit a company whose general account had excess cash and whose separate account was short of cash to transfer cash temporarily into the separate account for the purposes of supporting policy loans or benefit payments in excess of the cash flow to the separate account. If this is, in fact, the meaning of this provision, then it appears that the over-all cash flow of the company with respect to the VLI business would involve no risks not present in the fixed-dollar business and would, in fact, involve substantially less eco-

nomic risk, in that the investment risk resulting from any unfavorable liquidation will be borne, at least to a large extent, by the departing policyholders.

Montreal Regional Meeting

MR. RAYMOND J. NACIN, JR.: I would like to comment upon the variable life insurance (VLI) regulatory climate in the United States, some of the more recent developments in regulation, and the impact that regulations have on product development.

Current interest in VLI started with publication of the New York Life actuaries' paper on fixed premium variable benefit life insurance in the 1969 *Transactions* (XXI, 343). The second major development occurred in the fall of 1971, when the American Life Convention and the Life Insurance Association of America petitioned the Securities and Exchange Commission for the exemption of VLI from the four securities acts. In February, 1973, the SEC rules exempted VLI from the 1940 acts but made it subject to the Securities Act of 1933 and the Securities Exchange Act of 1934. In September, 1973, we saw SEC release No. 8000. It stated that the SEC was going to make a determination on whether or not the state as developed provided substantially equivalent protection to the 1940 acts. In December, 1973, the National Association of Insurance Commissioners promulgated a set of VLI model regulations. In February, 1974, the SEC sent out its first set of comments on the S-1 registration statements that a number of companies had filed. Questions asked were: How do you feel about displaying the level of commissions? What tables can best display increases in benefits? Tell us whether or not there is a fiduciary relationship with respect to VLI? What do you think about requiring an actuary to certify that the VLI product is actuarially sound and conforms to the various laws? There was a section with a number of questions on cost comparisons. The tables in the original S-1's were based on a \$10,000 policy, and they showed death benefit and cash-value results. The SEC wanted to see what the results would look like if we used an equal premium method—in other words, what will \$200 of premium buy? They also wanted to know whether the interest-adjusted cost method, or what they call the "yield method" or the "Belth method," could be applied to VLI for cost comparisons.

They also wanted our opinion on various financial statements which would be required in conjunction with the S-1. In March, 1974, the SEC started hearings on the NAIC model regulations. Conversations have started with the Internal Revenue Service on the tax questions. The NAIC has a number of technical modifications to its original model law,

and there is also the *Wellington* suit. The *Wellington* suit requested that the SEC reverse the exemption granted from the 1940 acts.

I will discuss some of the questions that the SEC posed to the NAIC and the American Life Insurance Association after their hearings in March 1974. These questions were responded to by the ALIA on May 24. The ALIA took the basic position that they had answered all the questions in the hearings in the written documents that they had provided the SEC. For the most part, they referred to their former responses and, where necessary, made whatever additional comments were appropriate. The first question was, in effect: "If we were to amend the original exemption, would this be inconsistent with the elimination of duplicate regulations?" The answer was yes. The SEC wanted comments on whether or not specific listings of protections would limit the flexibility of the commissioners in regulating VLI. Again, the association said yes. The SEC asked: "Does the limitation on gross premiums actually provide effective control of commission to agents or sales charges?" The ALIA's response was that this really is the best control, the best measure for doing this right now. The commission continued: "What actions can the SEC take to curb any abuses, particularly during the twelve- to eighteen-month monitoring period?" The association said that there were remedies under the 1933 and 1934 acts, sanctions of broker-dealers, and so on, that could be applied to take care of whatever problems came up in the interim.

The next question that the commission asked was: "Is rescinding or modifying the exemption rule 3C4 inconsistent with the McCarran Act?" The ALIA said that it certainly was. The SEC wanted to know whether the states could really in fact provide adequate substitute regulations under the model act, and again the association said that they could. In the original presentation, it was stated that the separate account involved could not be divided into shares and that it was virtually impossible to provide voting rights to policyholders under a VLI separate account. The SEC asked this question of the association: "League Life says it is going to do this; how is it going to divide its separate accounts into shares and have voting rights?" The association's response was: "Ask League Life—we really don't know."

The next point brought up was that the ALIA had said that the premiums in any particular year bear no relationship to the expenses. The association confirmed that this was, in fact, true. The SEC asked: "Is there some way we can come up with some sort of reasonable 9 per cent limitation?" The association said that if a company wants to set around a 9 per cent limitation, all it really has to do is raise its premium to come up with higher absolute dollar commission for the salesman. And,

in fact, the policyholder is going to look at his policy and know that he was better off with a \$90 premium on a VLI policy than a \$100 premium, totally and completely irrespective of whatever commission the agent might be getting. The SEC asked: "Why can't a 9 per cent rule of some sort be applied over some period of time, as on variable annuity?" Basically, the association said that the charges cannot be split out and that this is a totally different kind of a product from the variable annuity. The SEC asked: "Is it proper to recommend VLI to somebody who we know in advance is going to terminate before his death? Should somebody buy VLI if he knows he is going to terminate after twenty, twenty-five, or thirty years or at age 65? And, if this is the case, is this a situation where a combination of term and mutual funds would be as suitable?" The association replied that VLI was suitable for such a person and that the objectives of a person buying this product really are different from those of somebody buying a mutual fund and term. Here a person has the option of continuing full coverage, taking extended term, taking reduced paid-up, taking a cash value, or taking an annuity, and really only those last two options are available to a variable annuity purchaser. The last question that they asked was: "Do you support adoption of the model regulations immediately without reservation?" And the association said yes.

The SEC also asked a number of questions of the states. There was a fifteen-page list of questions on the model regulations themselves. The target date of reply for the NAIC is August. Some of the more interesting questions were: Will competition limit sales charges? What happens if the state of Michigan allows League Life to have voting rights in their separate accounts? Will the state of Nebraska go along with that? What would be the impact of the inconsistencies involved in rescinding the 3C4 exemption if in fact there were substantial deficiencies found in the first twelve to eighteen months? What protections can be provided in the situation where a stock company has a decision to make wherein they can discriminate against a separate account in favor of the company? Some specific questions on the model regulations: What is the difference between a product being suitable as opposed to being not unsuitable? The question of using lapse rates as a test of suitability came up, and they asked what level of lapse rates is in fact an indicator of unsuitability? They wanted to know whether the commissioners had so much flexibility in interpreting the law that they could get around the model law. They wanted to know, whether, in fact, reduced paid-up can be sold without guaranteed death benefit. They wanted to know: "How are you going to notify the people that buy this particular product of the eighteen-month

exchange provision?" They wanted to know about a minimum death benefit on reduced paid-up additions. They also wanted to know about disclosure of sales cost other than direct commission to the agents. And again they asked the question on suitability and termination, in other words: Is this product suitable for someone who knows in advance that he is going to terminate? We will have to wait and see what the answers to those questions are.

Under the 1933 act I think it is now clear what is involved. It is basically the "truth in securities" act—an act that requires that companies selling securities present adequate facts for an intelligent purchase. It requires that the product being sold be registered with the SEC, and requires the delivery of a prospectus before or at the time of sale. There are certain civil liability provisions. It requires that certain things go into a prospectus. In the VLI prospectus there will be a cover page, a general description of some of the technical features that is supposed to explain VLI to the man on the street in such a way that he will understand it. There are tables of various kinds that are going to let him compare his product with other products. There is going to be a technical section, but some things will be covered in the nontechnical description. There are financial statements; there is a section on certification of the actuary; and there are various reconciliations and appendixes.

Under the 1934 act we are fairly certain what is involved. This act was to establish and maintain fair and honest securities markets. Any company going into VLI basically either has to have or has to form a broker-dealer; it has to have principals for the broker-dealer. It has to register the broker-dealer with either the National Association of Securities Dealers or the SEC. It must train and test the registered representatives. It has to establish back-office procedures, develop a compliance manual, appoint a compliance officer, and come up with measures of suitability which have to be approved by the board of directors. It has to provide sales training for its registered representatives.

We talked briefly about the fact that last December the NAIC developed a model law. The sections of this law covered definitions, the qualifications of an insurance company to issue VLI, the insurance policy provision requirements, how the reserve liabilities of VLI were calculated, a section on separate accounts, a section on information furnished the applicant, what the application looked like, reports to policyholders, the qualifications of agents to sell VLI, and a severability article. Specific points of interest in the model law are controls on charges. One of the ways charges are controlled on VLI is by a limit on the gross premium that one can charge. There also are limits on charges against a separate account.

There is a limit of 0.75–0.3 per cent for investment management charges grading down as the separate account increases, and 0.5 per cent for mortality and expense guarantees. There are also certain limits on product designs.

The suitability question is not what is suitable for a particular client but what is not unsuitable—a more simple statement. One of the things that will be used as an indicator of the suitability of a particular product is the comparison of VLI lapse rates with fixed-dollar lapse rates. There is a free-look provision; basically the policyholder can turn in his policy forty-five days from the application or ten days after issue, whichever is later, and get his money back. There is disclosure of the agent's commissions—the policyholders get to know exactly what we are paying the agent. And there is an exchange provision that says the policy may be exchanged for a fixed policy at any time within the first eighteen months. We have to credit full premiums to the fixed policy, and there is the payment of the difference in cash values either to the company or to the policyholder, depending on how it works out. The model regulations say that variable extended term may not be offered, and they also say we must offer a loan; the loan must be from a separate account if it is a mutual company. The loan must affect only the borrower, and a company can call a loan only when the collateral reaches 100 per cent of the total cash value; in other words, if a policyholder takes out a loan (say, a 50 per cent loan) and it reaches the point where the loan is 100 per cent of the cash value, at that point you notify your policyholder, and thirty-one days later you can terminate his policy.

The IRS situation is pretty well undefined right now; it would appear that the policyholder's taxation will be comparable to what we have under fixed-dollar life insurance. The company situation at this point is totally and completely up in the air. The conversation has just begun, and a number of approaches have been suggested that we can cover later if there is some interest.

The final area I will mention is that of the development of products and the impact that regulation has on the development of products. As I mentioned, there are restrictions on the designs one can use. One is limited to the paid-up addition approach or the premium-paying addition approach, and with the paid-up addition approach one can also use paid-up term insurance. There are only three choices. One has the New York Life approach, the Equitable approach, and the Equitable approach with some paid-up term additions. The policy must be a level premium life term policy.

Because of the multiples test, there are limitations on both the premium-paying period one can use and the expense element one can use in the dividend formula. A minimum death benefit guarantee must be provided. This is a very interesting product development question. There is no choice here whether or not to offer a minimum death benefit guarantee, but there is a choice on how much to charge, and there is very little in the way of traditional actuarial theory or knowledge that can be applied to aid in making cost estimates. There are limits on the assumed interest rate (AIR) that vary by state. In a state that has a $3\frac{1}{2}$ per cent maximum, one is limited to a $3\frac{1}{2}$ per cent AIR. There is the impact of the disclosure on your cost. VLI is an expensive product, and one must reflect the development cost and the increased cost of administration of this product. There is going to be some impact on product development of disclosure of commissions. Would one want to disclose to the public that a product is paying a first-year agent's commission of 130 per cent? There are limitations on dividend options; one can elect to receive dividends in cash, apply them to premiums, or purchase paid-up additions on both a fixed and a variable basis. One can have accumulation at interest in the general account and one-year term on a fixed basis only. On a qualified product one can have variable accumulations. The question comes up: What does one do about inflation and expenses? The law requires that all investment gains be passed to the policyholder, and, therefore, some sort of inflation factor must be built into premium calculations. Another area that is intriguing is the guaranteed cash value rider. This is mentioned in at least three different places in the regulations. The first question is: Should we offer it? The second question is: If we should offer it, where should the guarantee be? Is it a one-point guarantee at age 65 or ten years if later, or is it all values after age 65, or is it all the time? One can get into some deep philosophical arguments about not offering it at all and what limits one should place on it if it is offered. Beyond that, pricing it is more fun than trying to price the minimum death benefit guarantee. It is very difficult to determine exactly what it should cost.

There must be compliance with the cash-value adjustment test, an extension of the multiples test. What one does is to compare the present value of gross premiums over the lifetime of the policy with the statutory maximum premiums over a period of time. If the present value of gross premiums is greater, the excess has to be reflected in an immediate increase in first-year cash values. It is highly unlikely that any company will have a premium that does not meet the test, because the increase in cash value is disastrous to profitability. Surplus strain is a consideration in product development—a company offering VLI must determine its benefit base. The benefit base is what one puts in the separate account. It would ap-

pear at present that we have the option of setting up a reserve different from the benefit base. The difference between the benefit base and reserve would be company surplus in the separate account. The NAIC is looking at this now, but it would appear that this option exists, and, depending on how you work it, there can be a tremendous difference in surplus strain.

Complications involving the field arise in VLI. In our company we like to come up with product specifications and talk to the field about them and make whatever adjustments are reasonable and necessary. It is difficult to go to one's agents and ask, "Do you want a 2 per cent AIR or a 4 per cent AIR?" They do not know what you are talking about. What one must do in all aspects of VLI is try to translate these technical details into impact on the premium and impact on the benefits. Explain that if we have a high AIR our premium is lower; that is great for competition, but the problem is that we have to earn more net investment yield to get any increase in benefit; in other words, we have a product that takes a higher investment return to respond. And we do have to talk to agents about VLI.

Qualified VLI poses a question, particularly now that it is impossible to sell to the man on the street. Should we offer qualified VLI? If so, what kind of a product? One must consider the level cash values on VLI other than the test limits. In other words, is this a protection product, and should our first-year cash value be zero? Should it be \$1.00, should it be \$10, should it be 75 per cent of the gross premium? There are many different reasons why one would use one approach as opposed to another, basically depending upon the reason for buying the product. In addition, the profitability of this product has been affected tremendously by regulation, not only through the expenses but also by the elimination of the excess investment income. The fact is we have to offer a guaranteed death benefit that we really do not know for sure how to price, and there is the possibility of offering the guaranteed cash value, which we again have some difficulty in pricing. We do have to offer a policy loan, but under state law we can as a company offer partial withdrawal as long as we make it extremely clear to the buyers of the policy that they do have a choice of the policy loan as opposed to partial withdrawal. Under a nonqualified VLI policy, settlement options can be on a fixed basis only. It would be totally logical to have a variable annuity settlement option on this product, but it just is not allowed. The premiums for incidental benefits must be set out separately for this product. One cannot bury them in with the basic premium. An area that is left wide open is the fixed benefit whole life rider. Does one want to have one of these? On what basis? Should it be the same as the variable policy? In spite of the regulatory maze and

its impact on product development, I feel that VLI is going to be a salable and profitable product for the industry. I think it is going to be essential that companies have this product to attract agents and clients.

MR. FRANK W. SPEED: VLI developments in Canada came somewhat earlier than they did south of the border. Questions relating to regulatory jurisdiction and the impact of regulation on product design were, for the most part, resolved about four years ago and, perhaps surprisingly, to almost everyone's general satisfaction.

Recent regulatory developments are few and reflect essentially the further development of an already established product. Preliminarily, let me mention that in Canada the same regulations apply to VLI as to variable annuities, including the same tests for exemption from securities commission regulation. For many years it has been accepted that in legislation and regulations the term life insurance includes annuities. One of our current problems, as a matter of fact, is that late last year a lower court decision in Manitoba ruled that annuities are not life insurance. Unfortunately, the industry could not promote an appeal because of the circumstances of the particular case. It appears, however, that some authorities are going to move fairly quickly to restore the previous situation through appropriate legislative amendments.

Probably you are most interested in the way the jurisdiction dispute between the securities commissions and the insurance departments was resolved. In Canada there are only provincial securities commissions—no federal securities commission. In only three provinces—Ontario, Manitoba, and Quebec—have the securities commissions asserted jurisdiction over insurance company products. The Ontario Commission took the lead in developing the solution that emerged.

As a side note, in Ontario the securities commission and the insurance department both report to the same government minister, and the superintendent of insurance is a member of the securities commission. These things probably contributed to the speedy resolution of the jurisdiction problem.

In a nutshell the situation is this. If a variable contract (life insurance or annuity) guarantees to return on death or maturity 75 per cent of premiums paid to that date, the contract is exempt from securities commission regulation. Otherwise a prospectus must be filed, and in Manitoba and Quebec (not in Ontario) the company must register as a securities issuer and agents must be licensed as securities salesmen.

The solution came about in this way. The Ontario Commission said, in effect, "We think that these products are securities and that we have

a duty to regulate them. Therefore we are not going to provide a specific new exemption. However, if they fit under one of the exemptions presently in the act, we won't take that exemption away." As it happened, there was an exemption in the act for "evidences of indebtedness . . . of an insurance company licensed under The Insurance Act." The questions then were, "What would be the extent of the guarantee required?" and "At what points must the guarantee be effective?" On the first question, we were able to find a precedent for suggesting 75 per cent of premiums paid as an appropriate minimum guarantee and to supplement this with acceptable explanations relating to the nature of our products. On the second, it was quickly agreed that the guarantee should apply on "completion of the contract," which was felt to mean death or maturity. No guarantee is required on surrender—the analogy being with a bondholder who sells before maturity and accepts whatever value is available at the time.

There were a number of technical problems that arose with regard to such things as substandard extra premiums, premiums for extra benefits, lapse, reinstatement, partial withdrawal of funds, and the like, but these were sorted out with the director of the Ontario Commission without too much difficulty. As a matter of interest, one of the problems related to a whole life contract and was resolved when the commission agreed that the guarantee could relate only to premiums paid prior to age 75. Manitoba adopted the Ontario rules with minor differences, and the Ontario rules also were acceptable to Quebec.

Although the industry was not prepared to admit that their variable contracts are securities (it has a legal opinion in support of that view), and despite some feeling that the proposed solution is a poor theoretical basis for distinguishing insurance products from securities (for example, a decreasing term policy cannot get an exemption while a single premium endowment can), the "75 per cent guarantee" requirement was accepted as a practical solution to the jurisdiction problem. Today virtually every variable contract offered in Ontario, Manitoba, and Quebec contains the guarantees necessary for exemption.

This solution was arrived at in the fall of 1970. In Ontario it is set out in a statement of opinion published by the commission. There is no legislative backup as yet, but the industry expects that there will be. When a complete revision of the Securities Act was put forward for study in 1972, the industry proposed that the "75 per cent guarantee" requirement be incorporated in the act and received a positive response from the deputy minister. However, the revision appears still to be under study.

In Manitoba there is a formal regulation under the Securities Act set-

ting out the requirements for exempting variable insurance contracts. In Quebec there are no written rulings, although the Quebec Securities Commission has orally made its position clear to industry delegations on several occasions.

There has been only one minor problem since the "75 per cent guarantee" requirement was agreed upon. In Ontario a variable settlement option included as part of an exempt variable insurance contract does not itself require the inclusion of a guarantee. In 1973 it came to the Commission's attention that one company was providing a settlement option without a guarantee through a separate contract from the exempt contract. It was concluded that each contract must stand on its own for the purpose of determining whether or not it is exempt. Thus a separate variable settlement option contract must contain a guarantee even though an otherwise identical settlement option may be provided without a guarantee as part of an exempt variable contract.

One of the primary concerns of the various securities commissions appears to have been that the purchaser of a variable insurance contract obtain what the commissions felt to be proper disclosure at the point of sale. Fortunately, in 1970 when the jurisdiction question arose the Ontario Securities Commission and the Ontario Insurance Department got together and prepared disclosure rules that were acceptable to both. (The industry's views were sought in the preparation of these rules.) Then, virtually identical regulations were adopted under the Securities Act and the Insurance Act with respect to disclosure at the point of sale (the Insurance Act document corresponding to a prospectus is called an "information folder").

Shortly thereafter, the Association of Superintendents of Insurance adopted the same disclosure rules as were agreed upon in Ontario. As a consequence, any potential problems regarding disclosure were completely defused.

The membership of the ASI includes all the provincial superintendents. It is the Canadian counterpart of the NAIC, but there is one important difference in the way it operates. When the association passes a resolution adopting a set of rules, the industry assumes that those rules are immediately in effect across Canada. Therefore, the superintendents do not always feel the necessity of promoting either amendments to legislation or formal regulations on these matters.

This system has advantages both for the superintendents and for the industry, and it has resulted in a commendable degree of uniformity in insurance regulation across Canada. The benefits of this system have been felt in the area of the regulation of variable insurance contracts.

The superintendents introduced their first "interim rules" regarding variable contracts in the fall of 1968. These called for the filing of individual policy forms (the filing of policy forms is not normally required in Canada) and of a copy of the information folder which the rules required be given a purchaser before an application is taken. They required that a receipt be obtained for the information folder, that an annual statement be given the purchaser, and they prescribed some of the things that must be included in the policy form, information folder, and annual statement.

The information folder called for by these original interim rules was to contain a brief description of the policy benefits and of certain features—notably the management charges and valuation frequency (which had to be not less than monthly)—of the investment fund (called "segregated fund" in Canada). In 1970 the Ontario Insurance Department—Securities Commission accord—if I might call it that—greatly expanded the volume of investment fund information required in the information folder.

In 1971 the rules were again changed to permit a summary of the information folder to be delivered to a purchaser. The summary omitted much of the investment information introduced the previous year, but required somewhat more investment information than the original rules. This change was felt to be compatible with the Ontario Securities Commission's ideas, since it was known that the commission was considering an internal recommendation for the use of a short form of prospectus. The proposed revision of the Ontario Securities Act that I mentioned earlier contained such a provision.

At the present time, most companies use the summary form of information folder, although a few use the longer form. However, the full circle was turned a few weeks ago when one insurance department indicated its intention to accept only summary or brief information folders in the future.

I will not take the time to try to summarize the disclosure requirements, since they have been largely unchanged since the fall of 1971.

There have been two recent proposals for change in the variable contract rules. One is a proposal from the industry to narrow the exemption granted to group variable contracts. This relates essentially to a group variable annuity problem. The other proposal is from the superintendents for further disclosure requirements and restrictions with respect to what are called "property funds"—funds that propose to invest in mortgages or real estate. In both cases specific detailed proposals are before the superintendents, but no action has been taken as yet.

One other item of interest: it is understood that one insurance depart-

ment is presently giving some thought to requiring a rescission right in variable contracts.

The federal insurance department is involved to some extent also. Traditionally the provincial superintendents have been responsible for policy forms, sales practices, and the licensing of companies and agents, and the federal superintendent for solvency and valuation of assets and liabilities. However, with the advent of individual variable contracts, the federal and provincial superintendents have come up with rules that overlap slightly each other's traditional roles. The provincial superintendents' current proposals regarding property funds, for example, reach into the area of the valuation of assets. On the other hand, the federal superintendent's guidelines regarding equity-based contracts providing for guaranteed benefits reach into the area of product design.

The federal guidelines, for example, prohibit the guarantee of cash values. They also bring the funds backing contracts with other than minimum guarantees within the equity-investment restrictions of the Insurance Act, which could, for some companies, limit the sales of such contracts. Among other things, the guidelines require the reserve for guarantees to be held in the general funds of the company and regulate the size of the guarantee reserves. One other matter not specifically a part of the guidelines but applicable nevertheless is a prohibition against policy loans against the variable portion of a contract.

The current federal guidelines were established in June, 1971, and there have been no subsequent problems.

On the subject of taxation, the Income Tax Act provides for the allocation of investment income and realized capital gains of the fund to policyholders and taxation in their hands of such allocations. (In Canada 50 per cent of realized taxable gains is subject to tax at normal rates.) There is no taxable gain on disposition of a variable policy as there may be on disposition of nonvariable policy.

The Income Tax Act recognizes the allocation problems faced by insurers by permitting a certain amount of flexibility in the method of allocating investment income and capital gains. Any reasonable method of allocation will be acceptable. The method adopted by any particular company for allocating capital gains would be influenced by such things as the type of policy, number of policyholders, record-keeping facilities available, and the like. Among the possibilities are (1) not allocating, that is, having the company absorb the tax; (2) allocation to individual policyholders according to their actual experience in the fund; and (3) allocation on some arbitrary basis. Another method of dealing with capital gains problems, of course, is to charge the fund for the maintenance of a reserve against which realized capital gains may be offset.

Unrealized capital gains are not taxable, nor can tax credits be obtained for unrealized losses or based on the policyholders' own actual experience with a policy. There is at present some difference of opinion in the industry as to whether or not a change in the act should be sought permitting the deduction of loadings and surrender charges in the determination of taxable gains.

In the regulatory environment that I have described, basic policy design has been left largely to the discretion of the individual company. Four broad types of the variable life insurance contract have emerged:

1. Policies with both premiums and benefits expressed in units of the fund. Such policies may be life, endowment, or term.
2. Fixed premium life or endowment policies where the reserve is invested in the segregated fund and the fund appreciation or depreciation (plus mortality and loading dividends if the policy is participating) are applied to provide paid-up adjustments to the sum insured. Frequently a part of one of these policies (say, 50 per cent) is fully guaranteed.
3. Fixed premium endowment policies where a portion of the premium is applied to acquire units of the fund. In some such policies the death benefit is the initial sum insured plus the appreciation in unit values, in others the initial sum insured or the accumulated fund if greater.
4. Fixed premium policies with scheduled amounts of fully guaranteed level or decreasing term insurance, where a portion of the premium is applied to acquire units of the fund. The death benefit is the guaranteed insurance amount plus the fund value.

All of these policies have an overriding guarantee to return on death or maturity 75 per cent of premiums paid.

MR. JEROME S. GOLDEN: Over the last seventeen months the Dow Jones average has fallen around 20 per cent, and companies in the United States are probably thankful that they did not issue their first VLI policy at the peak of the market back in January, 1973. However, it is possible that whenever United States companies begin issuing VLI in the general market (i.e., non-tax-qualified), there could be similar investment experience over an initial period. The question that arises is, Should the recent investment performance affect a company's approach to VLI—in particular, in the choice of an underlying investment policy? My answer would be "probably not."

First, VLI of the type that will be offered in the general market in the United States is *life insurance* that should be sold with an emphasis on the death benefits the policy can provide over the long term. Daily, monthly, and even longer periods of stock market declines should not overly concern prospective purchasers of VLI, if they have confidence in

the long-term return under common stock investments. The guarantee for the *life* of the policy of a death benefit at least equal to the initial face amount and, in addition, under certain designs the guarantee for *each* policy year of a death benefit equal to that in effect at the beginning of the year should reduce concerns of policyholders. But what about agents? It is not uncommon to see variable annuity sales results, particularly in the non-tax-qualified market, follow the bounces of the stock market. Our own company, in meetings with agents and managers to discuss VLI, has stressed the point that VLI should be sold to individuals who are interested in life insurance and who feel that over the long term common stocks may outperform fixed-dollar investments but are willing to bear the risks as to the entire cash value and the variable death benefit in excess of the initial face amount.

Despite a personal confidence in the long-term outlook for the stock market and in the professional manner in which the product will be sold, one might still consider whether an underlying investment policy of "primarily common stocks" is appropriate. Two alternatives might be marketable bonds or real estate investments. The latter is ruled out under the NAIC model VLI regulation because of the difficulty of readily determining market values. Real estate investment trusts are permitted, but these investments are subject to the whims of the market just as common stocks are. I am hopeful, however, that a vehicle will be developed so that VLI separate accounts may invest in real estate, possibly through investment in an underlying fund, the market values of which reflect real estate investments.

The use of a separate account investing in marketable bonds, although superficially appealing, has problems of its own. First, the investment results in such an account over the recent period would have been quite disappointing. For example, over a twelve-month period beginning May, 1973, one bond index showed a total return of minus 6.4 per cent. This index is the Salomon Brothers Total Performance Index for the High Grade Long Term Corporate Bond Market. In addition, the bond separate account would have been subject to violent fluctuations over this recent period.

More important than the recent returns in the bond market are what I would characterize as policyholder relations problems, particularly in a mutual company, of such an approach. Existing policyholders might be concerned that new premium income in the company would be diverted to the bond account enjoying the recent high yields. This might cause replacement problems. A more difficult problem would be the anomaly, I think, of selling a VLI policy with no guarantee of cash value side by

side with a traditional fixed benefit policy with cash-value guarantees, both with the underlying assets invested possibly in quite similar types of securities. Here is a question one might consider. If all options were available (i.e., there were no regulatory restrictions), should such a company (a) provide cash-value guarantees under the variable policy or (b) eliminate the guarantees under the fixed benefit policy?

The approach our company will follow is to have an investment policy which provides primarily for investment in common stock but also provides for investment in other securities, taking into account economic conditions and the general level of common stock prices.

TABLE 1

AVERAGE ANNUAL RATE OF INCREASE IN VARIABLE DEATH BENEFITS
 ASSUMING NET RATE OF RETURN (AFTER DEDUCTION OF ASSET CHARGE)
 EQUAL TO 3 PER CENT PLUS ASSUMED RATE OF INFLATION

DESIGN	RATE OF INFLATION 3%		RATE OF INFLATION 6%	
	At Age 65	At Age 100	At Age 65	At Age 100
Dutch.....	2.9%	2.9%	5.8%	5.8%
NYLIC.....	1.6	1.7	3.4	3.7
Walker (Equitable)....	1.5	2.2	3.2	4.6
Booth.....	1.2	3.0	2.8	5.7

Another economic fact of life today has been the high rates of inflation, occurring during a period of falling stock prices. Obviously in the short run there will be periods when benefits under variable policies will be going in the opposite direction to inflation. But how about the long run?

To partially answer this question, I prepared a study of the variable death benefits provided under four of the VLI designs described in the discussion to the original New York Life paper. In preparing this study, I created a hypothetical investment under which the annual rate of return equaled the sum of (a) the AIR of 3 per cent, (b) the asset charge, and (c) the annual rate of inflation. Looking only at issues to male age 35, I found out that the average annual compound rate of increase in variable death benefits to age 65 and to age 100 did not compare very closely with assumed rates of inflation of 3 per cent and 6 per cent, except under the Dutch design (see Table 1).

A more pressing problem for those companies just about to enter the VLI business is the pricing of their product, in particular, the provision for the risk of increasing expense rates into the future. In the original research done at the Equitable, we assumed that a portion of the asset

charge was available to support a 5 per cent annual increase in per unit expense rates. However, those calculations assumed a long-term trend of stock market performance that produced a net rate of return in excess of 7 per cent. If today's trends continued for any substantial period, nearly all of our asset charge would be required to cover increased expenses. In view of the limitation on asset charges for expense and mortality risks under the model regulation, a good hard look must be given to the expense levels expected in the future under VLI.

MR. RICHARD W. KLING: The alternatives to VLI appear to fall into two general classifications: (a) development of new policies or riders that have the death benefit tied to an external index such as the consumer price index (CPI) and (b) use of current products in "packaging" situations. These alternatives have one big advantage over VLI: they can be and are being marketed today.

Products that have death benefits linked to an external index have the advantage of closer correlation with actual changes in the cost of living than VLI based on investments in common stocks. However, the maximum increase in the death benefit is limited, which is not the case with VLI. In addition, premium rates appear to be relatively high for this type of plan. In addition to the increased death benefits, two possible reasons for these high premiums may be the lack of a suitable investment medium (i.e., one cannot invest in the CPI) and high required cash values. Another external index approach is the use of a rider which adjusts the basic coverage in accordance with changes in the index. The total death benefit is never less than the basic coverage, and any increases are funded by one-year renewable term insurance premiums which are automatically added to the premium for the basic coverage. A problem with this approach is that, over a period of time, an increasing index combined with the increasing one-year term rates can make it very expensive.

One of the "package" suggestions is essentially a "buy term and invest the difference" approach. That is, for the same premium dollars required for a VLI policy, buy instead a five-year level term insurance policy renewable to age 70 for the same initial death benefit, and invest the remaining dollars, if any, in mutual fund shares. Using my company's proposed VLI policy, its five-year term policy, our parent company's mutual fund structure, and a reasonable guess at the tax situation, we attempted this comparison. The package itself presented various problems. A contractual-type mutual fund plan required a level payment and therefore could not be used. The use of lump-sum mutual fund purchases required an extremely large total premium because of minimum initial purchase

requirements. Due to the increasing nature of the term premium, subsequent lump-sum fund purchase minimum requirements became a restraint. At the higher attained ages, where the term premium exceeded the VLI premium, fund redemptions were necessary. Briefly summarized, the results of this hypothetical comparison for issue age 35 and various rates of return are as follows: The package has generally higher death and surrender benefits at the earlier durations and lower surrender benefits at the later durations. Once the term insurance expires, the VLI death benefit is substantially larger. For low rates of return, the mutual fund is quickly depleted when the term premium exceeds the VLI premium. This reduces or cancels the term insurance.

The minimum death benefit guarantee is thought to be a risk with relatively minimal per policy cost. This does not mean that it can be ignored. One way to approximate the cost of this benefit is to employ a simulation technique using a long-term trend investment rate and fluctuation around this trend based on historical stock market performance. A minimum death benefit guarantee has also been suggested in connection with a variable reduced paid-up nonforfeiture option. This would involve similar, but possibly more difficult, considerations.

Mortality and expense guarantees take on more significance than is now the case in fixed-dollar nonparticipating insurance. Just as there is the possibility of large mortality profits due to excess investment performance, there is also the possibility, albeit remote, of large mortality losses. Maintenance expenses, on a per unit basis, should increase for VLI as compared with fixed life insurance because of frequent (possibly daily) valuation of assets, more elaborate internal administration, prospectuses, special reports, and the like. Inflation compounds the problem.

I would caution against specifying a certain portion of the asset charge or premium as covering a particular risk or guarantee. I feel that the only reasonable approach is to average all costs and risks, being satisfied that on balance the premium together with the asset charge is reasonably sufficient to pay all benefits and expenses while leaving a margin for profit.

I would like to discuss some of the more important findings that resulted from an analysis of our VLI asset share calculations. These comments refer specifically to the Equitable design but, in some instances, would also apply to the New York Life design.

When the separate account assets are kept equal to the benefit base liability through appropriate transfers between the general and separate accounts, the separate account does not develop profits but merely serves as an index to determine the change in variable liabilities and as a fund of assets backing these liabilities.

It has been stated, and I believe quite logically, that the death benefit formula should be on a net level premium basis. The policyholder pays a level premium and on death should not be penalized for acquisition expense recovery. This type of formula, as opposed to one based on modified reserves, requires a higher premium to produce the same relative profit.

In our fixed-dollar asset share analysis, we attempt to reflect a modification of the federal income tax formula directly in the asset share calculation. We tried a similar approach with VLI, incorporating the modifications to the tax formula as proposed by the ALIA. This formula seems to require that a tax charge be assessed in the separate account. An analysis of the asset share results indicated that, absent a tax charge, the higher the separate account investment return, the lower the value of the profits—clearly an unsatisfactory situation. The inclusion of a portion of the separate account investment return in the company's share of taxable investment income was the cause. The solution was clear. Any company in a Phase 1 tax position must make a tax charge against the separate account if the ALIA or a similar proposal is adopted.

Generally, it has been thought that under the concept of VLI the investment risk is transferred to the policyholder. From a profit standpoint this is not at all true. The better the separate account investment performance, the higher the assets (and, therefore, the asset charge) and the higher the level of mortality profits. VLI profits are affected very significantly by the separate account investment return. With a very low rate of return, our profits turn negative. This is as it should be, since it keeps the company's and policyholder's interests the same; that is, an increase in the separate account investment return will increase the company's profits and the policyholder's benefits, while a decrease will do the opposite.

In order to analyze the interrelationship of the asset charge and the assumed investment return, we investigated the effect of a $\frac{1}{2}$ per cent reduction in the asset charge combined with a $\frac{1}{2}$ per cent increase in the assumed investment return (this does not change the pivotal rate), with all other assumptions the same. This produced the rather startling result of slightly higher death benefits combined with slightly higher pretax profits. It appears that the higher death benefits were due to the lower net single premium rates used to purchase paid-up additions more than offsetting the smaller excess investment earnings (the same excess earnings rate is applied to a smaller base). The smaller benefit base premium transferred to the separate account seems to be the main reason for the increase in the value of future profits.

I would like to comment briefly on the choice of a separate account

investment rate for asset share analysis. I feel that simulation is the best way to handle this assumption, but, if a level rate approximating the simulated results can be determined, the practical problem of testing variations in other assumptions is simplified.

The cash-flow position now experienced in the general accounts of life insurance companies will probably weaken with the introduction of VLI because of benefit base premium transfers to the separate account. The situation is accentuated when annual transfers are made to the separate account on the policy anniversary regardless of the premium mode. Under these circumstances, the extreme situation would probably occur when monthly premiums are paid at the end of the grace period. The problem is lessened when separate account contributions are made on a modal basis and is minimized when they are made on a daily basis. The choice of benefit formula (including AIR) will also have an effect on the amount and incidence of general account cash flow. This should be obvious, since, depending on the choice of benefit formula, different proportions of the gross premium will be transferred to the separate account.

The total-cash-flow position of the company should not change significantly. It is expected that there will be a shift from fixed-dollar investments to equity investments. This may have an effect on the staffing of a company's investment department. For most companies, total cash flow should not be a serious problem.

MR. R. J. SQUIRES: I thought it might be of interest to you to hear something about the position in the United Kingdom, where VLI business has been transacted successfully for the last ten years.

My company is a large unit trust management company, equivalent to a mutual fund in the United States, with an insurance company subsidiary whose prime purpose is to sell monthly savings plans linked to units issued by its parent. It is ten years old and now has 160,000 monthly premium plans in force, representing £17 million annual premium, and some 50,000 single premium plans besides.

The historical development of VLI in the United Kingdom has been rather different from that in the United States. The main impetus came from the unit trust companies that recognized the desirability of monthly savings plans in order to ameliorate the problems of a highly volatile cash flow but faced practical difficulties in designing these as direct investment vehicles. That was because unit trusts, in common with other investment media, are controlled by the Prevention of Fraud Act, which prohibits face-to-face selling, and also because the expense loads are very strictly limited.

These restrictions do not apply to an insurance company, which may employ salesmen and may incorporate whatever expense loadings and pay whatever commissions it chooses. Further, it was realized that contributions paid via insurance premiums would attract tax relief, often to a greater extent than the cost of the death benefits and expense loadings included. Thus it was not surprising that the products were readily marketable.

The companies formed to exploit this market were also innovative in other respects and were, for instance, the originators of the technique of selling through printing the application form as part of a newspaper advertisement. This particular outlet has since become unprofitable, but unit-linked insurance still represents a substantial proportion of the total of new premium income in the United Kingdom.

LIFE INSURANCE AND CONSUMERISM

A review of the social function of life insurance and disclosure of its comparative cost as viewed by the individual policy buyer, the actuary, and the regulator. A discussion of the effect on underwriting results of current and potential restrictions in the use of underwriting information sources.

Dallas Regional Meeting

MR. C. NORMAN PEACOR: The main part of my presentation is the introduction of a new preliminary report which has been published recently by the Society of Actuaries. We are quite anxious as a committee to have as much input as possible from Society members on their thinking as to what this report either shows or purports to show. This preliminary report of the Society of Actuaries Special Committee on Cost Comparison Methods and Related Issues was published May 10, 1974. I would like to supply a little background for those who may not be aware of the committee and its activities. In February, 1973, the Subcommittee on Antitrust and Monopoly of the Committee on the Judiciary of the United States Senate, under the chairmanship of Senator Philip Hart, held hearings on life insurance. During the course of these hearings, many statements were made concerning the entire subject of life insurance cost comparisons. Shortly thereafter, the Society of Actuaries established an ad hoc committee whose charge was to report to the Executive Committee of the Society whether an opinion should be expressed on one or more of the areas being investigated by Senator Hart's committee. The committee started out as the Committee on Truth in Life Insurance. It began operation in April or May, 1973, with six members and was chaired by Bartley Munson.

At about the same time, the National Association of Insurance Commissioners became active in the area of cost comparisons. In December they took steps to inaugurate the so-called model bill on cost comparison methods, disclosure, and deceptive practices. The NAIC actually described a series of twelve research projects that they wanted accomplished. Three of these projects were assigned to the Society of Actuaries and are now in the domain of this committee. They are described in one of the appendixes to the preliminary report.

The report does not contain what I would consider to be a definitive conclusion. That is to say, it does not state that a certain method is *the* cost comparison method, is appropriate and useful under all cir-

cumstances, and, therefore, should be adopted by the life insurance industry. Rather, it is a background report to discuss cost comparison and disclosure. It deals with the question of determination of the true cost of life insurance, types of cost comparisons, and the use of average assumptions. Some of the analysis attempts to highlight the problems in arriving at a conclusion and some of the differences of opinion as to what is cost comparison, what is disclosure, and what is an index.

The report is a summary of most of the prevalent cost comparison methods. There are some that were omitted not by design or because we thought they were not meaningful but because perhaps they had not received wide enough acceptance to be noted in this particular report. I think one of the more interesting sections of the report is a chapter titled "The Relationship of Cost Comparison Index Methods to the Gross Premium Formula." This concept was developed by Lee Kemper. The thing that is enlightening about it, in my opinion, is the conclusion that virtually all the cost comparison methods now in existence, or ever discussed, really are variations on one theme, the gross premium formula. They are all related, and a chapter is devoted to showing the manner in which that relationship does exist. If the report were published containing just that one particular item, it would be meaningful because of the light the chapter throws on the interrelationship among all these methods.

One of the chapters is entitled "Characteristics of, and Criteria for, Cost Comparison Index Methods." I think that this will be of particular value, although people may disagree with what the committee used as criteria. We have objective criteria, subjective criteria, and characteristics concerning certain items. The following question illustrates some of these criteria: "Does the cost comparison index method reflect in some manner the levels of premium, dividends, cash values, and death benefits at all durations?" The report contains a tabular summary showing which criteria are satisfied by each method.

Although a "yes" answer in the table indicates that the element is included in the formula it is not necessarily true, nor should it be assumed, that the element is reflected in the formula correctly or in a way which will not be misleading to a user. We are avoiding a conclusion that just because a method contains those elements it is at least worthy of a subparagraph. Each of the committee members individually, and all the members in concert, evaluated how these criteria shaped up. The deficiency of a numerical tabulation of that kind is so obvious to this statistically minded group that I need not belabor the point. This report is preliminary, but we expect that by the end of the summer

the finished report will be submitted to the executive committee of the Society.

MR. GEORGE HILL: I will confine my remarks to the following four areas: (1) the agent's feeling about the cost indexes, (2) the state regulation situation, (3) consumer attitudes, and (4) the impact of these regulations on the companies.

In September, 1972, the National Association of Life Underwriters National Council went on record as opposing the adjusted method or any specific formula or index which purports to represent the cost or relative value of a life insurance policy. However, their board of trustees held to its position of making available to the consumer all pertinent data and to its position that the interest-adjusted cost (IAC) might be useful under the proper circumstances, although it is inadequate and has limited application. About the same time, the past president of the NALU, Mr. Mischke, summed up the position of both the NALU and the NAIC when he stated that cost comparisons are no substitute for accurate information about the policy provisions, premiums, and cash values. So Mr. Mischke asked the commissioners not to require the agent to present inappropriate figures or confusing information to the prospective buyer. The NALU's position has, however, become a little more receptive to the idea of cost comparison.

The NAIC model regulation provides that the agent or insurer shall furnish to the sales prospect, at or prior to delivery of a policy, the IAC comparison index calculated for both ten and twenty years. The index must be accompanied by an explanation substantially to the effect that the index is a measure of the relative cost of protection for similar plans as well as similar services and that a lower index number represents a better value than a higher one. The proposed rule is to apply to any solicitation, negotiation, or procurement. However, they excluded annuities, credit, franchise, group life, term insurance, and of course policies with varying benefits, policies with supplemental benefit provisions such as waiver, and policies with special dividend options; substandard policies; and policies used in pension trust split funding. They also exempted policies of \$5,000 or less. The original draft by the NAIC task force required that index numbers be given upon request to the sales prospect. But the form adopted by the NAIC at its meeting made the index presentation mandatory. However, later in December, 1973, the task force, which was a subcommittee of the NAIC, concluded that either a mandatory or upon-request provision would be consistent with the NAIC model regulation. Whether the index is mandatory or upon

request is a very significant point. The model regulation requires the agent, at or prior to delivery, to give a dated written proposal to the consumer which includes the name of the agent, the full name of the company, the name of the policy and any supplemental riders, disclosure of any special provisions in the policy other than the suicide and loan provisions, and the separation of any premiums for supplemental benefits, such as waiver, accidental death benefit, or anything of that type. The model regulation also contains a list of prohibited unfair practices and deceptive acts, including the use of any system for comparing cost of life insurance that does not recognize the time value of money.

The states have begun to act on this matter. In fact, Wisconsin preceded the commissioners by adopting, in January, 1973, an administrative code providing for the use of the life insurance surrender value comparison index, which must be furnished upon request to a sales prospect and in all cases prior to or with delivery of the policy. Arkansas, in a regulation that was effective in February, 1974, requires that the ten- and twenty-year cost indexes be furnished upon request for any policy of \$5,000 or larger. It also requires that the dividends be split out of the interest-adjusted cost and be shown separately as an equivalent level dividend at 4 per cent. California has had a hearing but has not promulgated any rules yet. Illinois has held two hearings and has proposed that the insurer provide three exhibits of information directly to the applicant, one of which must be signed and returned unless there is a ten-day free-look provision. Kansas has a disclosure regulation, effective January 1, 1974, requiring a dated written proposal, but no requirement for a cost index has been adopted yet. Maryland and Massachusetts have had bills introduced into the legislature for the publication of consumer guides, but no action has been taken so far. Oregon is holding hearings at this point; I understand that they have adopted the model regulation. Pennsylvania had a very comprehensive disclosure regulation which was to have become effective September 1, 1974, but adoption has been postponed. Texas has adopted a regulation quite similar to the NAIC model cost comparison regulation; in so doing, however, they added a requirement that the five-year index be furnished as well as the ten- and twenty-year indexes. However, the five-year index requirement may be withdrawn. West Virginia has a model regulation with a somewhat vague provision about cost and specific prohibition of the use of any method which does not recognize the time value of money.

The most important points at issue in state regulations are (1)

whether the disclosure is mandatory or upon request, (2) whether it is at solicitation or at the time of delivery, and (3) considerations about whether small policies can be excluded. Other points are whether term plans can be excluded, what to do about supplemental coverages, and whether split funded pension trust policies can be excluded.

While the various state legislatures have been debating the various aspects of cost disclosure, the NALU trustees have been active in re-examining their position on the IAC method. Their new position is that the IAC method may serve a useful purpose in comparing surrender costs of similar policies if all other factors are equal. However, any evaluation ignoring different circumstances in the case of the individual buyer, variations in contract provisions, and services rendered by the agent and the company is incomplete and can lead to erroneous conclusions. They concede that the IAC does add a dimension of cost comparison but does not represent true cost. Their final conclusion was that IAC has very limited application.

The special committee of the NALU has recommended that the NALU publish a consumer information booklet, reflecting their concern for the public's right to know. This booklet would describe the role of the life underwriter, the importance of need-solving and problem-solving, explanation of certain major policy provisions, and methods of comparison of various policies.

My third topic is consumer attitudes. I obtained most of my information from the MAP (Monitoring the Attitudes of the Public) survey. This survey was begun by the Institute of Life Insurance in 1968 and has continued every year. The work has been done by a professional organization. It is a high-quality statistical study, based on a scientifically selected sample of the population.

The 1972 survey indicated that 75 per cent of the people questioned were completely in favor of consumerism—not a surprising discovery. However, fewer people were aware of the movement to protect the life insurance consumer than were aware of the movement pertaining to food, drugs, housing, banking, and motion pictures. This is in spite of the fact that there has been somewhat more publicity about life insurance recently. Of the six products listed, insurance was ranked by the persons surveyed as the fourth most important area about which consumer information is needed.

Another question asked was how well informed the consumer feels about life insurance. The percentage that feel themselves very well informed has been steady at about 10 per cent since 1968. The percentage that feel themselves fairly well informed increased only slightly

to about 38 per cent, with the "not too well informed" responses decreasing slightly over the same period to about the same level of 38 per cent. The number believing themselves not at all informed remains at 15 per cent. The respondents were asked to describe the difference between term and whole life insurance, and fewer than 60 per cent replied correctly, so one may wonder how many would understand the cost index. However, there are several things which they do not understand (including the Dow Jones index) but which they accept and use every day, so it may not be necessary that they understand how the cost index is derived. The percentage of people who have made direct comparisons between the costs of different life insurance companies has remained almost constant at 36 per cent from 1969 to the present. As one would expect, people with the highest incomes and the largest amounts of insurance were most likely to perform comparisons among the costs from several companies. Three-fourths of those making the comparisons found a difference among companies in values, costs, and benefits. In 1972 a more detailed question was asked of those who made comparisons, and, of these, 75 per cent found the information needed to make the comparison easy to obtain from the insurer. The MAP survey concludes that if the industry did more to encourage people to take this initiative and showed them that information was available, some of the mounting consumerist pressure for comparative cost data would be relieved.

Quite a few questions were asked about the reaction of the public to the life insurance industry. These included questions covering the extent of the industry's concern for the public, the ethical code of life companies concerning the large buyer as opposed to the small buyer, the question of getting your money's worth, and claim practices of the companies. Of the people sampled, nearly half had no strong opinion on these matters. The rest were about equally divided but slightly favorable to the life insurance industry, except for the matter of claim practices, where 38 per cent felt that the companies relied too much on the fine print of the contract.

The role of the life insurance agent was also surveyed. Among the people surveyed, 41 per cent reported having a life insurance agent, the percentage increasing with increase in education, income, and amount of life insurance coverage. Very few people were able to estimate the agent's compensation as a percentage of the total of the first twenty premiums. The great majority overestimated the total amount that the agent receives. Unfortunately, 69 per cent believe that the commission system affects the recommendation that the agent makes for the type of policy that he presents. Nearly 40 per cent feel that the agent adds un-

necessarily to the cost of life insurance, but (agents will be pleased to know) 54 per cent feel that he is well worth the additional cost. Among those who believe in the agent's objectivity, only two out of ten believe that he adds unnecessarily to the cost.

Some additional interesting facts are brought out in the survey. Seven out of ten, in 1972, thought that life insurance was a necessity; and for the first time the majority thought that the criterion to be used in judging the amount of coverage should be the amount needed to make the family self-supporting. In the past there had been more emphasis on what the person could afford or enough to cover final expenses. It is interesting that two out of three think that life insurance is more expensive than it was formerly, although I think we all know that the cost of life insurance has decreased in the last fifty or one hundred years. Thus, much remains to be done in educating the public about the good job that the life insurance industry has done in reducing costs.

Turning to the impact of cost comparison regulation on the life insurance companies, we must remember that the progress of the model regulation is still very much in the formative stages. In my company we have one member of the law department who is watching developments closely, and we notify our agents in various states when they have new regulations to follow. In our new ratebook, which we introduced in the fall of last year, we published ten- and twenty-year interest-adjusted cost and interest-adjusted net payment figures for eight major plans of insurance, and we have held agency seminars to train the agents how to use these figures. During the development of the new ratebook we used the interest-adjusted cost and net payment figures very carefully in developing the cost of each plan to be sure that the dividends were consistent from plan to plan. We also looked at the interest-adjusted cost of competing companies and tried to stay as competitive as we could. Our concern, as well as the concern of many companies, is the matter of expense. If each state makes different regulations, it will be almost impossible to keep track of the requirements and to be able to cope with those requirements. It would be even worse if we had to compute several different cost indexes for different states. As I mentioned, our agents are not particularly enthusiastic about using cost figures. Most buyers are not primarily concerned about cost, and most agents do not discuss cost if they do not have to. Most consumers feel that cost is about the same everywhere, so most agents rely on the reputation of their company and of their agency. As a result of articles published in the January and February, 1974, issues of *Consumer Reports*, some of our agents are being questioned about costs when they approach prospects for insurance.

My conclusion is that probably we are entering an era of even greater

competition, and we might be pressed to be too competitive if this becomes the case, because profit margins are very, very thin at the present time.

MR. GEORGE McNAMARA: It is rather natural that the underwriting end of the insurance business would be a matter of much questioning in the era of consumerism. After all, the underwriting function is a rather sensitive one which directly affects the consumer and is not very well understood. Clearly there was room for education of our various publics long before this. Now there are restrictions coming on the scene, some recently enacted and others likely to come along down the road. They arise from these factors: the general consumer interest and unrest which affect all parts of American business, not only the insurance business; concern over improper invasions of privacy; distrust of the accuracy of records and information that may exist on a consumer, especially when these records are in data banks or in files not accessible to the consumer himself; a growing belief that the consumer is entitled to a full and fair disclosure of why an insurance company rates or declines him; and a growing attitude that life insurance coverage is a right rather than a privilege.

The topic to be discussed has to do with the effect on underwriting results of restrictions in the use of underwriting information sources. The seven different sources of underwriting information are (1) the applicant himself, (2) the agent writing the application, (3) the medical examination of the applicant, (4) the inspection report, (5) the Medical Information Bureau (MIB) files, (6) information from attending physicians, and (7) information from other insurance companies.

MR. O. L. KARSTEN, JR.: Let us look back to the turn of the century and examine the typical underwriting information one might find on a policy issued in those days. I think one will be struck by the fact that virtually all underwriting information came from one man, the medical examiner. Typically, he was a practicing physician who knew everyone in town and, in turn, was known and respected by everyone in town. He reported on people who had lived all their lives in the community. This doctor usually was the applicant's family physician and may even have been the doctor who brought him into the world. Thus he was in an excellent position to report not only the applicant's current health but also his past medical history. Such questions as, Is the applicant of sound family stock? Is he of good moral character and of temperate habits? were easily answered by the medical examiner

in that era, since he and the insurance applicant had been acquainted most of their adult lives. The examiner was physician, family friend, and informant.

Today's world is different in many ways, one being that each year some 24 per cent of our adult population moves to a new address. To put this into perspective, it means that the relationships between the applicant and his doctor, neighbor, business acquaintances, and even the agent himself are at most four years in duration. In fact, the applicant may be meeting both the agent and the medical examiner for the first time. Thus it is that the underwriter is more dependent upon the input of many different people, who do not and cannot know the applicant very well in our complex society. Pieces of underwriting information must be put together from the insured, the agent, the examiner, and the usual medical attendant and from friends or neighbors or business acquaintances. Much of the information is offered by one source and confirmed by another.

For many years investigative reports have been a unique way of confirming all the other sources of information. Occasionally a report will turn up some new information—for example, revealing a hidden life style—which had not been brought out previously, but their main value has been the way in which they bring together so many other underwriting factors.

In 1971 the Fair Credit Reporting Act (FCRA) added new responsibilities to the underwriting process. All applicants for life insurance must be notified in writing, at the time of application, that they may be subject to an investigative report. The notice must state that the proposed insured has the right to ask the home office about the investigative process. Any applicant who is declined for insurance or offered a rated contract must be informed in writing when such adverse action is based wholly or in part upon an investigative report. The address of the nearest investigative office must be given also.

The Federal Trade Commission has had the responsibility for administering and monitoring the FCRA. Last summer the FTC recommended far-reaching changes in the law. Most underwriters perceive these proposed changes as ultimately destroying the value of investigative reports.

The FTC suggestions were put into legislative proposals by congressional staff. Such amendments were tabled briefly, but hearings have been reopened. The proposals were also publicized in a newspaper campaign in which it was alleged that employees of investigative agencies have quotas for the number of adverse reports they must produce. The

inference was that, under the pressures of time and quotas, false and damaging statements are added to file records of innocent Americans and that insurance underwriters rely upon such false information to take adverse action. The legislative proposal was to open the actual file to every insured so that he could read what was being said about him by his friends, neighbors, business associates, or just plain critics, and learn the names of all informants.

The largest company specializing in investigative reports has just announced that they will voluntarily permit anyone to read his own personal file, beginning June 1, 1974. The names of informants will not be divulged. Underwriters have been concerned that the FCRA will deter informants from reporting what they know about a proposed insured if the insured has access to the informants' names. Judging by the current difficulty in getting banks to give out financial information on their customers, this fear is well founded. You are familiar with the large-amount studies of the Society and can appreciate the underwriting value of clear and complete financial data on such applicants.

Underwriters are concerned about a potential loss of all inspection reports, because they are a major source of underwriting confirmation. In turn, that would reduce credibility of other sources of information. The ultimate outcome would be a substantial increase in the cost of life insurance for all policyowners, if the time comes when applicants who deliberately withhold information or give false information cannot be declined or rated.

I would like to return to the attacks on one investigative company and the allegations by four employees that employees are required to turn out false and damaging reports. Here is the other side of the story. During the past two and a half years that company has made 90 million reports; 160,000 individuals who were inspected got in touch with the investigative company, and 92 per cent of them found nothing in their files to challenge. Of the 8 per cent (12,000) that were rechecked, only 1,900—16 per cent of the group—involved errors that were significant. That means that about one meaningful error was detected in 50,000 reports. The evidence does not seem to support the charge that records are falsified in wholesale numbers.

Northwestern Mutual Life's experience under the FCRA has been similar. During the last two years, NML agents handed out some 280,000 notifications to prospective insureds that they might be subject to an investigative report. We secured only 63,000 reports, leaving 217,000 unneeded notifications. Only 110 people exercised their legal right to request further details.

During the last two years my company underwrote about 350 applicants who were declined or offered a rated policy wholly or in part because of information in the investigative report. As required by law, this was explained in a letter to the applicant along with the address of the nearest office of the investigative agency. We do not know how many actually visited those offices to review their file and correct discrepancies. We do know that 6 formal requests were made to reconsider our underwriting action on the basis of revised investigative reports. The decision was reversed on 4 cases. While it was certainly important to those 4, they were only 4 out of an initial 280,000 notices, or 4 out of 63,000 actual reports.

From the viewpoint of regulators and legislators, the FCRA directly affected 4 applicants. From the viewpoint of Northwestern Mutual, 2 million policyowners bore the cost of handling the 280,000 notifications and the resulting 110 inquiries. What is not known is whether a more stringent law, as proposed, would have suppressed information which led to the rating of 350 applicants. Had that information not been available, the cost for future mortality losses would have been substantial.

Let me speculate on the future as it relates to investigative reports. The experiment to let the consumer see his own file may work out. If the law requires that he also learn the names of informants, it will not work.

The cost of inspection reports rose sharply this year and will continue to rise as it becomes more difficult to get informant cooperation. This increasing expense could put more pressure on smaller companies handling business from brokers or part-time agents.

An investigative report is absolutely necessary for larger amounts of insurance, particularly at older ages. Commercial inspection agencies already charge substantial fees for more thorough reports on the larger cases. As fees increase, insurance companies might consider having their own investigative employees for underwriting and claims. That, too, would be an expensive operation.

One investigative company is now conducting an experiment of interviewing only the insurance applicant himself. It remains to be seen whether the insurance applicant will have the objectivity of a third party.

My prognosis is that investigative reports will increase sharply in cost, lessen in value, and add to the costs of the insurance buyer. Consumerists and government will continue to do all they can to bring this about.

MR. McNAMARA: There is at least one way in which the cost to the insurance buyer could be moderated; that would result if we could persuade Congress to make an exception in the FCRA for applications for large amounts of insurance. After all, that is where the insurance company stands to lose the most, and it will be the average man on the street who has to pay for the extra mortality or morbidity cost.

Now for some remarks about the MIB. Of all the various underwriting tools, there is none more valuable than the MIB for holding down the cost of insurance for the public as a whole. It enables the insurance company to evaluate the risk better, more quickly, and less expensively because it points up those who do not answer correctly the various questions in the application for insurance.

Unfortunately, the very secrecy of MIB in the years gone by, with the consequent lack of knowledge about it, has exposed MIB to much criticism from our home office personnel and our own agents as well as from the public as a whole. Many people believe it to be a blacklist of individuals, but, as anyone with underwriting experience knows, it serves as an alert signal. An insurance company must still do its own underwriting of the risk.

The executive committee of the MIB recently mandated some changes effective January 1, 1975, but optional before then. These changes serve to lift the veil of secrecy about the MIB and effect some improvements in the area of public knowledge. One change is the requirement that the consumer be informed at the outset that insurability factors about him may be reported to the MIB file and that he can obtain disclosure of his own MIB record. Another change pertains to the consumer's authorization to obtain information from his attending physician, hospitals, or other organizations; the change here requires the naming of the MIB as one of these sources of information. Henceforth the insurer must have in hand this authorization specifically naming the MIB before it may look up the MIB file. These changes should serve to answer the critics who are concerned about improper invasion of the consumer's privacy.

The implementation of these changes represents a big step forward in the education of the public, and I think they will be good for the insurance industry. The changes were under active consideration by the MIB executive committee for more than a year and were experimented with by two companies last year before they were officially adopted. Because a revision of the FCRA is under consideration in Washington, it was pleasing to read the recent press release of Senator Proxmire

in which he made favorable remarks about the forward-looking steps of the MIB organization. He went on to say that he will still press for amendment of the FCRA because he prefers that the MIB mandates be given the force of law rather than remaining voluntary. He also went on to say that he intends to require postnotice as in the case of inspection reports. The postnotice idea contemplates that, when an insurance company charges an extra premium or declines to give an individual the insurance coverage for which he applied, it will have to inform him in writing that there is an MIB record on him. I am not at all sure that this postnotice will serve much purpose, but I doubt very much that the industry will oppose it. As we learned to live with the original FCRA, we can learn to live with this. It is hoped that one or more companies will experiment with this postnotice idea so that we can learn what the problems really are. If they are not serious, the MIB may voluntarily adopt the postnotice requirement.

My own conclusions in respect to the MIB are these: The changes in respect to the prenotice and the authorization are in the best interest of the insurance industry and the consumer. They may scare away some individual applicants for insurance, which will of course be unfortunate, but I doubt very much that the number of policies and volume of insurance affected will be at all significant. We may be involved in more correspondence and controversy with agents and consumers arising in part because the underwriting process is not understood. As far as the effect on mortality and morbidity costs is concerned, I do not think there will be any significant impact initially. From a long-range point of view, ill effects may arise. I have in mind the members of the medical profession who are caught in the middle between the insurer and the consumer. They may become reluctant to disclose medical histories and thereby deprive their patients of insurance coverage. How soon that will occur and whether it will be at all significant is anyone's guess!

MR. KARSTEN: George [Hill], in your prepared remarks you made mention of a consumer information booklet that may be published under the auspices of the NALU, which, if I understood you correctly, is an attempt to clarify the role of the field underwriters, policy provisions, and similar matters. It appears to me that there is a thrust in that general direction by the underwriters' fraternity—to inform the applicant not only of inspection reports but also of the operation of the MIB and in addition what the whole selection process is about. Is that movement being covered in the NALU movement?

MR. HILL: I do not believe so. I think that this was a consumer information booklet about the role of the life underwriter in relation to the agent. It was just a recommendation to the NALU that they publish such a booklet, and it is really too early to know whether anything will result from the recommendation.

MR. McNAMARA: Some companies are considering putting an explanation of the underwriting process on the back of the FCRA notice. In effect, the insured then will have the required FCRA notice as well as the MIB prenotice, and on the back will be the explanation of how these pieces of information fit into the entire underwriting process.

CHAIRMAN CHARLES N. WALKER: My own company is one of a few that tried an experiment prior to publication of the MIB prenotice requirement. We printed a separate booklet, which we asked to have delivered to the applicant. It was fairly short, perhaps too short, but it did attempt to cover the entire spectrum of the underwriting process, including specific mention of the MIB and the inspection report. We had no adverse reactions whatsoever from applicants about this booklet. Unfortunately, the favorable response was very sparse also.

MR. PEACOR: One thing I would like to know about the MIB is what, if any, provisions are available for an applicant to secure changes in his MIB record should he consider them in error.

MR. McNAMARA: When he presents the facts, there is a procedure for modifying the record. There is, of course, a sincere effort on the part of the MIB as well as on the part of the reporting company making the initial report to have the record accurate.

CHAIRMAN WALKER: One thing that strikes you while you listen to these two separate but somewhat concurrently developed needs for telling things which are happening is the sheer volume of paper work that goes with all this. There is a definite question about what effect all this additional paper that must be placed in the hands of the applicant will have on the sale of life insurance. How many people may change their minds simply because they cannot wade through it all? How many agents may be in difficulty just over fumbling with so much paper work?

MR. PEACOR: I believe that one area in which a problem may arise is where each state commissioner tries to be a little bit different from

his neighbor, to prove that he is actually on the job on behalf of the consumer in his state. The costs to the insurance company may well proliferate in such a manner as to be prohibitive. I think one of the harsher observations, unfortunately, is that not a single state has adopted the model bill, and this is what is liable to kill the consumerist interest on the part of the life insurance companies or any other organization.

MR. McNAMARA: I would like to comment on the underwriting aspect of this situation. I believe the changes resulting from the inspection and the MIB prenotice are going to be good for the industry because they will educate the consumer and the agents. As Mr. Peacor noted, it will be bad if we are required by the different states to have variations in the wording of information. I personally believe that our agents can learn to live with these things and will be able to consider them positively. After all, one of the signs of a successful agent is that he can turn negative points into positive ones. I do not believe that the changes will have serious effects on life insurance sales, just as I feel that the requirements of the "truth in lending" act have not caused me or others to stop borrowing money because I receive a lot of information about the interest rate.

MR. FRANK S. IRISH: With regard to price comparison, the remark of Mr. Hill about acceptance being more important than intelligibility deserves amplification. There are many well-known indexes, of which the Dow Jones and the consumer price index are good examples, that the public accepts and uses without having the slightest idea how they are constructed. Another example, which seems to me to be quite pertinent to what we are discussing here, is the truth-in-lending interest rate. The paper presented today by Mr. Hunt exemplifies the complexities of truth in lending; but the question is not whether the public understands these details. Rather the question is whether people are willing to use this rate in making intelligent decisions. It is basically a matter of trust in the competence of the people who designed it. Hence I would like to ask the panel whether truth in lending is succeeding and is being used effectively by consumers. The answer to this question, it seems to me, has clear implications for the future of price disclosure in life insurance.

MR. DEAN SHARP:* The Federal Reserve Board can offer you statistics and is constantly doing surveys on consumer acceptance of the truth-in-lending law, particularly the single consolidated interest rate or

* Mr. Sharp, not a member of the Society, is a member of the Senate Antitrust and Monopoly Subcommittee.

annual percentage rate that one finds on any loan statement. They are finding that it—the annual percentage rate—is gaining widespread acceptance, especially among middle-income groups. Obviously, with respect to the people who are walking “hat in hand” into the consumer small-loan offices, whether they are the working poor or from the ghetto, it may not mean that much to them, as is true of any other unit-buying concept in relation to the poor. For example, what Dr. Joseph Belth is suggesting is actually a unit-buying concept for life insurance. Truth in packaging’s unit-buying concept is also gaining wide acceptance among the middle-income groups. The acceptance by the consumer depends on the market trying to be reached, the intelligence of the market, and the income of the market. I do not think we can make a *carte blanche* statement saying that it is or is not working. You have to look at the particular market you are trying to reach.

The same is going to happen with regard to life insurance. Those people with earnings to protect who are looking to purchase life insurance with the idea of protection, regardless of what type or form of life insurance, may be interested in doing some intelligent shopping, and not just in the area of price. The important thing is that, if truth in lending is working in these various markets, and it seems to be, then the importance to the consumer of the single consolidated interest rate is that someone has devised a method of generating a figure which he can trust. The consumer is not interested in and could not even understand Regulation Z of the Federal Reserve Board, but he now has a single annual percentage rate which he can trust. It takes time for these concepts to gain trust—it is an educational process.

I appreciate your inviting me here. Although I have never attended one of your meetings before, I have read about them in the *Transactions*. I am very impressed listening to the panelists and the questions that are asked. After all, to most of us lay people a kind of mystique surrounds the actuary because he deals with higher mathematics which most of us find quite above our training. We feel, or, more specifically, I feel, that the key to the life insurance business does not lie only in the hands of the lawyers, the investment people, the underwriters, or even the salesmen—the fellows who really understand this business are you actuaries. The important thing is that all of us keep the dialogue going, regardless of how we stand philosophically with respect to the value of a given disclosure system or assumptions underlying any particular cost index. What has impressed me most is that I see hope for the life insurance consumer, and for the industry itself, because you actuaries can be of tremendous instructive help. We look

forward to working with you, and we hope that we share the same goals and that you do not view us as just a bunch of bureaucrats or investigators in Washington out to crucify the life insurance industry. We are truly trying to get more accurate and reliable knowledge to the consumer. I think, from what I have heard today, that we are all trying to work toward this same end.

Montreal Regional Meeting

MR. FRANK E. ROOKE: The restrictions in the use of underwriting information sources to which I intend to refer in my remarks are those imposed by legislation dealing with reports of information about consumers. The principal underwriting sources which are affected by such legislation are the inspection companies and the Medical Information Bureau (MIB), but potentially other sources may be affected as well. Let me say at the outset that I am completely in sympathy with the central objective of this legislation, that of ensuring that all of us as consumers have a right to check out what is said about us and that procedures are available for correcting information that may be erroneous—in other words, of ensuring that the reporting is “fair” as indicated by the name of the federal United States act. In the pursuit of this objective, however, restrictions may, in some instances, be of such a character that underwriting results will indeed be affected.

UNITED STATES

The natural starting point in this review is on the United States side, since the Fair Credit Reporting Act (FCRA), which came into effect in 1971, is the earliest such restrictive legislation (apart from some state legislation such as that of New Mexico). When this legislation first arrived on the scene, there was considerable apprehension that it would have a very restrictive effect on the inspection source of underwriting information. The direct notification to the consumer of the fact of an inspection, the subsequent notification of its part in adverse action, and the exposure of reported information to interested consumers potentially would create a climate in which effective reporting could not be done. The experience of the last three years has, however, shown these fears to be unfounded. The Retail Credit Company reports that the incidence of protective information, rather than diminishing, has in fact increased. Of course, the user's notion of what is protective may differ substantially from that of the investigative agency, so that insurance studies may produce different results. However, it does not appear that a substantial change has occurred. There have, of course, been difficulties,

not the least of which is the manner in which the enforcing agency, the Federal Trade Commission, has zealously sought to do its assigned task. One case in point was the public denouncement of five companies for noncompliance, which was done in a manner that suggested that these companies, and a substantial proportion of all others, were attempting to evade the law when, in fact, the problem was a matter of interpretation of the words required to accomplish the notification.

I do not propose to review the FCRA at any length, but there are a few points that I would like to mention. First, the act does not limit the kinds of information that may be reported except in terms of age, and even here the prohibition is waived where a consumer credit request is for underwriting purposes and the amount of insurance is \$50,000 or more. The age limitation is fourteen years for bankruptcies and seven years for other listed items, including a residual "other adverse information" item. This prohibition against obsolete information would appear to have little effect on underwriting results, although there are, no doubt, isolated instances where it is a factor.

A second aspect of this act, and I mention it in part because it is in contrast to the Canadian situation to be referred to later, is the continuance of the qualified privilege attaching to inspection reports. The consumer may not use information disclosed pursuant to the act as a basis for a defamation suit except as to false information furnished with malice or willful intent to injure. Also, the sources of information for what is called an investigative consumer report, the kind supplied for life underwriting purposes, need not be disclosed. The act does require the consumer reporting agency to follow reasonable procedures to ensure maximum possible accuracy, but obviously the possibility of acquiring erroneous information exists. With protection against defamation suits and protection of identity of sources, it would seem that the position of the inspection services in supplying protective information for underwriting purposes is not impaired and that underwriting results would not be adversely affected. I regret to say that I have no factual information from the insurance side to illustrate what the effect of this legislation has been in terms of the amount of protective information produced by inspection services subsequent to its enactment. In the discussion which hopefully will follow, some of you may be in a position to enlighten us. I have already mentioned that on the inspection side an increase in the incidence of protective information has been noted.

You will recall that the MIB changed a number of its rules when the FCRA came into effect. Some of these changes, such as the limitation to seven years on the retention of codes, were in line with the act's

requirements on reporting agencies. Disclosure procedures were also adopted to provide an opportunity for the correction of erroneous information. A rule was introduced prohibiting a member from using MIB information as a basis for underwriting action. While these actions brought the MIB procedures more in line with the FCRA, they evidently did not go far enough. In January of this year the MIB reported having been under serious attack in the United States Congress, in other government circles, and in some sections of the media. For example, in a 1973 report of the United States Department of Health, Education, and Welfare, it is held that "there must be no personal data record-keeping systems whose very existence is secret . . . there must be a way for an individual to find out what information about him is in a record and how it is used." The MIB has had under study for some time changes in procedures, including a so-called pre-notice procedure. New rules have now been adopted, which become mandatory by January 1, 1975. Disability claim information may no longer be reported. Inquiries to the file will not be permitted without signed consent by the individual to be insured and after he has been furnished with a written notice in a form acceptable to the MIB. The required notice briefly explains the information exchange function of the MIB, tells the consumer how to go about arranging disclosure of file information and that, if he questions its accuracy, correction can be sought under the procedures of the FCRA. Senator Proxmire commended the MIB for the action taken and, in fact, publicly announced the change. This seems to augur well for the continued existence of the MIB. The changes, of course, reduce to some degree the usefulness of the MIB both in the content of the file and in its availability, particularly for such purposes as screening of group and guaranteed issue business. Underwriting results in general, however, should not be materially affected. The main impact will be in the area of communication to the agency forces and to our clients, so that this very important underwriting tool will be accepted by the public and will be permitted to continue to fulfill its fundamental purpose.

CANADA

The first Canadian legislation was enacted by the Province of Manitoba in 1971, the same year in which the FCRA came into effect. This Canadian act is, in many respects, similar to the United States act. Certain information may not be included, such as bankruptcies occurring more than fourteen years prior to making the report, adverse factual and investigative information more than seven years old, and reference to race, creed, religion, ethnic origin, or political affiliation.

There is an exemption from civil liability on the part of the user or agency unless he knew or ought to have known that information was false or misleading or was obtained negligently. In the disclosure required by the agency, the identity of sources of investigative information is protected. As in the case of the FRCA, the consumer is given the right to check and correct information, but the reporting agency does not appear to be unduly inhibited in its activities in providing information for underwriting use. Underwriting results, therefore, should not be materially affected.

Saskatchewan also adopted legislation to protect the consumer by requiring disclosure on request. This probably accomplishes the real purpose in the simplest way.

During 1973, three other provinces, namely, British Columbia, Ontario, and Nova Scotia, enacted consumer reporting legislation. The Nova Scotia act came into force on April 1, 1974; the Ontario act will become effective on July 2, 1974; and the British Columbia act has yet to be proclaimed. While all of these acts again are generally similar to the FCRA in content and purpose, there are important differences which may very well affect the quality of inspection report that can be produced and hence the underwriting results.

In his book *Credit Reporting and Privacy*, Professor Sharp, after reviewing English and Canadian case law on the point, comes to the conclusion that the "effect on modern Canadian law . . . is that credit bureaus in general do not appear to share the widely-granted conditional or qualified privilege accorded to these bodies in the United States." Professor Sharp concludes that, subject to the enactment of legislation which achieves his objectives for protection of the consumer, qualified privilege would be acceptable. We have seen that Manitoba in fact followed this course and provided a form of qualified privilege to the reporting agencies. Professor Sharp, incidentally, was associate professor of law and director of the Legal Research Institute of the University of Manitoba in 1970 when this book was published.

In none of the three new acts do we find any form of qualified privilege. Of course, the inspection companies have been operating successfully for many years in Canada without this protection, but neither the user nor the agency was required to reveal information and, indeed, the user was required by contract to guard its confidentiality. Now we have law requiring disclosure to the consumer, which disclosure has a very worthwhile purpose in itself but also exposes the agency to the risk of a suit for defamation. Under, for example, the Ontario act, the reporting agency on request must disclose copies of any written report

pertaining to the consumer made to any other person within certain time limits. The consumer may be accompanied by one other person of his choosing, to whom the agency may be required by the consumer to disclose his file. The consumer may make an abstract of the file, and the agency may not require the consumer to waive any right as a condition precedent to his access to his file. One of the elements of defamation is that it be published, but "publish" in this context merely requires that the information be passed to a person other than the person defamed, so publication has taken place in the normal course by reporting to the user—it does not require any violation of confidentiality by the user by passing the information to a wider public. In other words, in the event of erroneous derogatory information, however innocently acquired, the agency is required by law to provide the consumer with all he needs for a defamation suit.

That this exposure of the agency to civil liability is intended is illustrated by the remarks of Mr. Clement, Ontario minister of consumer and commercial relations: "The guarantee to the consumer is this: His file is fair game; if there is any information contained in there that isn't true, he will obtain the remedies that are available to him in an action for slander or libel, as the case may be, or both. . . . These agencies are, I suggest, going to be very, very careful with any information . . . because if it is incorrect then, I suggest, they are going to be liable for civil action because you can use their own files in essence against them." This exposure to civil action, as Mr. Clement suggests, requires that the agencies give accuracy a high priority, which is fine; but does it also mean that they will be inhibited in reporting adverse information which cannot be corroborated but which may very well be correct? If the answer is in the negative, then I suppose that they can expect litigation where their information happens to be in error, which will increase their costs and, in turn, ours. If the answer is in the affirmative, then the protective value will be impaired and our costs increased in another way.

A second feature which I feel can have greater impact on inspection reports, and in turn on underwriting results, is the requirement in the acts of Nova Scotia and British Columbia that the agency disclose to the consumer, on request, the sources of its information. I presume that this means the identity of the individuals from whom the information has been obtained. If this is the case, how can the agency expect to obtain derogatory personal information from individuals? One would suppose that an assurance of confidentiality would usually be required before significantly adverse comment would be made.

The list of prohibited information is considerably more extensive than that contained in earlier legislation. One example is the exclusion of information concerning criminal charges which have not resulted in a conviction. This appears in all three acts in various forms and will prevent information usually considered important from being passed to the underwriter. Before leaving the subject of prohibited information, I should mention that Ontario may be the first North American jurisdiction to prohibit sex. This, I hasten to add, is not a reference to life style but rather to whether the person is in fact male or female. Presumably, in view of contemporary styles of hair and dress, the agency is relieved of what otherwise could have been a burden, but it does mean that care must be exercised by them in the use of the personal pronoun.

A further innovation of the three provincial acts, and one which is currently causing considerable concern to underwriters, is the notification required if a benefit is denied or a charge increased because of information obtained elsewhere than from a consumer reporting agency. The Manitoba act has a somewhat similar requirement, but there different classes of information are defined and different disclosure requirements apply to each class. Most important from our point of view, the Manitoba act, like the FCRA, has a definition of medical information which excludes it from the disclosure requirement. The three new acts make no such distinction, apart from a narrowly defined type of medical information which has been obtained by a reporting agency. This is extended by regulation in Ontario to such information directly acquired by a user. The particular facts which must be disclosed to the consumer are the nature and source of any information where the information is provided by a person other than a consumer reporting agency. In two of the provinces this disclosure appears to be required even though it has no bearing on the action taken.

On its face, this section of the acts seems to have an extremely broad application. "Benefit," for example, is not defined. The Ontario legislators discussed the point but decided to leave its interpretation to the courts. No further disclosure obligation is imposed on the source of such information, so it is difficult to see how the legislation ties in with the objective of ensuring that the consumer has an opportunity to correct erroneous information. From the underwriting standpoint, is it intended to apply to information obtained from doctors and hospitals, and, if so, does this create a problem? In the normal course, the fact of obtaining such information is no secret. No doubt in the majority of cases where such information has had a bearing on the action taken, the consumer can infer that such is the case. Despite this, I suspect that

a formal notice from the company to the consumer implicating his personal physician in the adverse action taken on his application will do nothing to improve our relations with such physician and may cause him to be less cooperative than he now is in responding to our requests for information. We are heavily dependent on medical sources to do an effective job in risk selection. Our requests for information are not unnaturally viewed as a rather onerous additional burden by the physician, whose prime function of caring for the sick leaves little opportunity to attend to such correspondence. As I have indicated, this section is potentially extremely broad in its application, and there must be numerous situations where practical judgments will be made on the necessity for a strict and literal interpretation both by the public and the administrators.

To the best of my knowledge, none of the Canadian consumer reporting acts is considered to be applicable to the MIB. This question has been discussed on more than one occasion with Ontario officials, and the position at present is that it does not. At the federal level, work has been going on for several years on the subject of data banks, their security, privacy, and so on. Of particular concern are data banks in foreign countries which contain personal information about Canadians. A frequently cited example is the MIB. It is entirely possible that when legislation is brought in, one of the requirements will be that such information be filed in Canada. If the MIB should be considered a consumer reporting agency, the existing provincial legislation would also require that the information be stored in Canada.

There is, no doubt, more to come in the legislative field, both federal and state or provincial. We have recently had one state insurance department, using its authority for policy form approval, adopt regulations which in their initial version would have been a near-fatal blow to the MIB in that area. Amendments to the FCRA have been proposed which would impose onerous burdens. Although these have been tabled, further action there is to be expected. Governments on both sides of the border are looking at ways to control data banks. More consumer reporting acts will appear in Canada. So far, the effects in terms of availability of underwriting information are not major. While neither the MIB nor inspections can be classed as essential, their absence would greatly increase the difficulty of identifying those who would take advantage of the system, and this would work to the detriment of the majority of honest consumers. It is evident that underwriters are going to have to pay greater attention to explaining what it is they are doing and why, if this eventuality is to be avoided.

MRS. DAPHNE D. BARTLETT: One important area of consumerist interest in the life insurance industry is, of course, the subject of cost comparisons. This subject is but a small part of the over-all concerns of prospective purchasers of life insurance, involving what type of insurance to buy, what company and agent to buy it from, and whether or not it is a "good deal."

REGULATORY TRENDS

Few actuaries would deny that it is difficult for us, even with our knowledge and experience, to make the perfect life insurance purchase decision. The average consumer is in a much more difficult position and, in many cases, probably has to base his decision on faith. Much of the consumerist activity in the United States, at both the state and federal levels, probably has been an attempt to make the decision more scientific. Therefore, this activity has been most prevalent in the areas of cost comparisons, disclosure, and deceptive practices; very little has been undertaken in the more philosophical area of consumer education.

The National Association of Insurance Commissioners endorsed the report of its life insurance cost comparisons task force in June, 1973, and adopted two model regulations—one defining and prohibiting certain "deceptive practices" and outlining certain elements of policy disclosure and the other providing rules for use of the interest-adjusted cost comparison index in certain circumstances. The report of the task force recommended that the interest-adjusted index be adopted "on an interim basis," pending the results of further research on the entire project. However, the method has been proposed or adopted, with some modifications, in seven states to date.

The subject of disclosure has received considerably more individualized attention at the state level than the cost comparison method to be used, probably because only very general guidelines were presented in the NAIC task force report and model regulations. Therefore, several different types of disclosure are now required by various states, resulting in quite difficult and probably fairly expensive compliance problems for the companies.

Meanwhile, Senator Hart is still involved in the entire subject, as was indicated in March in his remarks to the Association for Advanced Life Underwriting. He reported that he is working on a "truth in life insurance" bill, which will cover, in addition to other subjects, the areas of disclosure and cost comparisons. The bill contemplates compulsory disclosure, for each year to age 75, of the annual premium, death benefit, cash values, and dividends, and the "price per \$1,000 of protection." In addition, Senator Hart indicated that "the system should

include a summary measure of price, expressed as a lump sum at the issue date of the policy. The summary measure would show a breakdown between the protection element of the policy and the savings element. In constructing this summary measure, an interest rate, a mortality table and a lapse table would be used."

It is obvious that activity in the area of cost comparisons and disclosure is quite extensive at the present time in the United States, at both state and federal levels. It is interesting to reflect, if only briefly, on whether all this regulation is really necessary. Will the consumer necessarily make a better choice when presented with a series of comparison indexes and disclosure statements than when he is not? What will be the ultimate effect on premium and dividend scales as a result of the additional expense to the insurers of complying with a variety of different regulations? Could this eventually lead to different rate-books or dividend scales in certain states? Has anyone seriously considered whether some of the price abuses (which we probably might admit exist to some extent) could be controlled some other way?

To be practical, it is unlikely that it is possible to go back to the beginning and rethink this entire subject. However, there is still an opportunity to avoid the hazards of legislative or regulatory "overkill." Even the best-intentioned attempts to protect the consumer will fail if, through their complexity, they confuse further or substantially increase the cost of the product.

ACTUARIAL RESPONSES TO COST DISCLOSURE

A glance at the last few issues of *The Actuary* indicates that the subject of cost comparison is of considerable actuarial interest. The Society of Actuaries Committee on Cost Comparison Methods and Related Issues, of which I am a member, was established in early 1973 under the chairmanship of Bart Munson, with an original charge of determining whether or not the Society should express publicly an opinion on certain aspects of the entire subject.

Subsequently, our charge was revised to accommodate a request by the NAIC task force on cost comparisons to perform certain research projects for the NAIC. The *1974 Year Book* now describes our function as follows: "This Committee is (1) to study the underlying actuarial principles involved in and the problems arising from, different methods of comparing life insurance costs, (2) to explore related insurance issues, and (3) to develop recommendations based on the Committee's findings."

Most of our research to date has been involved with the specific projects assigned by the NAIC. The three projects are as follows:

1. Use of a file of data assembled by Senator Hart (as another research project) to test the results produced by various comparison methods and to consider why the methods produce similar or different results.
2. Analysis of the philosophy of different companies with respect to the computation and dissemination of dividend illustrations.
3. Study of the assumptions suggested for use in the various comparison methods, particularly interest, mortality, and persistency.

The research on the data bank is underway currently, and the committee plans to report on the results of this study before the annual meeting. This report also probably will be responsive in some degree to the third research project involving assumptions.

A questionnaire has been sent out by our committee to elicit from representative members of the Society their professional opinions on dividend illustration dissemination and computation. We plan to report on this subject also before the annual meeting.

In the course of our work on these various research projects, our committee has necessarily become very involved, not just in these particular projects, but also in the entire subject. Therefore, in response to our more general function as defined in the *Year Book*, we also plan a third report, which hopefully will be responsive to the *Year Book's* description of our role. A preliminary version of this report has been prepared for distribution at this meeting. The input we receive on this preliminary report will be used as the basis for its revision. I should emphasize that this report is not as complete as we would like. We felt that it was more important to have a basis for discussion among the Society's membership than to submit a completed report without any discussion at all.

The report barely touches on some large areas of the subject. We are aware of some of these areas; others we have not even considered. I hope personally that any omissions will be brought to the committee's attention, in order that we may fulfill our charge as professionally as possible.

In the course of preparation of the report, it was our intent to be as objective as possible and to avoid "expression of opinion." The committee, which consists of a small but quite varied group of individuals, supports generally the statements made in the report; I hope this is some evidence that our goal of objectivity has been achieved.

Before I mention what is included in the report, I should tell you what is not. There is no "answer" to the question, "What is the ideal

method?" We do not endorse any method, nor do we recommend against any method. In fact, as of today, I am not sure that any members of the committee believe that there is a perfect solution to the problem.

Here are a few highlights of what the report does include:

1. A discussion of the difference between cost comparison and disclosure, an area where some confusion has existed in the past.
2. A discussion of the problems involved in determining the "true cost" of a life insurance policy to an individual at the time of sale, with, of course, the conclusion that it cannot be done.
3. An analysis of the difficulties involved in comparing policies with differing levels of nonguaranteed payments, whether the comparison is between participating and nonparticipating policies or between participating policies themselves. In this chapter we also raise a few questions about the various solutions proposed to solve this dilemma but, unfortunately, find no answers.
4. An actuarial analysis of some of the frequently discussed cost comparison methods, showing that most of these methods have the gross premium formula as their basis.
5. Discussion of the characteristics of each of these methods and discussion of various criteria which the ideal single index cost comparison method might be expected to satisfy. A tabular summary showing the various methods and their characteristics, and another showing how they satisfy some of these criteria, is included.

DIVIDEND ILLUSTRATIONS

Previously I mentioned our committee's questionnaire on companies' philosophies on the computation and dissemination of dividend illustrations. One could rightly question whether dividend illustrations are "computed," other than for a new plan of insurance. A scale of dividends is computed; the current scale for a plan is what is supposed to be illustrated. The words are not ours, however. They are from the NAIC task force's report.

The intent of the NAIC research project seems clear: the committee has been asked to study the implications of dividend illustrations in relation to the entire subject of cost comparisons and disclosure. The questionnaire itself is only part of our research in this project. We are also surveying various regulations and statutes on the subject of dividend illustrations and studying the surprisingly sparse available literature on the subject.

Our preliminary report, as I mentioned before, discussed one aspect of this particular problem—how comparisons can be made among policies with differing degrees of guaranteed payments. The issue involved is perhaps best illustrated by a quotation from that report:

The prospective purchaser of a whole life policy, for example, is likely to assume that any one such policy is "similar" to any other. In fact, we can consider that he is faced with at least three types of not necessarily independent decisions with regard to the degree of guarantee in the policy, listed here in increasing order of subtlety:

- (1) The choice between a participating and a guaranteed cost policy;
- (2) The choice between the relative "degree of guarantee" in two participating policies; this can be illustrated, for simplicity, as the choice between a high premium, high dividend policy with a relatively low degree of guarantee and a low premium, low dividend policy, with a relatively high degree of guarantee; and,
- (3) The choice based on the relative credibility of two illustrated dividend scales relating to whether one is more conservatively determined than the other.

Much of the comment concerning illustrated dividends and their use in cost comparison situations has come from stock companies and, no doubt, is based on competitive considerations. Nevertheless, I believe personally that some concern should be evidenced by those companies selling participating insurance, particularly those with somewhat conservative dividend philosophies and/or relatively low degrees of guarantee in their product design.

We have not had any time to study the questionnaire thoroughly. My personal impression of what I have scanned so far is of the remarkable professional concern and honesty evidenced by the replies. I congratulate and thank those of you who worked on them. I hope the results of our research will provide some useful contribution to the actuarial literature on the general subject of surplus distribution, as well as input to a response related to our committee's specific project.

Here are a few preliminary results from a tabulation of the 110 questionnaires we have received to date—44 from mutual companies, 50 from stock companies writing participating insurance, and 16 from stock companies not writing participating insurance.

On the question, "Do you believe the public is sufficiently aware of the nonguaranteed nature of dividends?" 29 responses from mutual companies said "yes" and 11 said "no," while 16 responses from stock companies said "yes" and 41 said "no." (The remainder of the replies contained no answer, or a vague one, or "yes and no.")

Another question asked: "When illustrating dividends, does the actuary have a responsibility to illustrate only those dividends which he feels can probably be paid?" To this, 26 mutual company actuaries said "yes" and 14 said "no"; 45 stock company actuaries said "yes"

and 14 said "no." The answers to this question probably reflect some confusion about the wording of the question itself, but raise a further interesting thought—in the absence of legislation to the contrary, *should* dividend illustrations be based on a continuation of current experience? What if an actuary is convinced that current experience will deteriorate (or improve)? Do we, as actuaries, have a moral responsibility to try to change legislation which requires us to illustrate a scale which may not be realized?

In a later question we asked: "Do you believe dividends should be included in life insurance cost comparisons between a participating policy and a guaranteed cost policy?" On this, 41 mutual company actuaries said "yes," none said "no"; surprisingly, 53 actuaries of stock companies said "yes" and 11 said "no." (This conclusion, however, might be qualified in a study of the comments on this question; I would expect that, although many stock companies are willing to agree that dividends be included, they might also suggest that comparisons be made on a basis which excludes dividends.)

The question: "Do you believe dividend illustrations can be manipulated to produce favorable cost comparison results?" created the greatest consensus: 100 actuaries said "yes"; only 2 mutual company actuaries disagreed!

We then asked: "Do you believe this statement: 'If the consumer is taught to cost-shop for life insurance and compares costs on a widely accepted basis mandated by regulations or law, there will be increased pressures on actuaries to produce more liberal dividend illustrations for new business than are currently being produced.'" This, again, resulted in considerable agreement, with 87 responses indicating agreement and only 15 disagreeing.

I should point out that many of the answers to these questions were carefully qualified at length. Nevertheless, I feel that even these few questions and answers indicate that considerable actuarial concern does indeed exist about the nature of the participating life insurance contract and how it should be presented in a cost comparison situation.

MR. CHARLES T. P. GALLOWAY: I shall begin with a discussion of criticisms and regulatory trends in Canada. For those not familiar with the regulation of life insurance in Canada, I might remark that there is a federal Department of Insurance which has the responsibility for supervising life insurance companies which are federally incorporated or which have voluntarily subjected themselves to its regulations by becoming registered federally, and that the federal department

concerns itself primarily with matters pertaining to solvency and fair treatment of the policyholders in certain respects, such as surplus distribution. The federal act deals with general corporate matters, investments, valuation, annual statements, separation of accounts between participating and nonparticipating, and the share of surplus to be distributed to participating policyholders. The department also concerns itself with whether or not the companies are dealing in good faith with their policyholders and endeavoring to answer complaints directed to their attention.

The provincial departments, on the other hand, although they deal with the above-mentioned matters for those companies which are provincially incorporated and licensed, are concerned primarily with licensing of agents and with policy conditions. The provinces historically have permitted the companies to proceed with business with a minimum of hindrance, not requiring the filing of policy forms but dealing only with problems which have been brought to their attention in practice. In recent years, with the advent of equity policies, the provincial departments have become more active, requiring the filing of such equity policies and advertising material before use and imposing strict requirements on the companies with respect to such business. The departments also have concerned themselves actively with certain matters pertaining to group and franchise insurance business.

The Canadian Life Insurance Association, in an attempt to meet the consumerists with some positive steps of its own rather than with reactions to criticism, recently has encouraged member companies to grant the ten-day "free look," to prepare descriptive booklets to accompany policy contracts, and to distribute interest-adjusted net cost figures when requested. They also have encouraged the companies to adopt more uniform and liberal practices in the payment of interest on delayed claims.

Recently, the federal insurance superintendent has expressed concern over the question of high front-end loads and consequent low early cash values on deferred annuity policies, which concern has been stimulated primarily by the large sales of such policies in connection with the provisions of the income tax act permitting the reduction of a taxpayer's taxable income by contributions to such plans within certain limits and subject to certain conditions.

Considerable interest in the life insurance business has been expressed by the Ontario minister of consumer affairs, Mr. John Clement (to whom the Ontario provincial superintendent of insurance reports), in two speeches, the first of which was delivered to the Chartered Life

Underwriters Association on May 7, 1973, and the second of which was delivered to the Fellows of the Life Management Institute on March 28, 1974.

In the address to the CLUA, the minister warned that our industry was likely to receive much more evaluation than it has received in the past and that the cause of this was that consumer complaints had indicated that the industry was not meeting certain legitimate consumer needs. He suggested that the policyholders do not understand their policies and are frequently dissatisfied with the low early cash values on permanent policies registered for income tax relief. Most of his criticism, however, was directed at the commission system of remunerating agents, suggesting that the agent's ability to give sound advice was impaired by the necessity of selling more insurance and by the higher commissions which he could earn by selling permanent plans rather than term insurance. He also commented on the single-company representation rule which applies in provinces other than Quebec and the restrictions on twisting. He also expressed misgivings about high lapse rates, follow-up service, and the training of agents. He concluded this address by announcing the appointment of Mr. Douglas Carruthers, Q.C., as a special counsel to the ministry to conduct a study of the role of the life insurance agent and to review existing laws and practices from the standpoint of how well they reflect the public interest.

In his second address, on March 28, 1974, Mr. Clement mentioned that his ministry currently is examining the entire life insurance industry in an attempt to assess its performance and its relationship with the public and the provincial government. I would like to quote a few excerpts from this speech which I think illustrate a rather enlightened outlook.

When reviewing an industry of such size, it is important to get the questions right before looking for the answers. Government studies, like statistics, can be developed to prove just about anything you like and the results have often been disappointing. Establishing a context is therefore essential. So, too, is a sense of detachment and objectivity, so that the conclusions do not automatically tend to justify either the way things have always been done, or the way the loudest critics say they should be done.

We are anxious to see what new ideas can be brought into your industry, to help it respond to the issues of the day. And in the past year, we have seen the signs of a very positive response from the industry.

In response to these problems, the Canadian Life Insurance Association has introduced a program to help consumers compare insurance policies and understand them better. The 10-day free look offered consumers by all C.L.I.A.

members is also an encouraging step. While it is too early to judge the effectiveness of these innovations, I think it is significant that they are the work of the industry itself. No legislation was necessary.

The following quotations are suggestions from the minister for consideration:

First, I don't think we have heard enough from the life insurance companies on the comparative value of life insurance, and other insurance company products, as investments.

Secondly, we need more information on insurance companies as investors. I am told that insurance companies in Canada invest more money than their 11 million policyholders. I suspect that this investment has had a good deal to do with building this country. But we don't know much more about the subject.

Because the Canadian public is underinsured, government—especially at the provincial level—finds itself overcommitted. We would like your thoughts on how some of this burden can be shifted back to the private sector.

Finally, we would like to know the extent to which your industry is really capable of individualized service at a reasonable cost. But there must be a trade-off between providing this service and selling a reasonably priced product.

The minister then concluded with a plea that the industry bear certain things in mind, such as the following:

Design human systems, so we can always go over the computer's head and talk to one of our own species. Maintain your own contact with the policyholder. Don't rely solely on the agent to tell you what's really going on out there, or to solve all your problems and answer the complaints.

Try to create a model of the perfect company to set your sights on—a company that helps its claimants, includes social and economic policies in its investment strategy, and treats its policyholders like shareholders.

Give some thought to how we can develop meaningful cost comparisons for permanent policies, including return on investment measured against a standard cost of money or some other measure of opportunity cost, adjusted for risk if necessary.

I think about how the benefit of insurance can be extended to the uninsurables.

Suggest to us a standard policy for determining when interest should become payable on claims.

These are the kinds of initiatives we would like to see from you.

This is pretty encouraging stuff! However, the first evidence of the long-awaited "Carruthers Report" was a memo which appears to have

been leaked to the newspapers and was a considerable disappointment to the industry because it proved to be a disorganized compilation of old worn-out half-truths and misunderstandings, with equal emphasis given to matters of some importance and matters which seemed to be in the report simply to add to the list. The CLIA responded with a letter over the signature of Mr. J. A. Tuck, the executive director, with a well-organized response to the various points listed in the report. I think I can summarize the Carruthers Report best by reference to this letter which summarizes the response under several headings. Two of the points in the report refer to comparison of costs and understanding of policies. Three of the points have to do with single-company representation. Five of the points deal with agents' training and turnover. One of the points refers to high lapse rates. Eight of the points have to do with the commission-agency system. One point deals with policyholders' service and another with twisting.

The report suggested that the companies did not do enough to help the prospect compare costs or understand his policies, and the CLIA reply pointed out that a booklet had been published on the question of comparing costs and that many companies were now providing explanatory booklets with each policy issued. The report suggested that single-company representation was disadvantageous to the policyholders, and the response indicated that there were arguments on both sides of the question and listed some of them. The response outlined some of the activities of the companies in their attempts to improve the training and agent turnover picture and compared the results of the life insurance industry with other industries. The response discussed the persistency problem, pointing out the voluntary nature of the life insurance premium payment and, therefore, how it could not be compared with the repossession of financed products. In reply to the criticism of the commission-agency system, reference was made to the alternative marketing methods, such as group insurance and mass merchandising, and to the necessity of a salesman's building up an established clientele and relationships which inhibit his selling only those products on which he expects to receive the highest commission. The response ended with some comments on policyholders' service and twisting, drawing attention to the servicing efforts of the companies and the antitwisting legislation which is in effect in all provinces.

Mr. Gordon Grundy, the superintendent of insurance for Ontario, speaking at the annual meeting of the CLIA explained that the "twenty questions" were printed in the press as a result of a leak of an inter-office memo and it was never intended that they be given wide pub-

licity. He stated further that he is expecting Carruthers to complete his investigation and actually recommend changes in legislation. These recommendations would be the Carruthers Report.

Recently, the Life Underwriters' Association of Canada has prepared a memorandum to Mr. Grundy providing a response to each of the "twenty problems." This memorandum refers to a very comprehensive study entitled *The Distribution of Life Insurance in Canada* which the LUAC published simultaneously with the memorandum. This book contains chapters on the agency system, qualification standards, licensing of agents, ethical practice of agents, nondiscrimination among policyholders, disclosure to purchasers, service to policyholders, and compensation of life agents. It is a well-presented study of the official policy of the LUAC on these important matters.

The balance of my remarks will deal with actuarial responses to cost disclosure in Canada. The subject of cost comparisons has received considerable attention in Canada, although this has been motivated primarily by the desire of the industry to keep on top of the subject rather than to have something forced down its throat later. The CLIA has prepared a booklet entitled *How to Compare* and subtitled *Considerations in the Comparison of Life Insurance Policies*.

The book has an ambitious purpose because it clearly sets out to explain in simple terms what the subject is all about and to avoid giving pat and misleading answers. The subject is opened up in the introduction, which concludes with the following words: "This booklet sets out some considerations to keep in mind when buying a life insurance policy and when comparing policies. It also describes some aids that have been developed to help you to compare the cost of policies. It outlines the advantages and indicates that there are limitations in their use."

The booklet then outlines the kinds of information, such as premiums, specimen cash values, specimen reduced paid-up values, specimen dividends and accumulations and bonus addition amounts, and details as to other benefits included in the policy, which are required in order to make an intelligent comparison. Following this, it explains that the true cost will be known only when all the transactions are completed. It goes on to explain some of the other details which are necessary to make appropriate comparison, such as the difference between participating and nonparticipating policies, high-premium versus low-premium policies, policy size, cash values, settlement options, conversion rights, and so on.

The booklet then explains four cost indexes: the traditional net cost

index assuming the policy is surrendered at a given point of time, the interest-adjusted net cost index, and corresponding net payment index which ignore the surrender value. This is followed by illustrative figures. The book concludes with a dissertation on the various limitations that such indexes have, followed by a glossary of life insurance terms.

The book does not give the detailed instructions for calculating cost indexes which would permit a layman to calculate his own. However, all the companies in Canada have agreed that they will provide such figures upon request, so that a policyholder who is really interested in the subject can obtain the necessary information. Furthermore, the Stone and Cox publication of life insurance tables is obtaining information to publish such figures in its next edition.

The subject of cost comparisons also is under study by the Ontario Insurance Department. The actuary of the department, Mr. Lear Wood, proposes that cost comparisons be made by calculating three net premiums on the 1958-64 Canadian Assured Lives Select Mortality Table at 5 per cent interest for the plan and issue age for which the comparison is to be made. The first premium would assume that the policy matures for the tenth cash value, the second that it matures for the twentieth cash value, and the third that the policy continues to the maturity date. The difference between these net premiums and the gross premium for the policy could be expressed in absolute dollar amounts and as a percentage of the gross premium.

By this method of calculation the termination contingency over which the policyholder has no control (that is, death) is built into the figure on an average basis, whereas the termination contingency over which he has control (that is, surrender) is dealt with by illustrations to which he can attach weight in accordance with his own judgment as to the applicability of each to his own circumstances. No attempt is made to prescribe an index which is assumed to be appropriate for all cases, but the many complex numbers of the policy are condensed into a few simple numbers which may give the policyholder some guidance. The prospect might draw a different conclusion as to whether a high- or a low-premium plan is desirable, depending on whether he focuses his attention on the absolute dollar amount of expense margin or the percentage of the premium.

Mr. Wood's feeling is that for participating insurance it might be appropriate to require that the companies illustrate the net premium for the guaranteed benefits under the policy but permit them to provide any supplementary figures (such as averaged-out dividends on a similar

basis) that they feel are appropriate to complete the picture. They could, for example, average out the cash dividends on the given mortality and interest basis or calculate a level premium equivalent to the value of the paid-up additions granted, subject to appropriate explanations.

The objection to Mr. Wood's approach is that the interest-adjusted method, although imperfect, has received widespread acceptance, and there is a danger that a multiplicity of methods may only add confusion and create the impression that the industry is trying to avoid disclosure by promoting confusion.

Unfortunately, the problem has been further confused because the LUAC in its book *The Distribution of Life Insurance in Canada* (in chap. 6) has recommended that "the life insurance companies and the regulatory authorities seek a method of cost disclosure better than the interest adjusted net cost index and preferably a cost measurement which is a function of premium to enable comparisons to be made among life insurance policies of any type and among companies." Following this, they draw attention to the so-called equivalent level annual premium developed by Milton J. Goldberg. I do not understand what they mean by "function of premium" and why this would "enable comparisons to be made among life insurance policies of any type and among companies." Perhaps it is their intention that a percentage be calculated indicating that part of the premium which is not used to purchase benefits on the net basis and it is their impression that this will permit valid comparison of vastly different policies.

One of my favorite definitions of an actuary is "a person whose job, is to provide answers to questions that don't have any answers." Therefore, it comes as no surprise that the Canadian Institute of Actuaries has appointed a committee to deliberate the question of cost comparison. This committee includes a consulting actuary and a university professor as well as three life insurance company actuaries, so it is possible that the results of its deliberations will be given more credence than if it were purely an industry reaction to the problem. I understand that in their initial discussions they decided that a suitable cost index should include an appropriate adjustment for interest but beyond that they were unable to reach an agreement.

It is interesting to consider what differences might exist between Canada and the United States in answering the problem of cost comparisons. There is, of course, the question of assumptions being appropriate to the conditions in either country. Since interest is the only assumption required for the interest-adjusted cost comparison, the other items entering

into the calculation being facts related to the policy in question, it is the only one on which some difference need be made for this method. The CLIA booklet recommends a rate of 5 per cent for Canadian comparisons, as compared with the 4 per cent rate used in the United States. In other respects, probably much the same considerations apply to the sale of life insurance in Canada as in the United States. One factor, however, which might have some influence on the final course of things is the law respecting single-company representation, which applies in provinces other than Quebec. Each agent is required to represent one company and to hold himself out as a representative of that company rather than as a broker or "consultant." This may serve to warn the prospect that it may be in his interest to obtain other information to compare. At the present time there is some pressure for elimination of the single-company representation law, on the assumption that it is a means by which the companies stifle competition. The most active advocates of change are the agents themselves, so there are some grounds for suspecting that it may be commission competition rather than rate competition which underlies the desire for change. On the other hand, when the subject of comparing life insurance costs, in particular the CLIA booklet, was discussed with Mrs. Helen Anderson of the National Consumers Association, she made reference to multiple-company representation as being desirable in giving the policyholder the opportunity to ask the agent to provide him with information on several companies so he could compare the cost. Since the whole matter would be under the control of the agent, one can only wonder how diligently he would seek out the lowest cost if this was in conflict with his own self-interest.

Another factor of some interest is that the tax laws in Canada encourage the taking of the paid-up addition option as opposed to dividends on deposit. A company that gives favorable conversion to paid-up additions is unfairly treated by a cost comparison method which ignores paid-up additions.

MRS. ANNA M. RAPPAPORT: I believe it is unrealistic to expect that the consumer will ever be very knowledgeable about life insurance. Providing comparative cost information will not help the consumer to determine what his needs are and what type of insurance will best serve those needs. These questions outweigh in importance the question of which company has a lower cost index. The agent and the advice of the agent are most important in assisting the buyer in making the right choice.

I believe it is essential that we examine the way we do business and that we try to do business in such a way that the interest of the agent will not be opposed to the interest of the customer. In order to accomplish this, it would be necessary to change the agent's compensation to provide more equal compensation between plans.

I am particularly unhappy that New York, in regulating commissions, provides for lower maximum commissions on term insurance.