

**EXPANDING THE ACTUARY'S HORIZONS TO THE
EVALUATION OF A BROADER RANGE OF RISKS**

1. The actuary's role in the field of insurance:
 - a) Are the basic actuarial principles observed by a life actuary and a casualty actuary similar? Should the education of actuaries be less parochial in respect to these basic principles?
 - b) Should the educational curriculum put more emphasis on utility theory, ruin theory, and the theory of collective risk? Would such emphasis provide a better bridge between traditional life and nonlife actuarial concepts, and broaden the actuary's scope in other respects?
 - c) Does the present course of study qualify an actuary to deal with the problems of investment risk inherent in variable life insurance and annuities providing minimum benefits?
2. Should actuarial techniques be applied outside the traditional area of insurance and employee benefits, for example, to
 - a) The evaluation of the effect of various degrees of inflation in relation to insurance, finance, and business in general?
 - b) Corporate planning, operations research, and the study of the future?
 - c) Funding problems in general, including obsolescence, depreciation, and management of debt?
3. What should be the role of the actuary in a holding company complex concerned with both financial and commercial enterprises?

MR. J. CRAIG DAVIDSON: Speaking from the Canadian scene, we see that the extension of the Canadian Institute's membership to both life actuaries and casualty actuaries has been most fruitful. For example, at the fall meeting of the Canadian Institute of Actuaries, we were able to listen to a most interesting panel discussion on no-fault automobile insurance in which two of the panelists were casualty actuaries and one was a life actuary.

But no-fault automobile insurance is not the only subject in which life and casualty actuaries may have a common interest. A prime example is the construction of a scale of gross premiums for any insurance coverage, be it life, health, or casualty. The textbook recipe for the calculation of a gross premium G requires one to calculate first the net premium, P , for the specific coverage; next to calculate the security loading λ to cover the risk of adverse deviations and the loading E for acquisition, overhead, and administrative expenses; and, finally, to divide the whole by 1 minus the average value K of commissions and other premium-related expenses

expressed per dollar of gross premium. The above can be expressed algebraically as follows:

$$G = \frac{P + \lambda + E}{1 - K},$$

where G , P , λ , E , and K are defined as above.

Both the size of the security loading λ to cover the risk of adverse deviations and the size of the loading E for acquisition, overhead, and administrative expenses depend on the number of policies in force, N . A small increment in the number of policies in force will result in a small decrement in both λ and E , namely, $-\Delta\lambda$ and $-\Delta E$.

The decrement in the size of the gross premium, namely, $-\Delta G$, is then given by

$$\Delta G = \frac{\Delta\lambda + \Delta E}{1 - K},$$

where ΔG , $\Delta\lambda$, ΔE , and K are as defined above.

Such a decrement $-\Delta G$ in a competitive market should generate a small increment in the number of new sales, ΔB , which should finally result in a small increment in the number of policies in force, ΔN , and so the cycle is completed.

Let us use an example to illustrate the relationships among the various symbols I have just defined. An insurance company wishes to penetrate the high-school market and decides to design a contract which pays \$10,000 if the student dies accidentally during the school year. The net premium is assumed to be \$10 per student per school year, and the agent's commission and premium tax 10 per cent of the gross premium. In calculating the security loading, the actuary can assume that there will be a sufficient number of sales so that the profit distribution will be approximately the normal curve. Thus a security loading of 2 standard deviations should restrict the probability of ruin to less than 2.5 percent. It is desired by management that this new block of business make an annual contribution of \$100,000 toward covering administrative expenses and overhead. The tabulation on page D563 shows, for various portfolio sizes, the gross premiums calculated to reflect the assumptions I have just outlined.

In the table we have seven different gross premiums, each aimed at a different number of policies in force. Which gross premium should we use? Here the actuary must decide under uncertainty which gross premium is most likely to generate sufficient business, which, in turn, will result in a portfolio size equal to or greater than the one assumed in its calculation. To arrive at this decision, the actuary may use the frequency function $f(N/G)$, which yields the probability that, given a gross premium G , a

Number of Policies in Force (N)	Net Premium (P)	Security Loading (λ)	Expenses (E)	Gross Premium* (G)
50,000.....	\$10.00	\$1.41	\$2.00	\$14.90
75,000.....	10.00	1.15	1.33	13.87
100,000.....	10.00	1.00	1.00	13.33
125,000.....	10.00	0.89	0.80	12.99
150,000.....	10.00	0.82	0.67	12.76
175,000.....	10.00	0.76	0.57	12.59
200,000.....	10.00	0.71	0.50	12.46

$$* G = (P + \lambda + E)/0.90.$$

sufficient number of policies will be issued to generate a portfolio of N policies in force. This frequency function describes the consumer's behavior toward our simple accidental death policy.

In our example, we have seven gross premiums, each for a given portfolio size. Let us assume that we have been able to develop a frequency function of portfolio sizes for each of the seven gross premiums. We must then calculate the cumulative distribution function $F(N/G)$, which yields the probability that, given a gross premium G , a sufficient number of policies will be issued to generate a portfolio of not more than N policies. For example, if the cumulative distribution function tells us that the probability of generating a portfolio of less than 100,000 policies, given a premium of \$13.33, is 0.25, while the probability of generating a portfolio of less than 150,000 policies, given a premium of \$12.76, is only 0.05, we may tend to favor the lower premium as being the one with a better chance of producing a reasonable profit.

I am afraid that I have oversimplified the problems of a pricing actuary. However, I do hope that this example illustrates how an actuary can use utility theory in arriving at gross premium decisions under uncertainty. Actually utility theory, although described over one hundred years ago by William Stanley Jevons, has found its way only recently into actuarial literature, mainly through the efforts of Karl Borch and Paul Kahn. Indeed, utility theory can be used successfully to solve a large variety of life and casualty problems such as experience rating, retention limits, and the like. Yet utility theory is not in the syllabus of the Society's examinations and, I believe, is referred to only briefly in the study material for the Casualty examinations.

One area in which the insurance industry is becoming increasingly active is that of variable life insurance and annuities with minimum guarantees. Yet our educational system does not qualify the actuary

properly to deal with the investment risk related to these new types of life insurance and annuity contracts. Indeed, our examination syllabus should require some basic knowledge of fundamental subjects, such as security and market analysis, which are essential to an understanding of the forces operating within the security market.

I do recognize that there are insurmountable difficulties in adding new subjects to the course of reading of the Society's examinations. Nevertheless, I feel it is essential for the survival of our profession to enlarge our educational horizon in order to sharpen our perception of the times through which we will practice our profession. Our Society could perform a great postexamination educational role through its Committee on Continuing Education and Research if it sponsored courses on such subjects as elementary and advanced risk theory, time series analysis, utility theory, decision theory, operations research techniques, data processing, security and market analysis, and economics and political science. Such courses could be run by universities, jointly sponsored by the Society and other North American actuarial organizations. They could be on a correspondence or on a classroom basis. Thus the members of our profession could participate by correspondence or by periodic leaves of absence to attend a university.

As we celebrate our twenty-fifth anniversary, and ponder the forecasts made by John Bragg and Cecil White on the future of our profession, we should question seriously whether or not our educational system truly is designed to permit our actuarial students to withstand the shock of the future. Take John Bragg's creation, Richard McKee—or better, take his older cousin, Donald McKee—who was born, say, ten years before Richard and who probably will be writing the Part 3 examination of the Society next month.

Donald McKee is expected to spend over one-third of his professional life in the twenty-first century. Is our educational system capable of preparing him to make a soft landing in the next century? I fear that the system is built too much along traditional lines, where the practical skills of the past are handed down from one generation of actuaries to the next. If we wish our profession to survive in the relatively unknown society of tomorrow, we can no longer assume that our traditional approach to education will continue to be adequate. We ought to focus our educational system on the horizon of today, and possibly on the expanded horizon of tomorrow, rather than on yesterday.

Before attempting to answer the question whether actuarial techniques should be applied outside the traditional areas of insurance and employee benefits, we should try to determine what we mean by "actuarial tech-

niques." If we define them as mathematical methods used to explore the unknown in order to identify and solve problems of an economic nature or, better still, if we define them in a broader sense as mathematical methods used to explore the unknown for any reason whatever, then the field of application of actuarial techniques is greatly expanded. One area that comes to mind is that of inflation.

An attempt has already been made to determine, using actuarial techniques, the effect of various degrees of inflation on the Canadian economy and, in turn, on the development of an insurance company operating in Canada. This year's spring meeting of the Canadian Institute of Actuaries was devoted entirely to the subject of inflation. Three different models were presented and discussed during the two-day meeting. The first attempted to determine the effect of various degrees of inflation on Canadian economic indicators such as gross national product, rate of unemployment, and personal disposable income. The second attempted to measure the effect of various degrees of inflation on interest rates and the resulting effect on bond and common stock prices. Finally, the third attempted to depict what the operating statements and balance sheets of a life insurance company might look like over a ten-year period under various inflationary conditions. The economic models were linked to the insurance model by personal disposable income, which traditionally has shown the greatest degree of correlation between general economic conditions in Canada and the sale of life insurance.

We learned from these three models that the greatest threat to the survival of a life insurance company operating in Canada is posed not by rising costs, which can be offset partly by excess investment income from higher yields and partly by accelerated sales resulting in increased volume of insurance in force, but by the valuation strain resulting from using a statutory rate of interest which is too low in relation to current yields and by the Canadian statutory requirement of valuing all corporate bonds at market.

I would like to refer briefly to the forecasting technique developed by Arthur C. Clarke, the distinguished scientist and author of *Profiles of the Future*. Clarke systematically analyzes long-established trends in the areas of transportation, communication, information, materials, manufacturing, biology, chemistry, and physics and, using extrapolatory techniques, he attempts to define, both in time and space, the boundaries within which the future of each of the established trends is likely to lie.

The Clarke technique of defining the future in terms of boundaries can be used effectively in corporate planning. The main objective of the corporate planner is not only to chart a course for the future development

of his company but also to define the boundaries within which certain long-established trends are likely to develop, so that some of the opportunities that will present themselves in the future can be recognized far ahead of time. For example, what are the boundaries within which the future North American life-style is likely to lie? What is the range of financial services necessary to support this life-style, and, finally, what should an insurance company do to gear itself for the provision of such financial services?

Let us return for a moment to the subject of inflation and focus on a current controversial subject, "inflation accounting." The current practice is to depreciate the cost of a piece of equipment in accordance with its purchase price. Generally, the depreciation program is carried out over a fixed number of years which may have little to do with the estimated lifetime of the equipment or with its probability of becoming obsolete.

I am afraid that this method of depreciating equipment during a period of moderate or severe inflation will not permit the cost accountant to price properly the cost of a unit of output. Proper accounting requires that expenditures for items consumed be considered expenses of the period in which consumption takes place. Consequently, the units of time in the lifetime of the equipment destroyed in the production of a unit of output must be valued on the basis of the present value, at that point in time, of the cost of the equipment when it will have to be replaced. To calculate the value of a unit of production, the cost accountant must make use of the probability of equipment survival, a suitable interest rate, and the rate of inflation operating on the cost of such equipment. Obviously, this cost accountant needs actuarial advice. In fact, using the mathematics inherent in the construction of a mortality table but using the probability that a piece of equipment will survive a certain number of units of time, it is possible to construct a table that would be most helpful to the cost accountant in calculating depreciation allowances.

To illustrate this point, consider the case of a car rental company which systematically retires cars from service after 75,000 miles or because of prior obsolescence or accidental destruction. Let us assume that the average mileage per car is 15,000 miles a year; that the 1975 base price of the car model used by the company is \$4,500; and that inflation will increase the price of cars at the rate of 10 per cent a year. Our problem is twofold. First, we must devise a depreciation scheme that will permit the company to set aside funds so that cars that are retired from service can be replaced immediately with new cars which cost substantially more than those they replace, and, second, we must determine the depreciation cost per mile so that the company's management will be able to develop

a pricing policy. Now, making a number of assumptions regarding the rates of obsolescence and accidental destruction, using salvage values based on the 1974 car dealers' *Red Book* adjusted for future inflation, and assuming 8 per cent interest, we find that the 1975 models purchased by this company should be depreciated at the rate of 5½ cents per mile. That is, if the company sets aside 5½ cents per mile and invests the money at 8 per cent, it will be able to accumulate sufficient funds to replace the 1975 cars with cars of a similar model but at inflated prices.

This is an example of inflation accounting which not only helps the company to price its services more accurately but also permits the company to optimize the utilization of its capital.

The above is a very practical problem. Most car rental companies could use actuarial advice nowadays, as evidenced by a story which appeared in the *Wall Street Journal* just about a month ago. The headline of this story read, "Soaring car prices cause companies to re-examine fleet purchasing plans." The story went on to report on the findings of a survey conducted among its members by the National Association of Fleet Administrators. The results of the survey indicated that 27 per cent of the member companies plan to alter car-buying habits because of soaring car prices.

The same types of actuarial techniques can be used to depreciate machinery and equipment, to minimize the cost of carrying inventories, and to solve a host of accounting problems where the contingencies of obsolescence and/or inflation are at the core of the problem.

MR. FRANCIS E. GUASCHI:* Since I first became interested in problems outside of life and pensions, it has become increasingly apparent to me that there are two aspects to the expansion process:

1. What do actuaries, especially life actuaries, receive in their training which is applicable, either directly or with suitable modifications, to problems outside their field?
2. What new techniques or disciplines are desirable to acquire so as to enable actuaries to cope with such problems?

If we take the first aspect, one observes the very close family ties between the life and the casualty actuary. The insistence on the ordered presentation of data and the checks on adequacy and correctness of such data are common to the systems of training. Proceeding to more complicated operations, such as the determination of the exposed to risk, the

* Mr. Guaschi, not a member of the Society, is a Fellow of the Institute of Actuaries and is from the Mercantile and General Reinsurance Company, Ltd., in London.

correct allocation of the claim event to the exposure, and the graduation of crude rates in order to produce a smooth progression, we find again that actuarial minds of all types have the same basic approach. However, there is a difference. Actuaries trained in the life assurance field, and I am one, almost take these things for granted, not meaning that too unkindly. When I first tackled something in my company's casualty department, the sheer power of these simple techniques in uncovering all sorts of nasty anomalies and in exposing downright errors struck me very forcibly. So as actuaries we ought to place a proper value upon what sometimes appear to be modest instruments of our profession.

Coming to yet more complicated aspects of our training, the separation and analysis of the components of a risk followed by the formation of multiple increment/decrement tables can open up unexpected avenues when applied outside life and pensions. Probably the most powerful process we can apply, and one which is the hallmark of the casualty and the life actuary, is the devastating combination of probability and compound interest (or discounted cash flow, to use the current jargon). Some professions can wield the tools of probability and statistics with confidence, while others are skilled in the use of discounting techniques, but it is actuaries who can put them both together and can thread their way through many complicated problems which at first sight defy solution.

Turning now to the second aspect, the most obvious example is the use of computer techniques. The immense speed of the computer has meant that problems previously considered to be either intractable or impossibly time-consuming can be tackled with some prospect of success. Thus actuaries have been quick to seize upon the potentialities of simulation techniques where analytical methods cannot be employed. Looking perhaps a little farther afield, it is clear that the elementary theory of statistics is sufficient to enable most life and pensions problems to be solved, but rather more advanced treatment is often necessary for casualty and other fields. In the rating of motor liability business, for example, the natural approach is to analyze the frequency of claims according to obvious characteristics such as age, sex, type of vehicle, geographical district, and so on, and for this we would tend to employ some technique of multivariate analysis. When we look at the severity or size of claim, it is clear that, in sharp contrast to life assurance with its known sum assured at death, we have the prospect of a claim which may vary from zero to a million dollars. I nearly said infinity. A knowledge of claim distribution patterns is clearly very useful. The resulting combination of a statistical distribution for the frequency of an event with another for

the size of the claim can lead us into strange mathematical waters. But they are waters into which I am convinced actuaries must venture if they are to overcome the more difficult problems which will inevitably arise outside their traditional activities.

If one scans the world actuarial scene, it is clear that some highly theoretical work is being performed. How much of this can or will be transformed into practical actuarial tools remains to be seen. For example, much has been written and said on the theory of ruin, and, judging by some notable—one might even say notorious—cases, it is clearly a subject with which we have to come to grips. However, it is not enough to know what the probability of ruin is. Examination of a recent British failure shows that the burning question was whether there was any evidence previous to the actual failure which, had we spotted it, would have enabled us to foresee what was going to happen. I believe that a whole battery of techniques, none of which individually would be sufficient to point toward impending trouble but which cumulatively might do so, must be developed in this area. The theory of ruin and its applications is or may be one such technique. It is clear also that study of insolvency problems cannot be considered in a vacuum. At the same time that you are testing whether a company has sufficient reserves, it is vitally important to check that its scales of premiums are adequate. If anyone doubts that this problem has a nasty twist to it, I would refer them to Hilary Seal's paper "Simulation of the Ruin Potential of Nonlife Insurance Companies" (*TSA*, XXI, 563), where he obtained the somewhat surprising result that companies failed even though theoretically sound premiums were being charged.

My company has carried out on its computer some investigations into the prognosis for our staff pension fund. This involved feeding in assumptions about future interest earnings, salary progression, mortality, and new-entrant patterns and plotting the possible course of the fund. Given a contribution of fixed percentage of salary, we were able to see quite clearly the circumstances under which the pension fund might become insolvent. More importantly, disaster can overtake one sooner than one realizes. I think it is the rate of change of the variables with which we have to cope that can take us unawares. Consequently, any techniques of an analytical nature would benefit enormously from being subjected to a dynamic or time-based test. For example, if your company has a 0.001 chance of being ruined this year, what would have to happen to make the probability 0.002 or 0.01, and how long before this might happen? More and more, I am becoming convinced that actuaries are, or ought to be, operators of control systems. They should be able to know how long it

takes for a system to react to something which happens to it. How often do we not see an assumption in a paper that such and such variables are independent? Ask yourselves how often that assumption can be made in a real environment. A few years ago we were looking at some claim settlement figures in order to find out such things as the pattern of settlement and how long on the average we were taking to settle claims. The reaction of the claims manager to the news was, "We must do something to reduce the time lag." So how long now does it take to settle? I am sure we can think of many examples of feedback, positive and negative.

My own company transacts reinsurance only, and over recent years we have seen the growth in importance of nonproportional reinsurance. Basically, reinsurance is concerned with the natural desire of assurance companies to protect themselves against the occurrence of either large individual claims or large accumulations of claims. If we consider the problem of individual claims, a company will normally choose a sum of money representing the highest amount it wishes to pay out on an individual claim. For any claims which exceed this figure, the reinsurer meets the balance in return for an appropriate premium. If we look at this from a life point of view, it is merely a question of dividing the premium for the total sum assured on any risk ratably between the retention on the one hand and the sum assured minus the retention on the other. But what happens when there is not a sum assured as, for example, in accident liability business? Some of the techniques mentioned earlier have been used to tackle this problem, but recently a new and much more sinister enemy called inflation has crept into the reckoning. Reinsurers have seen inflation in a particularly vicious form. But first let me set the scene. We all know that it tends to take a long time to settle liability claims, and I guess we are all familiar with the size that some of them can reach. So, we have a delay in settlement, and the tendency for that delay is to increase the size of the claim. Now imagine an assurance company with a retention of \$10,000. Suppose that it sees an inflation of 50 per cent over a period of, say, three or four years. This will mean that a claim which it thought would cost \$20,000 gross will, because of the delay, ultimately cost \$30,000. However, thanks to the retention, the assurance company has no inflation because it pays \$10,000 whatever happens. The reinsurer, contrariwise, pays \$20,000 instead of \$10,000, an increase of 100 per cent. It is important for us as actuaries to watch closely the effect of inflation on our business and to be prepared to meet it in its more pernicious forms. The gearing up which one sees in the reinsurance example just given may well be lurking in problems which we are called upon to meet outside the traditional fields.

Professor Cramér in a lecture to the Institute of Actuaries in 1963 stressed the importance of the basic tools of mathematical probability and finance. Other disciplines, such as biology, medicine, technology, and the law, increasingly find themselves facing practical problems in finance and assurance. Actuarial science, he said, is the field where all these disciplines meet and concur in their application to practical problems of assurance, in the widest sense of the word. I am sure that we would agree with those sentiments even more today.

MR. MORRISON H. BEACH: The basic and traditional role of the actuary has been to seek out, observe, and classify facts, to structure problems in quantitative ways. This should never change, for it is the bedrock of the insurance industry.

We have moved quickly from a society of caveat emptor to one of caveat vendor, and I am certain you will agree that some of the difficult questions posed to our industry by creditable consumer groups deserve more than a cursory response. Our profession is being called upon more and more to assist in those responses, for we are the ones with the most direct access to the facts as well as the skills and training with which to help interpret these facts for our publics and provide them with open and positive solutions.

We cannot limit our scope to the traditional actuarial roles when the environment in which we move is changing form before our eyes. We must involve ourselves in the political, social, and financial problems of our times. Over the last forty years, a number of actuaries have done this. I will touch on two major areas in which I think actuaries should be deeply involved: evaluating and countering the impact of inflation, and legislative developments concerning social programs.

Our traditional techniques rely heavily on statistical experience, a backward look. Inflation increases the importance of projecting future experience. In our rapidly changing environment the actuary should be aware of what is going on in our economy and be able to translate what any developments mean in terms of changes in operating costs and claim costs. Waiting until these costs actually hit us is too late. Premium rates have to be set in terms of prospective medical costs; hourly labor rates for car repairs; the cost of lumber, shingles, and paint; and many other factors.

Inflation is increasing the problems of expense management for insurance companies, where particularly the cost of marketing life insurance is already high. If inflation decreases the proportion of permanent insurance sold, the income of our sales forces may be declining at a time when their income needs are increasing.

To a certain extent higher interest rates—which have a causal relationship to inflation—tend to offset inflationary claim costs. This will work out properly, however, only if the investment programs properly hedge changes in interest levels. Otherwise, higher interest rates mean depressed market values of bonds and mortgages, and this compounds the problems of inflation. The actuary is in an ideal position to work out the cash flows and to recommend maturity schedule requirements for investments.

Beyond this, in these times of depressed stock market values and shrinking surpluses, the actuary has to measure carefully the risks being assumed in relation to surplus. Currently the surplus of many casualty-property companies is affected much more by fluctuations in the stock market than by the profitability of its insurance underwriting. In times like these, applying probability forecasting to possible changes in the level of the stock market is very dangerous. After the market had fallen to the level it reached in early summer, there was a very small probability, based on historical experience, of a further fall to the levels it reached in August and September, and it was these further drops that really hurt many casualty-property companies. A major requirement of our industry is a strong capital and surplus position. Preservation of this position is essential if we are to continue to be able to serve our customers by maintaining and expanding our premium writings. As a result, the actuary should leave individual investments to the investment men, but he should monitor carefully investment strategy and performance because of its strong impact on surplus and thus on the ability to write business.

In the matter of social legislation, actuaries should be playing a very important role, and some have and are. A number of actuaries were involved in developing the basic actuarial concepts for financing our social security program, and others have continuously monitored the financial soundness of the system. Currently a number of actuaries are working with congressional staff developing alternative drafts for a national health insurance program. Who can provide better cost estimates and argue the priorities in relation to costs? In short, the actuary, by his actuarial understanding of social legislation, is uniquely able to assess it for his company. He has a public relations role to play—that is, to explain government programs and their true cost.

I turn briefly now to my other topic, the use of actuarial techniques in corporate planning, operations research, and study of the future. The insurance actuary can play a central role in corporate planning. The planning process can be a very important management tool. Planning, to be effective and meaningful, has to be quantitative. New premium rate

programs, plans to reduce turnover, changes in interest and inflation levels, changes in salary scales, and a whole host of things have to be quantified to see what a year's operations will produce in terms of profits and change in surplus. The actuary is the person most naturally qualified to develop these relationships and produce a profit and surplus plan.

Related to planning is the need to establish controls to measure the effectiveness of the execution of our programs. Without these controls, planning can be the expensive game of who can be the biggest spender.

I also feel that our skills will be called upon more and more as new approaches are sought to avoid the cyclical swings which heretofore have characterized the casualty-property and group health business. These are difficult markets to stabilize, but, as we become more deeply involved in the many aspects of corporate planning incorporating the social, political, and economic considerations, I am confident that pathways to solutions can be found.

There are many other parts of the actuary's training that make corporate planning a natural for him. For example, he should be involved in tax planning, that is, tax-exempts versus taxables, stocks versus bonds, minimizing the impact of discriminatory state premium tax laws, and the like. Tax planning is an area where the actuary can make a profound contribution to his company's success.

What makes the life insurance actuary effective in planning is his experience in considering the long-term implications of his decisions. No other group of people in any business is involved routinely in such long-term operations. This experience, combined with our quantitative abilities, qualifies us uniquely for planning. It is this long-term quality that has caused several casualty-property companies to employ life actuaries in their operations.

Operations simulation is another area in which an actuary can make substantial contributions. Although some of the techniques used in operations simulation may not yet have entered the mainstream of actuarial methodology, I feel that a melding of various disciplines can bring about useful models for us to consider. In our company, our operations simulation team has concentrated its thinking in the area of financial planning.

For example, work progresses on the construction of models to better understand the implications of various corporate strategies related to cash flow, and on modeling future profit projections, and we have delved deeply into the problem of persistency and quality of business. We are evaluating the economics of various procedures for selecting new agents. We have developed models indicating what losses would be today for

each of the major natural disasters—hurricanes, earthquakes, floods, and so on—which have occurred over the last fifty years.

Throughout these and other critical areas of corporate concern, the quantitative methods, which are the basis of actuarial science, can bring a fresh analytical point of view—and overview, if you will—to some of the critical problems we face. Granted, some of our skills may not be directly adaptable to some of the problems we face. But our training and perspective as actuaries, now extended by some of the newer quantitative approaches, can provide new sources of insight.

It is important that any research project or team be structured in such a way that each member can draw from his own background and be motivated to contribute his knowledge, his questions, and his skills. Thus the members' combined power can provide a wholeness to the solutions we seek. This approach certainly will not restrict the role of the actuary. Instead, I feel, it will greatly enhance it.

MR. HARALD BOHMAN:* There are many problems in the insurance business which have not yet been solved. Before we start to consider utility theory and other sophisticated mathematical methods, we should try to solve our everyday problems.

As an example of how everyday problems are not solved, or, at least, not solved in a satisfactory way, I want to mention the rate-making problem in nonlife business.

Company A has a customer, Mr. B, who for many years has been paying large amounts of premiums to Company A. Mr. B now thinks that the relation between claim payments to him from Company A and premium payments from him to Company A is unfavorable. He asks Company A to do something about it.

Company A has to deal with such a common situation every day. It has, however, no firm theoretical base from which it can get an indication of how to handle the actual case, and therefore it deals with such problems rather haphazardly. The outcome of such a discussion between company and customer often will depend on bargaining, and the customer will easily obtain the impression that the premiums of Company A do not follow strict mathematical and statistical rules but are open to bargaining.

My second example is a new type of risk which appears on the market, and insurance companies are asked to furnish insurance coverage. No statistical data are available, but a coverage must be arranged and a

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premium must be set. This is also a very common situation and it is a real problem. Insurance companies do not have an understanding of how to cope with such a situation.

My suggestion is that some well-known actuarial journal should try to stimulate and coordinate research in some of the unsolved problem areas. Let it be known that for the time being the journal gives priority for contributions within area X. Write to actuaries with experience and ideas and ask for contributions, rejecting those which are inferior. We must try to develop a better theoretical base for our insurance industry.

MR. FREDERICK W. KILBOURNE: A boost may be given to the expansion of actuarial horizons by means of a definition of "actuary" that is as general as can be within the confines of accuracy. The definition suggested is that an actuary is one who has the necessary "training and experience in the evaluation and quantification of contingencies and in the analysis of the financial consequences of those contingencies." If this definition is accepted, it can be seen that the potential horizons of the actuary extend well beyond the narrow confines of the insurance industry.

It is clear that the foundation of life actuarial work conforms to the above definition. Casualty actuarial work similarly conforms, in that claim frequency and severity are basic building blocks. As an aside, however, note the blind spot of each field: severity to the life actuary and discount to the casualty actuary.

With minor revisions in the training program, the actuary should be presentable as an expert in answering the questions "whether or not?" and "if so, how much?" The list of organizations and people needing answers to these questions is lengthy indeed.

CHAIRMAN JOHN H. MILLER: Clearly the actuary's horizons have been broadened, not always by conscious choice. New hazards and new expectations of security created by political, social, and economic change have presented opportunities and demands for new types of insurance, and actuaries have always responded with solutions.

Nowadays we are hearing of insurance against kidnapping, insurance against depreciation in market values, and insurance against mortgage default. Should not each such new insurance concept be assessed on at least three counts? Is it in the public interest, is it indeed insurable, and have we adequate information or technology to establish a proper premium rate?

Are our programs of education and continuing education adequate to prepare the profession to make these assessments? In the process of

adapting our educational curriculum to external changes, should we not place more emphasis on studying the nature of the underlying risks, through a more general approach embracing nonlife as well as life risks? Should we not put more stress on the “why,” with less emphasis on the “what” and the “how”? For example, would most of us be better prepared to deal with the new problems looming on the horizon had we spent more time studying basic principles and mathematical procedures, with less time allotted to learning the details of section 213 or of the Annual Statement blanks of the United States and Canada?

This is certainly not intended as a criticism of our Committees on Education and Examination and on Continuing Education. If anything, I believe that these committees have been held back by the conservative attitudes of our profession and would respond readily to a decision by the Society to change the emphasis and direction of our programs of education. There is a lag of perhaps ten to twenty years between the period of the actuary’s initial professional education and the time that he will be called upon to make major decisions. We cannot predict the details of the problems which may be faced in twenty years. But we can, with some confidence, believe that the principles of risk theory and the mathematical and statistical concepts and techniques which are the actuary’s tools will stand him in good stead when he faces these problems, when, inevitably, they appear.

LIVING WITH WORLDWIDE INFLATION

If the rates of inflation recently experienced almost everywhere in the free world were to continue for a substantial number of years, what would be the implications for the insurance industry in the following:

1. Product design: What products existing or envisioned would receive wide public acceptance at a high level of inflation in
 - a) Individual life or health insurance?
 - b) Pensions?
 - c) Group life and health insurance?
2. Pricing
 - a) Should expense loadings on level premium life insurance include a factor for inflation at a substantial level for the foreseeable future?
 - b) Would continued inflation at the rates recently experienced create eventual operating deficits on existing blocks of business?
 - c) Are there some forms of insurance (e.g., health) that cannot be appropriately priced in a period of runaway inflation?
3. Investments
 - a) What, if any, changes in the insurance industry's investment policies would be required?
 - b) Are indexed investments an answer?
 - c) What has been the experience in countries where indexed investments have been used?
4. Would general "indexing" of investments, wages, and other monetary contracts (including premiums) be a possible answer?

MR. J. M. BRAGG: At the outset, let me point out the one and only reason for my presence: the company with which I am associated—Life Insurance Company of Georgia—has since 1968 had on the market certain ordinary life insurance products which are tied to the consumer price index (CPI). This does not mean that we know the answers to the rather staggering problems outlined in the agenda—not by any means.

You will note that the agenda reads: "If the rates of inflation recently experienced almost everywhere in the free world were to continue for a substantial number of years, what would be the implications. . . ."

Here are some recent rates of inflation being experienced in fully developed countries: Japan, 24 per cent, England, 16 per cent, France, 13 per cent, and the United States, 12.6 per cent. So we are not as badly off as some!

However, an inflation rate of 12.6 per cent per annum would cause the CPI to more than double in just six years' time. This would be disastrous

for millions of people living on fixed incomes and would be a severe blow in many other respects—especially for the life insurance industry, which is heavily tied to the fixed-dollar concept. Let us hope, and in fact believe, that inflation of this magnitude will not continue indefinitely but can be brought under some kind of control.

In this connection I might mention that in March, 1974, the Chase Manhattan Bank published a report entitled *The Long-Term Outlook for the Insurance Industry*. That report, which is based on a macroeconomic model, predicts that by 1982 there will be full employment, a balanced budget, and inflation of only 4 per cent. Perhaps that is the kind of inflation we can really cope with.

I intend to restrict these remarks largely to item 1 of the program outline—product design—and item 4, which deals with indexing. I will also try to deal, to some extent, with item 2—pricing.

It seems to me that doing a job for the public is more important than battenning down our hatches. So the first question might be: How good a job have we been doing for the public in the fight against inflation?

According to the *Life Insurance Fact Book*, the average amount of life insurance in force per family in the United States in 1963 was \$12,200. This had grown to \$24,400 in 1973, indicating a growth rate of 7.1 per cent per annum. (Incidentally, a good deal more of this increase came from group insurance than from ordinary insurance.) The annual growth rate in insurance protection was 7.1 per cent, as compared with a 4.1 per cent rate of increase in the CPI, indicating that some *real* improvement was achieved over the whole of this ten-year period. However, what about the most recent one-year span? From 1972 to 1973 average family coverage increased from \$22,900 to \$24,400—only 6.6 per cent. And for that period the CPI increased 8.8 per cent, showing that real life insurance protection declined during that one-year period. Undoubtedly the figures for 1973–74 will be even more discouraging.

Now to turn to the agenda question: What products existing or envisioned would receive wide public acceptance at a high level of inflation?

Dealing with individual life insurance first, there are the following approaches: (1) sale of more fixed-dollar insurance, (2) guaranteed insurability tied to the CPI, (3) the life-cycle concept, tied to the CPI, and (4) life insurance based on the CPI. You notice that I am not even including the famous product which was supposed to do the trick—variable life insurance!

1. *Sale of more fixed-dollar insurance.*—This is the approach used historically. It is the approach which most established field men like. I pointed out above

that it did work, modestly anyway, over the average of the ten-year period 1963-73. Life insurance protection per family did increase faster than the cost of living. Protection increased at a rate of 7.1 per cent per annum, while inflation averaged only 4.1 per cent. It took the help of group insurance to achieve this. However, the approach has not worked since 1972. Just to avoid going backward in real terms, the average coverage in force per family must increase 12.6 per cent in 1974. Considering the attrition caused by lapses, this means that sales in 1974 must double over the 1973 level—a phenomenon which we do not need to bother looking for.

2. *Guaranteed insurability tied to the CPI.*—Several companies have tried this, through riders or as part of dividend options. It is really just an extension of item 1 above. It says: If the CPI goes up, we will be glad to sell you more life insurance and you will not need to submit evidence of insurability. There is something to be said for the idea. I understand, however, that these riders and options have not been very popular with agents or policyholders.

3. *The life-cycle concept tied to the CPI.*—Very little has been published about this approach, and I do not consider myself knowledgeable about it. However, it does make sense that a family should adjust its coverage needs to inflation as well as to the many other variables which occur over its life cycle.

4. *Life insurance based on the CPI.*—Different varieties of this product are described in a paper in the 1970 *Transactions*: "Life Insurance Based on the Consumer Price Index" (*TSA*, XXII, 333). Two of these are on the market: (a) a whole life policy with level premiums and fixed cash values but with a death benefit escalating in accordance with the CPI and (b) a family income (decreasing term) rider, with level premiums but with a monthly income payment which escalates with the CPI, both before and after death of the insured. This rider is quite inexpensive and quite popular. Several such products are not on the market, for a variety of reasons, but can be envisioned: (c) any permanent product with level premiums but with cash values as well as death benefits which escalate with the CPI and (d) a permanent product, such as a whole life policy, in which the death benefit, the cash values, and the premiums all escalate with the CPI. This is the fully indexed policy and might be considered ideal, because *all payments* under it are in real terms. The term "fully Dutch" can also be applied to it.

The products I have described have to be subjected to certain reasonable limitations. At Life of Georgia, for example, we impose a rule: double is the maximum. It must also be admitted that there are difficulties in securing state approval, and not all agents take to these radical innovations. Also, these benefits cannot be pulled out of a hat for free—they have to be charged for. However, the technology to do these things soundly does exist. And you do not need "Index Bonds" to make it work. But I would say that you do need the high interest rates which seemingly go with inflation.

You might be interested in approximate relative prices of some of these products. Comparisons are shown in the accompanying tabulation for

TYPE OF PRODUCT	INFLATION RATE ASSUMED (PER ANNUM)		
	3.5%	5%	6.5%
Fixed dollar.....	\$188.00	\$188.00	\$188.00
Level premium, but face amount and cash values tied to CPI.....	286.80	300.30	307.80
Premiums, face amount, and cash values all tied to CPI.....	205.70	210.84	214.93

nonparticipating annual premiums per thousand based on a \$10,000 whole life policy issued at age 35. Changes in the inflation assumption do not have as much of an effect as might be supposed; this is because of the doubling limitation.

Agents tell me that it would be desirable to have both of these escalating products available, so that the prospect could choose between the high-level premium and the other premium which starts much lower but escalates. The twenty-year family income rider, with monthly income payments escalating with the index both before and after death of the insured is on the market at a price of \$93.20 per \$100 of initial benefit.

In the case of health insurance, both individual and group, I believe we are already doing a good job in keeping benefits in line with inflation. This is because the benefits, particularly in the medical care area, are quite "open-ended"—painfully so, in fact, when it comes to raising premium rates!

Group life insurance of the typical kind is also doing something like a fair job. This is because most group life schedules are tied to earnings. Nevertheless, some improvements in the group area may be possible—perhaps along the lines of the family income rider, tied to the CPI, which I mentioned earlier.

If anything really important can be done to protect pensions against inflation, I will be most interested to hear about that solution!

And now a brief word about item 2 of the program outline—pricing. It does indeed seem to me that expense rates, whether used for index-related or fixed-dollar products, should escalate to allow for future inflation in the cost of doing business. It will be up to each company to determine the inflation factors considered appropriate by it. As to existing blocks, I do not really foresee any serious problems, because, although expenses are higher, interest earnings are also higher than those originally assumed.

MR. ASHBY BLADEN:* When Mr. Jackson was organizing this panel, I tried to escape by saying that I could not agree with the basic premise, which is that something like the current rate of inflation might continue indefinitely. I believe that once inflation becomes endemic in an advanced economy with a well-developed credit structure, it can be financed only as long as the inflation tends to accelerate. By now a "soft landing" into price and financial stability has become virtually impossible in the United States and the United Kingdom, and probably in most other industrial countries; but that does not mean that the inflation will be perpetual. In the end, it is virtually certain to precipitate a financial crash and deflation; and the current increasingly desperate attempts to fend off a crash will only make it that much worse when it does come. Therefore, drastically revising the way we run the life insurance business at this late date, on the assumption that inflation is permanent, is likely to prove more disastrous than useful. Looking beyond our own professional concerns, it seems to me that the accelerating rate of inflation in most countries with democratic governments is symptomatic of a developing financial and social crisis that will have major political repercussions, in the United Kingdom at least and perhaps here too, so that this is a good time to be considering what the political and economic principles are that we really believe in. Unfortunately for me, Mr. Jackson thought that this line of reasoning was at least plausible and should be brought to your attention, and so here I am.

WHAT IS INFLATION?

It is possible to analyze inflation at almost any level of complexity and generalization, and most of the things people say about it are reasonably true at some level. I am going to try to make the broadest and simplest generalizations about it that I can; and in order to get to the heart of the problem quickly, I am going to talk only about the essential factors that are systematically involved in it and ignore some of the specific causes of our current inflation, such as wars, the Arab oil policy, and the politically motivated sale of wheat to the Russians.

Basically, we all know what inflation is. It is simply a matter of systematically creating more purchasing power than there are goods and services available to be bought at the current price level. There are several possible ways of doing this—the Spaniards did it once by conquering South America and shipping home all the gold and silver—but in a modern economy they all boil down to an overexpansion of credit. In an economy without credit the only way to produce inflation would

* Mr. Bladen, not a member of the Society, is senior vice-president—Investments, The Guardian Life Insurance Company.

be to find more of whatever the people use for money, because in such an economy total spendable incomes during any period of time would necessarily be equal to the total amount of goods and services that were produced and available to be bought during the same period; hence the general price level would not change unless the money supply also changed. In such an economy one group of people would be able to increase their money incomes at a rate faster than productivity is rising, only if the money incomes of other groups were declining. This is always true of real incomes, but during a period of inflation the fact that some people's real incomes are declining may not be obvious until the rate of decline becomes steep, because their money incomes may be stable or even rising. The real standard of living in the United States is declining somewhat, but nearly everybody still receives a raise every year.

Properly used, credit is a marvelously productive arrangement by which the lucky people who have more purchasing power than they need at the moment can lend it to other people who have a good use for it. Sustained economic progress is impossible without some technique for mobilizing the energies of large numbers of people to accomplish major projects, and, of all the techniques that humankind has devised for doing this, credit is by far the most efficient and humane. The only alternatives to it are forced labor and forced savings, or economic stagnation. But it is simply a fact that this ingenious technique, which is so productive when it is used in moderation, is systematically overused and abused in most advanced countries with democratic governments.

The expansion of purchasing power through a net expansion of credit is useful only to the extent that it causes unemployed people and resources to be put to work, thus also expanding the amount of goods and services available to be bought. Any excess of credit formation over that amount simply pushes prices up. An overexpansion of credit is not the only cause of price increases, but it is a necessary condition without which endemic inflation is impossible, because all the other forces affecting prices involve a transfer of purchasing power from some group of people to some other group rather than an over-all increase in purchasing power.

WHY DOES CREDIT OVEREXPAND?

The next question we have to ask is why credit grows persistently at an excessive and inflationary rate in practically all political democracies. After long and careful consideration, I am forced to the conclusion that the broadest and most general answer is that the modern welfare state involves a basic paradox—what the Marxists would call an “internal contradiction”—that tends to prevent it from fulfilling in real terms the

promises that the politicians have made to its people. Therefore, it needs a technique to create the illusion that it is accomplishing what it in fact cannot do, and that technique is the inflationary overexpansion of credit.

THE ACHILLES HEEL OF THE WELFARE STATE

The most fundamental cause of the overexpansion of credit is that once political democracy evolves into social democracy, as it generally seems to do, it tends in many ways to increase the demands for goods and services made upon the productive economy while simultaneously it tends to reduce the incentives for productive efforts. Most people are only now beginning to sense that the welfare state is inherently self-defeating and will tend to reduce the standard of living in countries that adopt it as soon as the obsolete attitudes and habits that were formed before its arrival have been replaced by the values and attitudes that it fosters. Conservative economists have been pointing out its basic contradictions for decades. This process is much further developed in the United Kingdom, which is rapidly approaching total disaster, than it is in the United States, but it is already producing observable consequences here.

The basic goals that social democracy tends toward are that everybody ought to have whatever he would like to have; but nobody should have to work particularly hard if he does not want to, or be especially rewarded if he does. This combination of goals is virtually bound to produce in the end an economy in which demands persistently outrun supplies. Our economy still works reasonably well because the habits and values of our productive middle-aged and older people were formed before social democracy really caught on in this country. In the United Kingdom, where social democracy caught on earlier, the economy and society no longer work very well; and by now they are in imminent danger of ceasing to work at all. The British example highlights the fact that, as the fall in the national standard of living accelerates, the struggle to maintain income shares gets increasingly desperate and violent. The United States is in some respects a less homogeneous and harmonious country than Britain used to be, and a decline in the standard of living is likely to produce even more social disorder here than it has there.

THE FINANCIAL CONSEQUENCES OF SOCIAL DEMOCRACY

While it is impossible in the long run for a society to consume substantially more than it produces, it is very easy to create the illusion that it does so by persistently raising prices and money incomes through credit inflation. In the United States between 1946 and 1970, real output

rose 130 per cent, its money value rose 370 per cent, and outstanding debts (not including the federal debt, which was stable during much of the period) rose 800 per cent. Nonfederal debts grew at an annually compounded rate of 9.5 per cent, two and a half times as fast as real output grew. The inevitable consequence was a moderate rate of inflation. After the semipanic of 1970 the rate of debt formation declined to 6 per cent in 1971, but in 1972 it soared to 13 per cent; it has been running at about that rate ever since, while real gross national product has stagnated. Under these circumstances it was inevitable that the rate of inflation would also soar.

I assume that the logical end result of these disparate rates of compounding must be crystal clear to a group of actuaries, particularly during a period when interest rates have increased enormously. In a few years' time all of money incomes will be going to meet debt service, and we will all have to eat one another's notes for breakfast. In practice, of course, the financial system will collapse long before we reach this theoretical limit. By 1970 at the latest, the debt structure had become so top-heavy that it required an accelerating rate of credit inflation to keep it from collapsing. When the federal government tried to halt the inflation by a stringent monetary policy, the resulting illiquidity rapidly brought the country to the brink of a financial crisis. Apparently the government did not realize how weak and overburdened the financial structure had become until the Penn Central Railroad failed, because when that happened Washington panicked and flooded the country with money—thereby repeating the mistakes of 1966–68 on an even grander scale. Just now we seem to be rounding that turn on the track once again, but with each lap the country becomes more heavily indebted and confidence in its financial stability is correspondingly weaker. Any time after 1970 a monetary policy sufficiently stringent to end the inflation would have precipitated a financial collapse; in the absence of such a policy, the debt burden is continuing to rise, and eventually confidence will disappear altogether. Then there will be a crash no matter what the federal government does.

This is an impossible dilemma. The President called his economic summit to find a way out of it, but the summitteers failed to find one because there simply are no good or easy solutions. Unless some new and presently unforeseen factor, such as a war, intervenes, I do not see how we can avoid a crash and deflation in the end, although probably it still can be postponed a while longer at the cost of more inflation, more accumulation of debts, and an even worse crash when it finally happens. I know that the political and social consequences will be severe, but

realizing that something will be unpleasant is not a sound basis for predicting that it will not happen. Once we cease looking for gimmicky solutions and face up to the fact that trouble and hard times will most probably come again, we can start to explore the real issues and to devise policies that will limit the damage.

CAN THE WELFARE STATE BE PATCHED UP?

While it probably is too late to avoid another crash, there is one vital question, to which the answer is not yet clear, that will be crucial to the longer-run prospects for this country. That is the question of what the national reaction will be to another bout with hard times. I am not sure that I am aware of all the possible alternatives, because it is only recently that a few liberal economists have been willing to admit that social democracy is seriously eroding the habits and values that make the productive economy work. However, it seems unlikely to me that it will turn out to be possible to retain the efficiency and progressiveness of the market system of economic organization without rather drastically modifying some of the goals of the welfare state. One of the most thoughtful and competent economists I know has wrestled with the problem of reconciling the two for several years. His recommendations to the President's summit conference included selective credit controls and a value-added tax to limit consumption, forced savings by taxpayers to be deposited with or released by the Treasury Department as a contra-cyclical device, and greatly accelerated depreciation for new investment in industries that the Treasury Department thinks ought to expand. This is a sincere attempt to make social democracy work by combining it with the efficiency of the market system of organizing productive efforts, but it seems to me to add up to something close to economic totalitarianism.

BRITAIN AND THE DEATH THROES OF SOCIAL DEMOCRACY—

IT DOESN'T HAVE TO HAPPEN HERE

If we continue to try to underwrite people's individual standards of living at a time when the national standard of living is falling, as they are trying to do in Britain, we are likely to end up with the same spreading social decay and chaos that they have. The only alternative, unpopular as it sounds today, is to recognize that accelerating inflation is the terminal disease of the welfare state and to reinstitute the market system in which economic rewards are distributed more or less in proportion to economic contributions. The combination of political democracy and the market system of organizing economic activity can never compete with social democracy, in either its Western liberal or Eastern Marxist forms, in the area of promises. Social democracy will always seem more

attractive to the young and inexperienced, but in the area of practical results political democracy and the market system have always come out ahead.

Obviously, we are not going to dismantle our present system of economic security; but it is vital that the gap between the standard of living that is underwritten by the government and that provided by productive work be widened to the point at which it constitutes a major incentive to do the least valuable work that society wants to get done. While the inflation lasts, this could be accomplished easily simply by freezing the benefit levels. Economic insanities like the minimum wage that merely drives marginally valuable projects and marginally productive people out of the market similarly could be permitted to wither into practical insignificance.

The key policy question is: How can we prevent credit from being overexpanded during good times? Good times promote confidence, rising confidence stimulates debt formation, and increasing debt formation makes the good times even better until the economy reaches full employment, or the burden of existing debts becomes excessive. The attempt to limit this self-reinforcing spiral through the control of banking reserves by the Federal Reserve system has not worked very well. Selective credit controls would be even worse because they would tend to transfer control of the investment decision-making process to politicians, who are notoriously bad at it.

In the end, this question is probably unanswerable as long as human beings remain less than perfectly rational. Credit sprees and collapses occurred centuries before the modern welfare state emerged, and it is altogether probable that eventually they will happen again. But for the foreseeable future the problem is likely to be greatly mitigated by the fact that some of the major incentives for overborrowing were produced by welfare state policies and are now rapidly disappearing. Under the Kennedy and Johnson administrations, slumps were not to be tolerated, so the risk involved in borrowing heavily appeared to be virtually eliminated, and the real cost of borrowing was substantially reduced by the inflation. Today the real cost of borrowing money is approximately zero, but the nominal cost is producing outflows of funds from financial institutions that will be ruinous if they continue much longer. Another crash and slump will go a long way toward restoring a healthy awareness that the future is uncertain and cannot be guaranteed. The last major cycle of credit-fueled boom and bust occurred approximately a generation ago, and once we get through the bust that seems to be developing now, it is unlikely that there will be another one during our lifetime.

MR. F. J. McDIARMID: I believe that the main reason I was asked to speak on this panel is that sixteen years ago, in 1958, I presented a paper to this Society entitled "Inflation and Life Insurance." The chief point made in this paper was that continuing inflation rather than stable money value was likely for the foreseeable future. This was mainly because the kind of world which had produced relatively stable money value during the nineteenth and early twentieth centuries had evolved into something quite different. This change tended to cast a shadow over the economic validity of those forms of life insurance where a relatively long time span elapsed on average between payment of premiums and collection of benefits. For example, in the case of a twenty-payment whole life policy issued at age 30, this time span is close to twenty-nine years. For an ordinary life policy issued at age 30, the time span is about seventeen years. In twenty-nine years a 10 per cent compounded rate of inflation reduces the value of money by 94 per cent, and a 5 per cent rate reduces it by 71 per cent.

Back in 1958 inflation was progressing at a rate of only about 1.5 per cent a year—that was the average compounded rate for the thirteen years ending in 1965. At that time (1958) I certainly did not envisage anything remotely approaching the recent rate of inflation. Had I done so in the paper, I am sure it would have been rejected as some kind of economic pipe dream, entirely unworthy of a place in the *Transactions*. As it was, it met with a very mixed reception. There was a considerable body of opinion to the effect that the subject should not have been brought up at all, since it tended to cast doubt on the sanctity of cash-value life insurance.

Over the entire inflationary period beginning in 1941, the real return on life insurance assets has been quite low. I deducted the annual rates of inflation as indicated by the CPI from the reported rates of return on life insurance assets for 1941–73. The average net rate of return for the thirty-three years was about 0.4 per cent. This was before income taxes. This return was most favorable during the thirteen years 1953–65, when inflation averaged only 1.5 per cent a year. Certainly over the entire period life insurance policyholders furnished capital to the economy at extremely low real cost, which may be not exactly what they had in mind. Over this period public utility customers, home builders, and businesses of all kinds were effectively subsidized by life insurance policyholders. This resulted from the type of investment media in which their reserves were very largely invested, namely, fixed-dollar, fixed-interest bonds and mortgages.

I strongly believe that the indexed bond is an idea whose time has

come. At this time in history, investors, including life insurance companies, have available to them no investment medium that promises even roughly to maintain its real value. This can hardly help discouraging savings and capital formation at a time when these are needed very badly by the economy. It certainly discourages the purchase of life insurance contracts with a large investment element. I believe that indexed bonds and mortgages would stimulate the savings process. They would enable life insurance companies to sell with a clear conscience indexed permanent life insurance policies having a large investment element in an inflationary period. I am not at all sure that we can sell such policies as are now available without serious misgivings.

It is sometimes believed that inflation may be compensated for in the interest rate. It just has not happened that way, nor is it possible. Over the thirty-three years ending with 1973, the average interest rate on new issues of utility bonds was about 4.65 per cent. This was an arithmetic average for issues of the thirty-three years. Over the same period inflation averaged 3.75 per cent a year compounded. That left less than 1 per cent to pay for risk, investment expenses, taxes, and real return on investment. Even present record interest rates hardly cover the recent rate of inflation alone. The long-term future rate of inflation is quite unpredictable, so how can it be built into long-term fixed interest rates?

Also, these interest rates are subject to tax—the higher the rates the more the tax. If you have 10 per cent inflation and a 10 per cent interest rate, there is no real return on the investment. On top of that, the tax charged on the interest is really in the nature of a capital levy and a very heavy one indeed. In a 40 per cent tax bracket it amounts to 4 per cent a year. One way to solve this would be to levy taxes on the amount of interest over and above the rate of inflation, that is, on the real interest. However, I do not expect to see this happen soon.

Recent high interest rates, phony as they are in real terms when inflationary shrinkage of principal value is taken into account, are political and social anathema. They bring great pressure to bear on the monetary authorities to increase the money supply to lower interest rates, even if this lowering is only very temporary. It is obvious that the interest rates that savers and investors would be willing to accept would be much lower if they were assured that their principal would be largely protected against inflationary erosion. And what is probably just as important, they would be encouraged to save more. What a wonderful product an inflation-proof life insurance policy would be for our agents to offer their clients!

Indexed bonds should be made as simple and as easy to understand as

possible. The simplest way would be to make the principal amount vary up or down according to some well-recognized index, such as the cost-of-living index. The rate of interest, but not, of course, the amount of interest, would remain fixed.

Such bonds would probably first have to be offered by the federal government, in which case we might again see 3 per cent government bonds. Others could then offer them at their option. Indexed home mortgages, and attendant much lower nominal interest rates, would have the great advantage of spreading the real cost of servicing the mortgage evenly over the life of the loan, and not heaping it up in the early years when young homeowners are least able to pay it.

I do not believe that index-linked bonds and mortgages are either inflationary or noninflationary. They should be no more inflationary than index-linked wage rates, whose use is expanding rapidly and which will probably soon become almost universal. I do not know what problems they would create—nor does anyone else. They seem to have worked fairly well over the last ten years in Brazil, where the process of capital formation is said to have been helped greatly thereby.

Several hundred years ago someone, the Venetians, I believe, invented the long-term bond—no doubt considered a very radical idea at the time. The same thing may be said of the first life insurance policies, evolved over two hundred years ago. Is the age of financial evolution, required to meet changing conditions, over?

I have few suggestions at this time for changes in investment policy within the available frame of investment possibilities. However, in current clouded circumstances, maximum flexibility for the future seems in order. That could mean shorter-term investments—buying bonds of five- to ten-year maturities instead of twenty-five- to forty-year bonds. If indexed bonds and mortgages were to become available, the nonindexed variety would become unattractive, and the sooner they matured the better. For a long time now, long-term bonds have treated their holders poorly, and the longer the maturity the worse the treatment.

With future inflation and interest rates quite unpredictable, and probably subject to wide swings, the job of setting interest rates for nonparticipating life insurance—other than term insurance—seems to be an impossible one. If the rate is set low enough to protect the company, it is likely to be an unattractive deal for the policyholder. Therefore, life insurance policies with a substantial investment element should be written largely on a participating basis.

Anyone who ventures an opinion on common stocks now is asking for trouble. However, these stocks have made a massive adjustment in the

earnings multiplier at which they sell. In many cases this adjustment has been much greater than the adjustment which has taken place in interest rates. Therefore, I do not believe that this is a good time to shy away from this area of investment.

In my 1958 paper I advocated the investment of a major part of the reserves of certain types of life insurance policies in common stocks, which by inference supported the concept of variable annuities. This proved a good idea for about seven years after that time, but not lately. I was so sold on the idea that I ate some of my own cooking and am now suffering from financial ptomaine poisoning. When I retired in 1970—incidentally, a very good year to retire from the investment field—I took part of my pension in the form of a variable annuity. These things seem to be for selling and not for eating. One thing I failed to take into account back in 1958 is that, while common stocks probably are a good investment for the long pull, in the case of a retired person the long pull is mostly behind him and only a relatively short pull probably remains. Some retired people who have taken variable annuity pensions in the last six years have had the dollar income therefrom more than cut in half. This is close to being an intolerable situation in the face of inflation such as we have had.

On the basis of my experience in running stock funds for over twenty years, and from watching the experience of other stock funds, including my variable annuity fund, I have become a strong advocate of the dart-board system of stock selection. Under this system you eliminate such overhead items as stock analysts and portfolio managers and turn the job over to a dart-thrower. The only precaution necessary is to have this fellow stand back far enough from the stock sheets so that he cannot read the names, thereby eliminating any possibility of adverse selection.

MR. JAMES B. H. PEGLER*: Before I come to my main remarks, I would like to make some comments on Mr. Bladen's references to chaos and violence in the United Kingdom, which he attributes to an excess of social welfare. I think he must have drawn the wrong conclusions from something he has seen, heard, or read.

We have, it is true, a good deal of violence in Northern Ireland which has been going on for a number of years, but I do not think that this is attributable to excessive social welfare. As regards Great Britain, we have had a number of student disturbances in the universities, a phenom-

* Mr. Pegler, not a member of the Society, is a member and past president of the Institute of Actuaries.

enon which I think is not unknown in the United States, and recently a political demonstration temporarily got out of hand and one student died as a result of injuries in the crowd. This really does not add up to a picture of chaos and violence.

If it is the failures of insurance companies that Mr. Bladen has in mind, I must make it clear that no company which a British actuary would regard as an orthodox life company has failed, nor do I believe any one is likely to. The failures have been confined to a few companies using a particular type of nonprofit investment bonds with excessive guaranteed surrender values and inadequate reserves.

We are far from complacent about the situation in the United Kingdom, and it may be, although I hope and believe not, that we shall have chaos and violence in the future. It does not give a true picture to say that we have it now, and, while our financial and economic state is nothing to be proud of, there are other matters of importance besides economic and financial stability.

I wanted to open my main remarks by saying that the whole basis of life assurance is fundamentally unsound, but the actuary of my Society would not let me—probably because he thinks this would give an unflattering, and indeed untrue, picture of life assurance in the United Kingdom and in my own Society. I suggest, however, that if one went to a leading member of any industry other than life assurance and asked him whether he would enter into a fixed-price contract to provide the goods or services of his industry over the next twenty, thirty, or fifty years, he would entertain doubts about your sanity. Nevertheless, by doing just that, the life assurance industry has provided immeasurable benefits for a vast number of people—certainly in the United Kingdom and I would guess probably in most countries elsewhere—with fewer failures than in most other industries.

The point I am trying to make is that I doubt whether it is possible to conduct life assurance business with absolute safety by following any policy or imposing any form of control. If absolute safety were possible, however, it would have to be at the cost of providing very much less attractive benefits in reasonably normal circumstances. I think we must accept the fact that we cannot provide against any conceivable level of inflation, whether worldwide or domestic, and that, even if it were possible, the price of doing so would be too high.

We have, however, managed to live with an abnormally high level of inflation in the United Kingdom—so far—and the reasons are mainly two. In the first place, the longer-established companies, whose business is not wholly or mainly of the equity-linked type, have reserves buttressed by

substantial participating business that contains a substantial bonus loading, that is, an additional premium paid for the right to participate in profits. In fact it has not in general been necessary to draw on this reserve—perhaps I should add “so far”—because of the second reason, which is that rising inflation has been accompanied by rising interest earnings, which are now of the order of 15 per cent.

The reserve provided by bonus loadings on participating policies is not, of course, available in connection with linked life assurance business in which the value of the sum assured varies with the value of a mutual fund or internal investment portfolio, and there are in the United Kingdom a considerable number of small, and a few large, recently formed companies whose business is largely or wholly of this kind. Provided that the income from the linked assets is payable to the company and not to the policyholder, the company will in general benefit from increased income in times of inflation, although it will not have the advantage enjoyed by the “classical” companies of being able to vary the constitution of the portfolio as between different types of assets—for instance, common stocks and real estate—as may seem best in the light of expected future trends.

Life assurance is long-term business, and its products are formed from raw material of two kinds: premiums and interest. The former are in almost all cases invariable (on the side of the insurer), and the only real hope of meeting increased expenses and (what is almost equally important for the reputation of the industry) increased expectations on the part of the policyholders is an increase in investment income. For the moment the problem will be considered in the light of investment outlets currently available, and later consideration will be given to the desirability of indexed-linked investments.

Prior to World War II it was not considered respectable in the United Kingdom for life offices to invest their assets in common stocks. A number of companies did in fact so invest a small proportion, but usually through an investment trust subsidiary, sometimes managed largely by outside advisers, rather than by direct holdings of a spread portfolio. Similar limitations applied to ownership of real estate, and it is believed that most offices owned little real property other than their own head office and branch offices. There has never been any *legal* restriction on the proportion of common stocks or real estate which a life office in the United Kingdom may hold against its actuarial or other reserves, and proportions of the order of 40 per cent in common stocks and 20 per cent in real estate would not have been unusual in recent years.

The change in attitude toward equity investment, which, when it

reached the popular level at its most extreme extent, became known in the United Kingdom as "the cult of the equity," had its earliest expression in papers to the Institute of Actuaries by H. E. Raynes. He pointed out something which is now a commonplace but was then not at all widely realized—that the ownership of an equity involved ownership of real assets, and in general these could be expected to appreciate in money terms as currency depreciated. Raynes produced statistics which indicated that in the fifteen years prior to 1927, and (later) in the twenty-five years prior to 1937, portfolios of common stocks had done better than bonds, and this was in a period in which the general economic trend was deflationary rather than inflationary.

Life offices were among the first to recognize the attractions of investment in common stocks in the postwar period, although, at any rate among the more enlightened, the idea behind it was not a specific "hedge against inflation" (as the popular saying goes) but the conviction that the expected yield on a well-spread portfolio was at least as high as that to be expected from bonds, since dividends should increase with increasing productivity—in short, that they were a better investment by the accepted criteria for life office investment policy.

The move in this direction became general and reached such a degree that it was widely thought that investment in common stocks would in fact provide a hedge against inflation and, further, that since a continuance of inflation was regarded as almost certain for many years to come, common stocks were the only satisfactory form of investment. On the other hand, the more farsighted realized that what I might perhaps call the "Raynes thesis" (the natural result of ownership of real assets) depended for its fulfillment on the continuance of a free (or nearly free) enterprise economic system. In almost no part of the civilized world have economic forces been allowed to work unrestricted by government control, and restrictions probably will increase rather than diminish in the future. It always has seemed unlikely, therefore, that if inflation became a major feature of economic life, governments would permit the owners of real assets to contract out of, or insure themselves against, inflationary losses to any significant extent. Recent developments in the United Kingdom have tended to confirm the correctness of this judgment, and the natural conclusion from it is that there is no natural inflation-proof investment available to life offices which would enable them to offer inflation-proof policies to their customers.

What type of investment comes nearest to providing an "inflation hedge" is not, I think, a matter about which it is possible to generalize, since it will depend on the financial, economic, and political climate of the

country concerned and on the degree of inflation. It is, moreover, in my opinion, the wrong question to ask, since the best inflation hedge is the best investment in inflationary conditions, and will be covered by the general consideration of investment policy appropriate to the nature of the liabilities and the expected financial situation.

The conclusion that there is no natural inflation-proof investment leads naturally to the question as to whether one should be created artificially. The general desirability (or otherwise) of indexed bonds is a subject which could, I think, easily occupy at least a half-day in discussion. I do not propose to go into the theoretical arguments which have been discussed at considerable length in economic literature and which are no doubt known to most if not all of you, at least in general terms. Consideration of the reports of actual experience, however, inclines me to the moderately confident prediction that the issue of indexed bonds on a scale large enough to be of value to life offices is unlikely in any major country of the Western world.

Since there has been no experience of indexed bonds in the United Kingdom, my knowledge of the subject is derived very largely from the Organization for Economic Co-operation and Development (OECD) report *Indexation of Fixed-Interest Securities*. It appears that the only countries in which indexed bonds have been issued on a substantial scale are Finland, Brazil, and Israel. I have information only about the experience in Finland, but it seems to me unlikely that the experience in Brazil and Israel would be much of a guide to the possible impact of indexation on a long-established life assurance industry. In Finland indexation was introduced shortly after the war and was discontinued in 1967 when there was a very substantial currency devaluation, since it was thought that the continuance of indexation would lead to an inflation which would undo all the effects of devaluation. The experiment has not been repeated.

More limited schemes in other countries which are members of OECD (Austria, France, Sweden, and Switzerland) have, it seems, in every case either dwindled to unimportance or been discounted altogether. My conclusion, therefore, from OECD countries' experience is that the trend has been rather away from indexation in recent years.

Is this experience likely to be changed if the considerable increase in inflation (such as we are suffering in the United Kingdom) continues? As regards provision of comparatively small indexed investment for individuals—up to a limit of perhaps \$2,000 or even \$5,000—I believe that a change is quite likely. It has been foreshadowed in the United Kingdom. Without it, it seems likely that savings collected directly by

governments from private individuals would fall off very considerably, but its introduction would have a very severely adverse effect on savings collected through such institutions as savings and loan associations.

I do not, however, see the likelihood of an extension of indexed investments to institutions. While the discouragement to saving through life offices which heavy inflation undoubtedly produces might be alleviated somewhat by the government's providing life offices with indexed government bonds, I suspect that this would be at the expense of direct investment and there would be little net advantage to counterbalance the undoubted disadvantages and dangers of indexed issues.

I fear, therefore, that we must face the likelihood that the volume of policies taken out mainly for saving will diminish, but I would not expect any very serious inroads on policies taken out for protection of dependents, unless, of course, we experience runaway inflation, in which case the results are unpredictable. Life assurance is the only way in which a substantial estate can be created immediately to provide for dependents at a comparatively small cost, and, provided that there was no alternative inflation-proof investment for any but small savers, I believe that a substantial proportion of the public in all advanced countries would continue to wish to provide for their dependents in this way.

LIFE INSURANCE DIVIDENDS IN THEORY AND PRACTICE

1. Is present-day dividend practice and philosophy still consistent with the principles spelled out in the classic text on the subject, *Distribution of Surplus* by Maclean and Marshall, and the current examination study notes?
2. Has thinking changed about what constitutes appropriate dividend classes?
3. Is it expected that future experience will replace actual current experience as the basis for dividend illustrations?
4. Is the temptation to use "new-money" interest rates as opposed to "portfolio" interest rates resistible in an inflationary era? What happens when new-money interest rates go down?
5. Is there a rationale for issuing participating insurance without intending or expecting dividends to reflect actual experience?

MR. IAN M. ROLLAND: In June, 1973, the Life Insurance Cost Comparison Task Force of the National Association of Insurance Commissioners specified twelve research projects which they hoped would assist in the search for an adequate system of life insurance cost comparison and disclosure. Three of these projects were assigned to the Society of Actuaries. All three were assigned by the Society's Board of Governors to the Committee on Cost Comparisons and Related Issues (Special). The report, which is the subject of this discussion, is entitled "Philosophies in the Computation and Dissemination of Dividend Illustrations" and is responsive to one of those research projects. The specific wording of the research project was as follows:

For a representative group of participating life insurance policies, each company would be asked to describe its philosophy in the computation and dissemination of dividend illustrations. The Society of Actuaries will be asked to undertake this project. A paper summarizing the results of the study and the conclusions indicated will be prepared.

A questionnaire distributed to companies and consulting firms employing two or more Fellows of the Society was used by the committee as the main basis for the report. Responses were received from 111 life insurance companies and two consulting firms. Of the companies responding, 45 were mutual, 43 were stock companies writing participating business, and 23 were stock companies not currently writing participating business. Forty-seven were classed as small, 49 as medium, and 15 as large. The questionnaire elicited information about company dividend

practices and philosophies and also asked questions to bring out opinions of individual actuaries.

A number of questions dealt with the disclosure of dividends on both new and existing business. Answers indicated that the typical prospective buyer of a participating policy normally will receive some illustration of dividends for the policy and most likely the illustration will cover twenty policy years. Some companies furnish the illustrations automatically, while most others give them on request. With respect to existing business, most companies do not provide or update illustrations of dividends automatically. Most respondents also indicated that no comparison of actual dividends paid with those illustrated at issue should be provided. Also in the area of disclosure, there was a significant difference of opinion as to whether or not the public is sufficiently aware of the nonguaranteed nature of dividends. Interestingly, more stock company actuaries indicated a belief that there was a lack of public awareness. Undoubtedly these opinions are influenced by the competitive situations involving participating insurance.

A second major block of questions in the questionnaire deals with dividend philosophies. From the responses, the committee has developed what might be called a "composite" and very broad dividend philosophy which reads as follows:

The primary concern of management in the decision as to how much surplus is available for distribution is the financial strength and solvency of the company, so that, even under adverse conditions, it will be able to meet its obligations to its policyholders.

In its analysis of the total amount of surplus to be distributed, management considers operating gains for the year, and the amounts to be set aside for contingency reserves, reserve strengthening, and general increase in surplus. In the case of a stock company, further consideration must be given to the amount to be distributed to stockholders for their part in financing the operation. The pressure of competition, it should be noted, does have considerable effect on this entire analysis.

Once the amount of surplus to be distributed has been determined, it is necessary to allocate that total equitably among different classes of policyholders. Most actuaries agree that surplus should be distributed on the basis of the source from which it arose, provided, of course, that the general insurance concept of pooling of risks is observed. The *Study Notes* of the Society of Actuaries state: "No system which does not, in some degree, take account of the sources of profits can properly claim to be equitable. But it is clear that 'equity' must be understood in a very broad sense." *Actuarial Studies* #6¹

¹ Joseph B. Maclean and Edward W. Marshall, *Distribution of Surplus* (Actuarial Studies No. 6) (New York: Actuarial Society of America, 1937), p. 14.

stated: ". . . the whole plan of operation assumes and depends on large groups, not individuals, so that for the most part contributions to surplus must necessarily be determined on the basis of the experience of the company as a whole. Refinements may be made as in the assessment of expenses between policies for different plans of insurance, ages at issue or durations, or in a classification for mortality experience in a few broad groups but the idea of *individual* contributions reduces very largely to the pro rata contributions based on the aggregates of large groups, if not the entire company."

Insurance is a pooled arrangement and, therefore, equity for an individual policyholder cannot be completely achieved. Equity is achieved in a general sense, by taking into account differences in experience among broad classes of policyholders, such as old and new issues, different issue ages and plans, and those who terminate or persist.

One of the most difficult areas in which to achieve equity is between old and new issues. There is no question that dividend scales for old and new issues must reflect such differences as those in premium rates, reserves, cash values and average size policies. Some companies take other differences into account, such as different loan interest rates, or settlement options. All these are justifiable differences in policy benefits or readily determinable sales characteristics. However, the justification of different emerging experience on these blocks of business is more difficult. Most companies do not have enough experience to make highly detailed mortality and persistency studies of the experience of each class of policyholders. Similar difficulties exist with respect to expense analysis by class.

Perhaps the most important factor in current dividend scales is the interest rate. Today's relatively high rate of return on investments has substantial impact on the dividends payable. A very significant question is whether or not a different interest rate should be used on old and new issues, and this depends on how broadly the investment element of insurance is considered by the company to be a "pooled" risk.

The use of different interest rates for old and new issues is a controversial subject. Some actuaries would contend that such a procedure is discriminatory against old policyholders, for the purpose of achieving a better cost for new issues, and that while companies might justify this approach in the current period of rising interest rates, companies might desire to change their philosophy if interest rates begin to drop. Other actuaries argue that while other assumptions vary little by issue year, investment returns vary substantially, and hence should be attributable to the class from which they arose.

In general the questionnaire indicated that actuaries believe that methods of surplus distribution used in their companies are based on firm philosophical grounds. Only a few disagreed with their companies' philosophies.

Another major area of inquiry involved the assumptions being used in

the calculation of dividends. Of the eighty-eight companies writing participating business, forty-one base dividends for new business on current experience unaltered for possible or future changes. Forty-three use different assumptions. Among the forty-three, some used expected future experience and others used expected future experience less a safety margin. Most of the reporting companies use the same practice in determining assumptions for existing business as for new business. However, about one-half of the companies use different assumptions on new and existing business. Most respondents felt that the differences were based on very definite differences in experience on various blocks of business. The most frequently varied assumptions were interest and expense.

One question brought forth numerous interesting responses. The question read:

When illustrating dividends, does the actuary have a responsibility to illustrate only those dividends which he feels probably can be paid? (For example, consider the hypothetical situation where it can be demonstrated that the company's interest rate will decline for the next several years and the unit expenses will inflate, with "all else being equal.")

Twenty-five per cent of the actuaries responding cited regulatory requirements that dividend illustrations represent only current experience as reason for believing that the actuary has no responsibility for the ultimate payment of the illustrated scale. On the other hand, 65 per cent of respondents expressed interest in the use of dividend projections, indicating concern over the possibility that a current scale might not be met or exceeded. Several indicated that actuaries even have a professional responsibility to illustrate only dividends that can most likely be paid in the future.

Since the research project was motivated by the search for a suitable cost comparison system, several questions dealt with whether and how dividends should be treated in cost comparison index calculations. One question asked for opinions of actuaries on how dividend illustrations could be manipulated to produce favorable cost comparison results. Nearly all respondents felt that dividends should be included in cost comparisons, with a majority believing that they should not be separately identified. However, a fairly large minority felt that they should be shown separately, but there was little agreement on how this should be accomplished. Almost all the respondents recognized the potential for manipulating dividend illustrations to produce a favorable cost comparison index, but there was a general feeling that currently this was not being done. Interestingly, several cited professional actuarial ethics and responsibility as being deterrents to such action.

Finally, several questions asked for views about the future. A substantial majority of respondents believe that there will be increased pressure on the actuary to produce more liberal dividend illustrations for new business if the consumer is taught to compare costs on some widely accepted basis. There were widely varying opinions as to whether that trend would be good or bad. Not surprisingly, a large majority of the respondents opposed the establishment of a method prescribed by regulatory authorities or by an actuarial body for calculating and illustrating dividends. However, about half the respondents felt that there might be a need for regulation of the use of dividend illustrations. Those favoring regulation cited the need for uniformity and consistency in illustrating dividends, in addition to a method which would eliminate the possibility of manipulation.

This has been a necessarily brief summary of a wealth of material on dividend practices and philosophies. The report is worthwhile reading for every actuary and hopefully will stimulate much discussion.

MR. DAVID R. JOHNSTON: This discussion is intended to focus on some aspects of dividend theory and practice in Canada and, to a lesser extent, in the United Kingdom and in the Caribbean islands, which are different from practices in the United States.

Certainly there is much similarity between the situations in Canada and in the United States. There are about one hundred and thirty life insurance companies in Canada, the largest part of the business being sold by the ten or fifteen largest companies. Of the top ten companies, seven are mutual companies and three are stock companies which sell both participating and nonparticipating business. The principal dividend distribution method is the contribution method, with both the three-factor and the experience premium method being used extensively.

Dividend options available and the policyholder tax treatment are also quite similar in the United States and Canada. Annual cash dividends are the norm, and the popular options are cash, accumulation, dividend addition, or one-year term insurance additions. An option popular in Canada is that whereby the dividends as declared are put in a segregated fund, the value of which fluctuates up and down with the value of the investments comprising the fund. In both countries interest on dividend accumulations is taxable each year, while the dividend addition option escapes tax until maturity or surrender of the policy.

As you are probably aware, the form of dividend distribution in the United Kingdom is somewhat different, with so-called reversionary bonuses being declared. These are similar to our dividend additions, but

in the United Kingdom there is normally no cash dividend—only the amount of the addition is declared. This is normally at a uniform rate every year for all plans, and the rate may be on a compound or simple basis. New dividends usually are declared either every year or every five years. Under the reversionary bonus system it sometimes is necessary to withhold surplus which might have been distributed under the contribution system in the early years so as to provide, in unchanging conditions, a uniform addition each year. English companies also normally distribute most of nonparticipating surplus to participating policyholders. In the Caribbean, life insurance has a heavy Canadian flavor, which is reflected in the dividend system, but there are some aspects of the United Kingdom approach.

I might comment further on several topics relating to specific theory and practice, starting with dividend classes. Recently, in conversations with actuaries of several Canadian companies, I found their theory was that almost any recognizable classification was valid for the purpose of dividend calculation. However, in practice not many unusual classifications are being used. Recent and current experience modified by predictable changes in the near future are the bases used to establish the assumptions within classes.

One classification that is of significance to us in Canada and may become more so to you in the United States is that created by different policy loan provisions. In contrast to the situation here, there have never been statutory maximum interest rates in Canada. However, up to 1968 there was an agreement with the Department of Insurance not to charge more than 6 per cent. Since then we have been allowed to charge more or less what we like under the friendly guidance of the department. Currently, common rates would be in the range of 8–9½ per cent on policies issued since 1968. Thus we have significantly different yields on different policies, and many Canadian companies are either thinking of, or have made, classifications by possible loan rate or by blocks of policies with heavy loans. At least one actuary has gone even further and, for certain blocks of business, varies the dividend policy by policy, depending on the amount of loan. Other actuaries feel that this is improper and that the loss of interest should be spread over a whole class. Certainly there are practical problems with doing this, one being that the loan could be repaid just before the dividend is calculated.

In the United Kingdom and in some of the Caribbean islands there also is no restriction on interest rates, but loans in the United Kingdom are less of a factor, since cash values normally are not guaranteed.

Another possible classification has to do with taxes. Often a dividend

scale is intended to cover several jurisdictions in which tax bases may differ. The premium tax in Puerto Rico is an example of this—should Puerto Rican policies have different dividends, or should the states of the United States support them? There is no parallel to this in Canada, but many Canadian companies have faced the question in the Caribbean and most have opted to vary the dividend scale by island when taxes went up.

A final classification often used in Canada differentiates between qualified and nonqualified pension business. Since the insurance companies tax is lighter on the former, greater dividends normally are paid. This may be applied to all plans of insurance.

Dividend illustrations in Canada and the thinking behind them parallel closely those in the United States. Unlike some of the states, Canada has no statutory or regulatory restrictions on these illustrations except in the case of segregated fund policies or segregated fund dividend options. Illustrations for these dividends have to be filed with provincial insurance departments, and the rate of accumulation of dividends which are in such a fund can be either at an arbitrary rate not greater than $7\frac{1}{2}$ per cent or at a range of arbitrary rates equally above and below $7\frac{1}{2}$ per cent.

With regard to dividend illustrations generally, a very common practice in Canada is to illustrate dividends exactly on the basis used in the current scale, and a statement on the illustration is made to this effect. I found no indication of any significant projecting of factors in the scale.

A different type of thinking prevails in the United Kingdom and parts of the Caribbean. In the United Kingdom the attitude seems to be that the original illustration should be lived up to if at all possible. Certainly a decrease in the bonus rate is more evident to the policyholder than under the contribution system. There have been cases, in fact, where the courts declared an illustration to be binding. Actuaries in the United Kingdom do find some flexibility through the fairly general use of terminal dividends. In effect there is more conservatism in the actual dividend scale.

The extent of this thinking is indicated by an example found by our company in Jamaica, where British actuarial thinking is in vogue. In Jamaica income tax is about 40 per cent of investment income less expenses of operation. Thus for an immature company there is no tax, while for a mature one both investment income and expenses are netted to 60 per cent. We pay no tax there and will not do so for a long time because of our growth pattern and expense levels. However, should we withdraw from the island, our expenses would drop drastically and taxes on existing policies would increase significantly, leading to a cut in dividends.

In line with the prevailing British thinking, we are faced currently with

a request from the commissioner to certify that, were the existing business considered a closed fund, the funds held, together with future premiums, would be adequate to support the contractual liabilities and a continuance of dividends at the illustrated level. In effect, we are being asked to allocate a tax against the existing business even though in fact we pay no tax, with the result that we feel compliance with the request will force us to lower the current dividend scale. I might add—only partly facetiously—that we are considering lowering our illustrations but, in fact, paying more than illustrated.

The basic question to be considered is whether we should recognize a possible tax, deferred far into the future, and hold back surplus to pay it. We do not feel so, but British actuaries apparently do. On the other hand, were the tax to be payable a few years from now, and in roughly determinable amounts, I think we should recognize it in the dividend scale.

The use of new-money rates is a controversial point in Canada as well as in the United States. About half the actuaries I contacted felt that the problem of what to do when interest yields fall would deter them from using new-money theory. The other half indicated that they either made some use of this approach, felt they might be forced to use it, or felt that it would be justified if they could handle the necessary classifications of blocks of business. The justification is that there is a demonstrably significant difference in earnings between blocks of business. In fact, in Canada not much use is actually being made of this theory in regular dividend scales. Those companies using new-money theory have relatively small differentials in interest rates.

Probably the one area where there is a significant use of new-money rates for participating business in Canada is for single premium or periodic premium annuities (the latter often being on a flexible premium basis). Some companies, mainly the smaller ones, have been guaranteeing accumulation rates on current premiums of as high as 10 per cent for five- or ten-year periods. Here the competition of trust companies for individual as well as group pension money has been a considerable factor in this use of new-money rates.

MR. ROBERT C. WINTERS: I would like to spend a few minutes on fundamentals—the conceptual and legal basis for participating insurance. After all, dividends are a *result* of the participating method of operation, not its objective.

Let me start with the basic idea of participation, at least as applied in a mutual company. What is the deal that we make with our policyholders? It has long been recognized that the basic concept of mutual life insurance

is an undertaking to provide insurance to the policyholder at cost. The notion of insurance at cost requires a little elaboration, but it is still the fundamental concept. Joseph Maclean put the idea in these terms over forty years ago: "The first fundamental of mutual life insurance is the idea of the mutual cooperation of a sufficient number of persons to insure their own lives at cost."

Now what does insurance at cost mean? Clearly, it does not mean simply that each individual policyholder is assessed the cost of providing the benefits which actually arise out of his policy—this would obviously violate the whole notion of a collective venture which is the essential of all insurance whether participating or nonparticipating. Rather, what must be meant is insurance at some kind of averaged cost: each policyholder is assessed the actual cost of benefits and expenses that apply across some broad aggregate of which he is a member.

Second, there has to be some kind of additional averaging that crosses the boundaries between separate aggregates or blocks of business. Some blocks of business will encounter particularly adverse circumstances. These adversities may occur in mortality levels, through war or catastrophe or other cause; in interest rates; perhaps in expense rates; and possibly even in withdrawal rates. Somebody has to cover the losses in those blocks of business which are not self-supporting, and in a mutual company the only possible source of this financing is other blocks of business. Thus, a part of the averaged cost which is charged to each policyholder is a surcharge on the blocks of business which currently are providing for their own expenses, to cover the inevitable circumstances of blocks of business which cannot. Clearly, this surcharge should be kept small. In theoretical terms, it is unreasonable to offer insurance at cost to a block of policyholders and then levy against them significant additional charges for other blocks of policyholders. In practical terms such a procedure is insupportable competitively.

Thus the requirement that a mutual company provide insurance to its various blocks of policyholders at averaged costs carries with it another requirement: each block of business must have a high probability of being financially self-sustaining. Since only small charges can be collected to cover losing blocks, there must be few of them.

If a block of business is to have a high probability of being self-supporting, it must start out its life with gross premiums which have a high probability of being sufficient to cover the excess of expenses and claims which will be incurred over investment income that will be received. When a mutual company actuary sets a scale of gross premiums, he is not particularly interested in the likely course of future mortality, expenses,

and interest rates. Instead, he is concerned with the most adverse plausible future. He asks himself how low interest rates are likely to fall, how bad expense inflation might become, how seriously mortality might deteriorate. His is a kind of calculus of adversity.

The actuary cannot cover all possible future contingencies in a scale of premiums which is either reasonable or competitive, but he does not need to. Even if future interest rate cycles bring yields back to historic lows, the block of business will not spend its entire life at the bottom of a cycle. Moreover, it is unlikely that everything will go wrong simultaneously. High rates of expenses inflation probably will be accompanied by high investment yields, offsetting some or all of the increased expenses. Nevertheless, the basic concern is how bad the future might be. If events turn out average or better, the unneeded gross premiums can be returned as dividends. If events turn out very badly, the gross premiums must be strong enough to carry most blocks of business without support from other blocks.

At issue, the entire burden of making a block of business self-supporting rests on the gross premiums. After issue, this burden shifts gradually to the accumulated funds. The capacity of the block to weather future adversity depends on the sum of accumulated funds and the present value of future premiums. Clearly this sum is dominated by the future premiums in early years, but this relationship changes as the funds build up.

Gross premiums and fund accumulations are opposite sides of the same coin. Together they represent the provision for the future, hence they should be considered together. When the actuary is considering a scale of gross premiums, he is also considering the funds which the block of business should have at future points in time.

Once the gross premiums for a block of issues have been guaranteed, the only variable subject to significant control is the fund accumulations. Just as with gross premiums, when the mutual company actuary considers the appropriate level of policy funds, he is concerned with how bad events may prove to be. Likely outcomes are not the determinant; the question is how much money must be on hand in the future to ensure a high probability that the business can be matured without subsidy under adverse conditions.

We made a calculation on the basis of our rates of interest and persistency, which are fairly typical. This calculation indicates that accumulated funds become the dominant source of safety quite early in the course of a block of business. The calculation compared the present value of future gross premiums with the accumulated funds at several

interest rates. The purpose was to find when funds first equal the present value of future premiums and also when funds become twice as large as the present value of future premiums. For before-tax interest rates between 3 and 6½ per cent, assuming a Phase I tax position, these points were relatively independent of the discount rate. For whole life policies the equivalence point was reached shortly before duration 15. Funds became two-thirds of the total resources between durations 20 and 25. Obvious extremes occur with term insurance, where funds never assume much significance, and with paid-up insurance, including paid-up dividend additions and nonforfeiture insurance, where there are no future premiums at all. It seems clear, however, that for most of the life of a block of participating business on a permanent plan, accumulated funds are more significant than future gross premiums.

The mechanism by which accumulated funds are controlled is, of course, dividends. In this formulation, dividends are the amount which the company can afford to pay out and still have funds remaining which, together with future gross premiums and investment income, stand a high probability of maturing the block of business. I do not mean by this to suggest that all mutual companies do or should use fund methods in dividend determination. In fact, I believe that very few do, and certainly the Prudential does not. I do believe, however, that at least implicit and frequently explicit in the basic development of dividend policy and dividend determination is a recognition that at their foundation dividends are the amount which you can afford to pay out this year and still have sufficient funds remaining so that you have a very good chance of carrying out the original deal—the undertaking to provide insurance at substantially averaged cost to the block of policyholders in question, without their requiring subsidy from other blocks or incurring significant drain to cover the losses of others.

Let me now turn to the question of giving meaning for the prospective purchaser of mutual life insurance to the dividend provision in the policy. To begin with, it seems to me that the only way to give meaning is to provide some sort of numerical display. I do not believe that a description in words is very helpful, even if we felt that we could say anything more than is already contained in the dividend provisions of our policies.

A numerical display seems to me inevitably to imply some kind of presentation of hypothetical dividend numbers for some years in the future. Given the nature of mutual life insurance, with actual dividends shaped by emerging experience, these numbers necessarily must be hypothetical. The range of choices then comes down to the hypotheses which appropriately might be used in developing the dividend numbers.

The traditional hypothesis is, of course, the continuation unchanged of the dividend formula now in effect for the payment of actual dividends on the company's business. Ian Rolland has already referred to some of the problems which this hypothesis can generate in a period when interest rates may be approaching a peak and expense rates are inflating strongly.

One way to get at these problems is to take what might be viewed as a more realistic hypothesis: Project a likely course of the significant earnings trends for a specific period of display—say twenty years—and then calculate the dividends which you would pay if those projected earnings factors actually emerged. While this hypothesis has a kind of theoretical appeal in laboratory situations, almost everyone is concerned about the problem of competitive optimism should such a system actually be put to use in the sale of life insurance. R. B. Robbins commented on exactly this problem in the early 1930's, when he wrote, "Selling promises in competition seems automatically to engender optimism."

A solution to this problem of competitive optimism is, of course, to mandate a standard set of assumptions about future events which everyone must then use. This hypothesis still leaves an operational problem: How do you know that the dividends a company says it would pay under those circumstances are the dividends that it actually would pay? Much more importantly, I think the hypothesis has a serious theoretical flaw. Different companies will not in fact experience the same interest, mortality, expenses, and persistency. They do not experience them now, and there is every reason to conclude that this diversity in operating results will continue. Prospective purchasers are entitled to evaluate the benefits of participation in a company on the basis of circumstances reasonably suited to that company, rather than some meaningless average.

I for one am thus driven to the conclusion that, to paraphrase Churchill, the use of dividend illustrations based on the current scale is the worst method there is, except for all the others that have been proposed. I think that it solves most of the practical problems through its simple insistence that, in presenting hypothetical future dividends, the companies put their mouths where their money is. Moreover, I think it meets most of the theoretical needs for comparisons among mutual companies or, more broadly, among participating policies. Granted that the future is not going to replicate current experience, most companies move into that future with an established position on the key earnings factors. If a company is in a relatively low-cost position today, I think it makes fairly good sense for the consumer to bet his money that it will be in a relatively low-cost position tomorrow, as compared with other companies.

Dividend illustrations based on the current scale do, however, fail to provide one important piece of comparative buying information for the consumer: a basis for comparing participating insurance with nonparticipating insurance. While I am somewhat comforted by the proposition that this is really a somewhat philosophic choice, having to do with the risk-taking proclivities of the buyer and his willingness to exchange uncertain profits for certain costs, I do not find that answer anywhere near completely satisfying. This problem remains one of the largely unanswered issues, although there is some help available from the examination of dividend histories.

In short, I do not like the drawbacks of the illustrated dividend system, but I dislike the alternatives even more. Thus I regard this as an area where the distilled wisdom of the past, as embodied in the law, represents the best guide currently available for the future.

CHAIRMAN DALE R. GUSTAFSON: I have a small comment on part of Ian's remarks, on an aspect of the Society's questionnaire and an aspect of the report with which I am not completely satisfied. I am concerned that the discussion on projection in the committee report did not delineate clearly enough two different aspects of projection. To be specific, I consider it inappropriate to base dividend illustrations on projections into the future. I would not consider it inappropriate, however, to prepare dividend illustrations projected over a relatively short period of time—say to the middle of the period over which it is expected that this dividend scale might be maintained. Instead of being based on the exact experience functions observed last year, dividends might be based on those experience functions, the interest rate and expenses, projected for a couple of years. I am concerned that some of the respondents think of "projection" only in the second sense but may have had their answers tabulated with the first kind.

MR. ROLLAND: I would agree to some extent that the answers to some of the questions on use of assumptions for new and existing dividends perhaps were not too clear or showed some misunderstanding of the question. It is true that it is easier to determine what the questions should have been after you get the responses than it is before. I guess the fact is that the committee did not think about that in putting together the questionnaire.

A key part of this questionnaire pertains to the extent to which the dividend illustration should be a projection of future results. I was surprised that so many actuaries felt that the dividend illustration should be a form of projection. The committee observed that this might be a

result of some of the consumerists' pressures to give the buyer aid in determining which life insurance policy is the best buy. I think it is also true that many buyers probably look on the dividend illustration as a form of projection, even though there are extensive caveats on the illustration. The committee dealt with how a dividend should be included in a cost comparison index to give the buyer some assistance in comparing a participating policy with a nonparticipating policy or in comparing two participating policies. We did not come up with any really good answers. We came up with several ideas but were not satisfied with any of them.

I would like to hear the views of the other panelists on how dividend illustrations should be used in cost comparisons.

MR. JOHNSTON: I think that I agree with that position, Ian. I am a bit taken aback though by one suggestion, that if we really had perfect communication between all parties concerned, it might be nice to have two sets of illustrations—one based on the current dividend scale and one based on what we thought perhaps might happen—and they would both be really clearly labeled as such. One question pertains to something that Gus was getting at in Ian's report. I believe you said, Ian, that about one-half of the companies use different dividend calculation assumptions on new and existing business. Does that one-half use better or worse assumptions, or are they distributed over the entire range?

MR. ROLLAND: The assumptions that were varied most frequently between existing and new business were those of expenses and interest earnings. Over half the companies that varied assumptions reported the use of different interest rates. The reason given most frequently for changing the assumption was the use of the investment-year method of determining the interest rate. This would lead one to believe that these companies are using more favorable interest assumptions on dividends for new business than they are for dividends on existing business. Other considerations mentioned for varying the interest rates were different policy loan interest rates, different valuation interest rates between blocks of business, and different federal income tax effects. In each of these areas it is difficult to tell whether the assumptions on new business are more or less favorable than those on existing business. In most cases, however, it is interesting to note that companies felt the differing assumptions were based on very definite differences in experience between various blocks of business.

A large number of companies who varied their assumptions among

different blocks of business made a change in their expense assumptions. The major reason given was a difference in the average size of policy between the blocks. Other reasons were different initial expenses or commission schedules. Some companies indicated that different amortization periods for initial expenses were used for new and existing business, necessitating the use of differing assumptions. As was the case in the area of interest earnings, it is difficult to tell whether the variations in the expense assumptions resulted in the use of more or less favorable assumptions on new business.

MR. JOHNSTON: That is in the calculation of dividends. In the illustration of dividends, is it also correct that some companies are using assumptions different from those in current scale calculations but, thinking here of the interest rate, that perhaps some companies are actually using lower assumptions in illustrations than the current interest rates, or higher ones, or both?

MR. LEE H. KEMPER: I think it can be stated definitely there is a difference in the basis used by companies in selecting dividend interest rates for new and old business. Some companies use a higher interest rate on new business than on old business and justify the difference by using the investment-year approach. On the basis of the information received by the Committee on Cost Comparisons and Related Issues, it appears that some companies use an investment-year approach which is well defined and structured. Other companies use a modified investment-year approach which more or less assumes that investment returns on funds generated by a new business will be greater than such returns on old business. The question whether or not a higher interest rate should be used on new issues and a lower rate on old issues is one of great controversy. Many argue that it is more equitable to use a higher rate on new issues than on old issues. Others will argue that an average interest rate should be used for all policies and, therefore, that the same interest rate should be applied to old and new issues. As many of you know, the investment-year approach is an acceptable method if it is properly applied. It is my understanding that the investment-year method is provided for in the New York Insurance Law, but, since my company does not operate in New York, I am not familiar with the details of that particular law.

MR. WINTERS: The New York Insurance Department does not tell you how to handle your investment-year method. You inform the

department in great detail how you propose to handle the method, and they tell you whether it is acceptable. If it is not, they so inform you, with reasons.

MR. BERT A. WINTER: I think most of you realize that the primary thrust of the New York investment method is for the allocation of investment income of the company among the branches of business and that most of the New York companies allocate investment income to branches by New York-approved investment methods. Nevertheless, in the ordinary branch we use the portfolio average rate for dividends.

CHAIRMAN GUSTAFSON: At my company we keep fairly close tabs, through published and public sources only, on what other companies are doing. We have observed in recent years that differences in interest rates by generation of business have been introduced in the ordinary dividend scales of some companies. We can see that small differences in interest rates can be used as rough approximations of actual differences in other factors such as expenses. However, we do not think that large differences—larger than 0.1–0.2 per cent—can be justified for these purposes. Perhaps somewhat larger differences can be justified with federal income taxes and different policy loan interest rates, but large differences must be assumed to reflect some sort of investment year or new-money allocation. We see nothing wrong actuarially, philosophically, or perhaps even legally with the application of a new-money theory to ordinary dividend distribution. However, we believe that if a company is going to do this, it should be in conformity with a well-thought-out, well-articulated plan, perhaps only articulated to the insurance departments. The change to a new-money basis for ordinary dividends should be permanent and irrevocable. But what happens when new-money rates fall below portfolio rates—should the company switch back to a portfolio basis for current new sales?

MR. HENRY B. RAMSEY: You said that you thought the change ought to be irrevocable. Do you not feel that has been the case? In other words, a sale today to a policyholder or a sale twenty years ago has the same implication—that the policyholder shares in whatever the experience is of the total company in the future. It seems to me that you are not changing the rules if you adopt this change in philosophy. You said it seemed clear to you that the change ought to be irrevocable into the future. What about the person you made a sale to yesterday?

CHAIRMAN GUSTAFSON: If what Hank is saying is true, and I guess it follows logically from what I have said, a company that has been in existence for a long time on a portfolio basis is locked into it. The implication is that you sold the policies to the old policyholder promising a portfolio rate, and now you cannot take away the high yields currently available and give them to the new policyholders.

MR. ROLLAND: It seems to me that there is a good deal of logic in that, for the same reasons that the investment-year methods seem to make sense for group annuities. Our climate may be such that there is a fair amount of logic driving you in this direction. I am not sure that is true. But suppose that there is a fairly new company whose portfolio rate is substantially higher than that of most companies, and the new company is able to have a real impact in the market. Using the same philosophy that we all use, this company will have a much more competitive dividend scale, which is not good. If, from an equity standpoint, the shift could be made somehow, it seems to me that it might be more equitable to do what you are discussing.

MR. WINTER: I think that is a good point, but I think there are two features of it that we should keep in sight. First of all, speaking at least for ourselves, I think I would rather compete with a new company. They can have the benefit of the higher interest rate, and they can have their expense levels. I do not feel uncomfortable about that situation. I think there is a somewhat greater threat on the other side. If some companies commit to year of investment and some stay with portfolio rates, and some of the latter are fairly cost effective on the expense side, they will be in a very strong competitive position when new-money rates fall below portfolio rates. I think that this may be a tougher problem to deal with than the current situation of the smaller, relatively recent company which probably is having to lay off some of that interest gain against additional expenses. But I would like to draw attention to a parallel in another area in the United States economy, that of the savings banks. Of course, the regulation of saving banks' interest rates has to protect two kinds of competitors. When interest rates are going up, you have to have limits on the amount that anyone can pay, or else all the old savings banks will be wiped out. Their mortgages just will not support their dividends. When interest rates are coming down, there is no way to permit new entry into the field if you let the established banks rely on their old portfolio rates. This has given us this very narrow rate regulation, which in a sense is rather unrealistic. It is realistic in terms of the

survival of competitors and new entrants into the market, but aside from that it is a very rigid regulation of savings banks. I would not like to see us get into a situation where that kind of regulation is needed to protect either new entrants or established companies in the life insurance business.

MR. ROLLAND: I tend to agree with you that once a company adopts an investment-year method for determining interest rates, they probably should be irrevocably committed to it in the future. However, I do not believe that a company which has used an average rate in the past is committed to an average rate for all time in the future. I think you can make a case for switching from an average rate to a new-money rate and then be committed to continue on that new-money rate indefinitely.

MR. VICTOR E. HENNINGSEN: I was shocked to learn in the report of the number of actuaries who were thinking about the desirability of using projected factors in their dividend scales. There is one point that has not been brought out which I think is another reason against the use of projected interest rates. Suppose that you have a 5 per cent interest factor in the current scale for dividends actually being paid. Assume that from current investments it is reasonable to expect that the interest factor can be increased to $5\frac{1}{2}$ per cent in five years. Drawing on this, you conclude that the illustrative scale for new sales should be based on 5 per cent for the first five years and $5\frac{1}{2}$ per cent thereafter. Now suppose that the anticipated interest increases are realized and the $5\frac{1}{2}$ per cent interest factor is in fact adopted on schedule for all in-force business. The amount to be disbursed as dividends will show a sizable increase. Existing policyowners of longer than five years' duration will be pleased. Those of exactly five years' duration will find that the dividends received will be exactly in accord with their sales illustrations. They are not likely to be satisfied with a statement to the effect that the increase in dividend payout goes only to older policyowners.

With respect to illustrative figures for new sales, the increases will be minimal because the $5\frac{1}{2}$ per cent factor in the first five years will not have any particular effect on the total dividends over a ten- or twenty-year period. In all likelihood the reaction of the agents to the whole change will be negative because the competitive position for new sales has not been improved. Unless the previous practice of using a projected interest factor is repeated—this time to, say, $5\frac{3}{4}$ or 6 per cent, there is no sales appeal in the dividend increase. So it seems to me that the use of projected factors becomes a continual catch-up game, and that ought to be enough to kill the use of projected factors.

MR. GEORGE W. SHELLY: Question 3 of the program outline would imply a dividend practice under which dividend illustrations for new sales would not be completely consistent with the dividends currently paid on existing policies. This principle is disturbing, since the illustrative dividends would be based on experience the actuary thinks will develop rather than on what is actually happening. In a sense such dividends become a matter of conjecture. Companies with optimistic actuaries will tend to be the most competitive on new sales. Pessimistic actuaries may have trouble finding or keeping employment in insurance companies.

Certainly expectations of future experience (particularly over the next few years) should be taken into account in setting the entire dividend scale. However, in our view, the formulas for illustrations should be based on the same assumptions used for dividends actually paid, with adjustments only for any real differences in the policies, such as premium levels and size grading.

The use of new-money interest rates in dividend determination as suggested in question 4 has some of the same problems as projection of experience. Under current conditions the "temptation" referred to is to have better sales illustrations than under a common portfolio rate. As contrasted with the projection of experience, the new-money interest rates used could and should be based on current experience. There are, however, a number of practical questions which should be answered before going down this path:

1. Insurance policies have guaranteed cash values. It would not be possible to assess any appropriate selection charges against these values on surrender.
2. The practice of "walling off" existing policies at the time the new-money rates are reflected works an inequity on this business with respect to future premiums received.
3. When the new-money rate falls below the portfolio rate, a company on this basis may have severe competitive problems with companies using the portfolio rate. At this point, the temptation would be to change back, creating further inequities for existing business.
4. Serious replacement problems would be created for policies issued prior to the adoption of new-money rates.
5. There is the problem of disclosure of the change to existing policyholders. Also, any cost comparison or disclosure indexes for new business become suspect. Clearly, dividend illustrations for a company on the new-money interest basis are not comparable with illustrations on the portfolio basis.

MR. RICHARD S. STENSON: The question of what constitutes a dividend class has changed gradually over the years. Underlying the

change has been the continuing principle that surplus should be distributed to the various dividend classes in proportion to the contribution to surplus made by each class.

Earlier thinking provided generally for variation of dividends by plan, issue age, and duration only. Over the years, smaller dividend classes which more closely recognize the amount of surplus contribution of various pieces of business have emerged. The grouping separately of policies with disability income benefits, for instance, in order to reflect bad experience on these benefits is one example. The use of dividend classes recognizing policy size is another.

Broad averaging continues to be an important element of surplus distribution, but the classes over which experience is averaged are becoming somewhat more precise over the years. In other words, considerations of equity are becoming more precise and more predominant.

An illustration of the type of problems causing new thinking is in the policy loan area. Averaging investment experience penalizes policyholders who do not borrow as compared with those who take loans at policy rates that are low compared with current market returns. A dividend class recognition of the amount of policy loan and the effect on investment earnings would be an example of a more precise recognition of equity.

MR. WALTER MILLER: I have a question on a point that I do not think was covered explicitly in the questionnaire. Many of you may be perhaps surprised or disappointed to hear this question being raised by an employee of a mutual company. Anyhow, I think that the determination of dividends for participating policies these days operates under two main conditions: (1) the blocks of new business that we sell are in a deficit position throughout quite a number of years, and (2) we commence the payment of dividends quite early. A number of companies have dividends at the end of the first policy year. Can this procedure be justified or merely rationalized?

MR. WINTERS: I think it can be justified fully. It seems to me that this is in the same formulation that I was talking about before—that the whole undertaking is one which at its bottom rests on providing insurance at average cost. This, in turn, requires that each block of business have a high probability, although obviously not certainty, of being self-sufficient. You start out with a scale of gross premiums which you think are adequate to meet any plausible adversity. You do not assume all adversities at once—you do not get inflation and low interest rates at the same time, or at least you do not assume that you will—and not all of them through-

out the entire history of the block; interest rates go down, but they also go up. But across the life of the block of business, a set of gross premiums usually is sufficient to handle any plausible adversity. This means that in the vast majority of the cases, certainly over 90 per cent, part of them will prove to be redundant. If you are to have fair treatment of the early and late terminators, you must start returning that redundant amount as soon as it is clear that it is unnecessary. I do not find it at all offensive, theoretically, to say that one year after you made the deal you are prepared to say that last year catastrophe did not occur. Last year adversity did not come along all of a sudden and beat us over the head. What is more, standing a year closer to what was then the future, I do not see any more ominous signs than I did a year ago. Therefore, I think we can afford to return some of the redundancy which proved to have been in last year's gross premium. That does not bother me. I do not find that rationalistic. I find it fully satisfying theoretically.

I think that adjusted earnings are a key part of this. The statutory accounting basis that we use for essentially different purposes ought not to dominate the equity with which we deal with early and late terminators from blocks of policies.

MR. BRUCE NICKERSON: In the hope of possibly adding a little bit more, I have a question I would like to ask. I would be particularly interested in Mr. Winters' comments, but also in those from others.

A very well-reasoned presentation was made as to the dangers of optimistic projections. At the same time, in the study report, the question was raised as to whether you should illustrate on the basis of your current scale if your projection is more pessimistic than your current scale. If I recall the answer, only 25 per cent of those responding answered yes. Do you in fact have the feeling that the dividend illustration should be on the basis of current experience or projected experience, whichever is less favorable, or do you hold that it should be based on current experience in all cases?

CHAIRMAN GUSTAFSON: At Northwestern we are uncomfortable with this, but our favorite method at the moment is to beef up the caveat.

MR. ROLLAND: I feel that if a dividend illustration is to be an illustration of the scale currently paid, you probably should stick to that in all circumstances, even when the future may be unfavorable. I would rather see consistency, so that the buyer really knows what the dividend scale

is. I think that perhaps the idea of something extra in the caveat may make some sense. However, on this point there was a significant difference of opinion among actuaries; there were very strong views on both sides of the question, some of them quoted in the report.

I rather suspect that competitive pressures will probably make us all very reluctant to be the first one to specifically state in our dividend illustration caveat, "Look, fellows, we really believe these dividends are higher than we are going to pay."

MR. WINTERS: I would like to take advantage of the opportunity to answer somebody from the examination committee by saying "neither of the above." I do not think the illustration should be based on current experience, and I do not think the illustration should be based on projected experience. I think the illustration should be based on the current dividend scale. The issue then becomes what you base your current dividend scale on. I am not particularly nervous about either the rationality or the kind of external discipline which operates on the reasonableness of the decisions when people are spending that kind of money. I think that increasingly companies are looking toward some projection of experience to the midpoint of the period in which they anticipate the scale will be in effect. But I do not call that "projection" in the illustration sense. As for a choice between two values of future dividends, it seems to me that you are facing an impossible situation because of the conditions of today. Obviously, you can contemplate higher portfolio rates and higher expense rates. This may mean that on permanent plans the future dividends actually will be better than the current scale and on term plans the future dividends almost surely will be worse. If you choose the blacker world in each case, you distort the relationship between term and permanent insurance, and nothing really is left as a frame of reference.

MR. ROLLAND: I have one more comment. One of the interesting aspects of the answers to several questions in this questionnaire was the feeling that a certain practice was actuarially unethical or contrary to the professional responsibility of the actuary. One of the respondents to this question indicated that the illustration of dividends which are higher than can probably be paid would be unethical and unprofessional. Throughout this report, one realizes that people are trying to analyze the questions in relation to what they think is unprofessional or unethical for an actuary, something that is consistent with the whole theme of this meeting.

MR. LESTER MOSKOWITZ: I would like to come back to Mr. Winters' comment about the payment of first-year dividends. I would like to know what your attitude would be if after the first year you found that your mortality experience was horrendous. Would you then, on the basis of one year's experience, say that we should not pay these first-year dividends? Or would you say that it was a fluctuation and that we should wait until a few more years go by?

MR. WINTERS: I suspect that we would continue our practice of paying dividends only at the end of two years. More seriously, I think that this is essentially a question of what circumstances induce you to change your scale of dividends or gross premiums. I guess I would answer your question by saying that if, in respect of the whole in-force or significant blocks of the in-force, you conclude that this mortality episode was in the nature of a random fluctuation and you are not going to adjust the dividends scales significantly for in-force contracts, I would not think that you would adjust them for recently issued ones either, where selection presumably is protecting you more in any case. If, on the other hand, you conclude that this event was really the precursor of a change and you are going to be changing your in-force dividends, I should think that you would change dividends in recent issues as well.

MR. MOSKOWITZ: I would like to ask you to explain again your justification for the first-year dividends.

MR. WINTERS: It is essentially prospective. The formulation that Walter Miller advanced, which is a fairly common one, is essentially a retrospective examination of the funds already on hand, typically dominated by statutory accounting. What I am saying is that the deal we make with the policyholders is insurance at cost, a prospective deal which at the beginning is centered entirely in the gross premium. Gradually the financing of that always prospective arrangement with the still existing policyholder shifts to the accumulated funds. And the vehicle for regulating the accumulated funds, once gross premiums are established, is the dividends. But this prospective view is the essence of justification.

MR. WILLIAM J. SCHNAER: Yesterday, in informal conversation, I heard a rather alarming statement that the New York Insurance Department insists upon the use of a three-factor formula to generate (or, at least, justify) any dividend scale. The reason I was alarmed is that my company, a small one licensed but not domiciled in New York, uses a

method in no way related to a three-factor formula. We are a stock company selling only participating insurance.

Briefly, our method is to examine at key ages the statutory book profits generated by target or actual gross premiums, for new or existing business, respectively. A suitable percentage of these profits, the percentage varying by plan and age, is then graduated to obtain the dividend scale at these key ages. Then these scales are interpolated to provide dividends for all ages.

So far, perhaps because of our size, New York has not questioned our method. My question is threefold. Do the members of the panel feel that our method is a reasonable one, and, if so, will any state insurance department ask us to develop a suitable after-the-fact three-factor formula which will reproduce our dividends? If this proves to be the case, what would you recommend?

MR. WINTERS: I am not aware of the requirement of a three-factor formula; the New York department's commitment to general contribution theory is pretty powerful, but not necessarily limited to a three-factor formula.

MR. BERNARD RABINOWITZ: It costs a lot of money today to finance the writing of new business, and in the participating account of a life insurance company this financing comes from the existing policyholders. The new policyholders are in effect borrowing from the old policyholders at a relatively low rate of interest, and I think that existing policyholders have suffered on account of this under the traditional three-factor formula. It seems to me that dividend scales for new policyholders should reflect the fact that it costs about 10–12 per cent today to borrow money and that this 10–12 per cent interest needed to finance the surplus strain should be reflected in the dividend scale projections for new business. I think that we ought to take a hard look at what is happening to existing policyholders in regard to financing the writing of new business before we can decide which blocks of business are to receive the benefit of today's high interest rates.

The question I have is, how should capital losses—whether they are book or realized—be taken into account in dividend scales? There does not appear to be any problem in determining what the mortality experience has been in the aggregate. Also the aggregate expenses are known, but I do not think we know what the aggregate investment income is. This is because investment income is a function of asset valuation. For example, the investment earnings on bonds are the contractual interest

payments plus the increase in the asset value according to a historic annual amortization schedule; nevertheless they are still a function of asset valuation. Asset valuation based on historic amortized values for bonds and historic book values for mortgages are, in my opinion, unrealistic under today's conditions. Somehow we have to reconcile the equity of the "unit" valuation approach as used in open-ended investment trusts for allocation of investment profits with the requirement of meeting the long-term guarantees of the capital values provided in the policy.

It is one problem to distribute profits from investments equitably, but it is another to determine first exactly what the profits are from investment earnings before even thinking of distributing them. Also, when we consider new-money rates, it appears that the bulk of the investment in new high-yielding securities today comes from existing policyholders. The new policyholders are, if anything, in a deficit situation. I doubt whether there are many companies giving these old policyholders the advantage of today's high interest rates. I would like the panel to comment on how capital losses should be taken into account in dividend scales, whether they are realized or unrealized, bearing in mind that there is no major difference between realized and unrealized capital losses. The reason is that on a book capital loss, for example, all one has to do is to sell the investment and then immediately buy it back, thus remaining in the same financial position but with a realized capital loss instead of a book loss.

MR. WINTERS: Those are several very good questions. Let me first touch upon this point about a loan at unrealistically low rates. There is no question about its being a loan. But where is it written that the rate has to be unrealistically low? That is, after all, within control of the company. You suggested that the major part of this should be the rate which borrowers have to pay for money in the marketplace. For one company our approach has been to look at the return which lenders are able to obtain in putting their money out, and there we have an obvious spread. Essentially, the statutory position of the new business is financed out of existing business temporarily, but in our case, at least, at the rates that are available to lenders in the market. As to gains and losses, I think here the question is whether you are looking at a balance sheet or at an income statement. The problem for distributing earnings is, what are the earnings? I do not worry about depressed carrying values on bonds if they are, in fact, going to pay their coupons and the principal on maturity, because that is the earnings stream that we anticipated when we bought the bond. That is the earnings stream on which the examination of our investment yield trends has been based in the establishment of the divi-

dend scale, and I do not see any problem. It seems to me that the carrying values of assets which you fully contemplate holding until maturity and on which there is no serious risk of impairment of either yield or principal are not a material item for dividend distribution. An irretrievable loss, which certainly includes realized losses, does not fall in that category. If you are simply rolling over a fixed-dollar investments, I am not sure that is too significant. Presumably, however, you have to reflect an irretrievable loss in an equity situation as a part of your total yield pattern. I do not think very many companies have as yet had what they felt were irretrievable losses. We have not found in recent years any need to modify the interest portion of our surplus distribution on account of the balance-sheet aspect of capital gains and losses in the investments.

MR. WALTER SHUR: This question of new money is, I think, a very deep one. I do not think there has been nearly enough recognition of this here. If you go into a new-money system for new business and you shut off your in-force business, it is true that the premiums coming in on the in-force business are still going to get the benefit of investments at current new-money rates. But that in-force block will become an unfunding block at some point where the payments made are greater than the premiums, investment income, and investment rollover. At that point, of course, you have quite a different situation. If interest rates start to rise at a time when you have a block of business that is unfunding, that is a negative event calling for a reduction in dividends. Just consider the case of a company operating with ten-year blocks of business, each one insulated from the other from the point of view of investment experience, over these last years. Some of these old blocks would be unfunding blocks, and the experience would be very bad because of the rising interest rates. Dividend reductions would be indicated on these old blocks at a time when you were putting out better and better illustrations on new business. It would be a very difficult situation. I think that there is a fundamental question whether a new-money approach is at all consistent with giving full guarantee of principal. Those of you who work in group annuity areas know that a man cannot walk out with all his money. He leaves some of his money behind if he tries to take his money out at a time when new-money interest rates are higher than the rate being earned on the money that he is withdrawing. You have a very similar kind of situation in the individual area when new-money concepts are introduced.

INTERNATIONAL TRENDS IN EMPLOYEE BENEFIT PLANS

Emerging differences between plans in Canada, the United Kingdom, and the United States, including an examination of

1. Pension plans from the point of view of both provisions and funding media.
2. Other types of plans, such as those providing benefits on death or disability.
3. New types of plans being developed.
4. Actuarial costing practices.

CHAIRMAN G. ASHLEY COOPER: Although the subject for our discussion is "trends," we hope also to highlight present as well as future differences in employee benefit plans among the three countries. It is assumed, of course, that most of those here are familiar with United States practices.

One obvious place to look for differences is in legislation. There appear to be at least four distinct areas: regulatory legislation, tax legislation, social security, and other miscellaneous legislation.

With regard to regulatory legislation, the scene in the United States is dominated currently by the new Employee Retirement Income Security Act of 1974 (ERISA), which gives us a new ball game with respect to participation, vesting, funding, maximum benefits, plan termination insurance, and a host of other items, particularly reporting and filing of forms. Canada had its version of pension reform starting in 1965 with the various provincial and the federal pension benefits acts. Although the United States legislation has borrowed some items from Canada, there are many differences between the programs. In the United Kingdom the situation is more relaxed. The only real, direct legislation relates to vesting and was brought in by the 1973 Social Security Act.

Tax legislation poses problems in all three countries, but none have regulations as voluminous as those in the United States. The principal areas of concern are the rules governing tax approval of pension plans and the tax treatment of approved and nonapproved plans in such areas as tax deductibility and employee and employer contributions.

A third area of difference in legislation arises from the social security systems. The Canadian and United States social security systems are, of course, different, but resulting benefits have been reasonably similar in recent years. The future, however, may bring divergences. On the other hand, the system in the United Kingdom is totally different and is quite

unique in the number of white papers that have been written on the subject of social security.

There are one or two other items of legislation that have a bearing on employee benefits. One of particular relevance concerns sex equality. Legislation to enact equal rights for both sexes is very active at the present time in the United States, with a lesser but rapidly increasing interest shown in this area in the United Kingdom.

Practices with respect to employee benefit plans differ in a number of areas in the three countries. With regard to plan design, the items that appear relevant are integration with social security, death benefits, disability benefits, employee contributions, and the form of benefit payment. Many differences stem from tax aspects. There are possibly fewer differences among the three countries in the area of funding, and we hope that our discussion will be able to identify present and future divergences. Problems of administration are worth looking at, especially the problems arising from communications to employees, informal augmentation, and discretion and other rules which are common in the United Kingdom but not in the United States. Actuarial practices differ, and I will go out on a limb and suggest that, among actuarial methods, the unit credit method is more common in Canada than in the other two countries, the individual entry age normal method is more common in the United States, and aggregate methods are held in more favor in the United Kingdom.

Our discussion would not be complete without some mention of two major economic factors affecting today's life—inflation and the stock market decline. I would suspect that each of our speakers will have something to say concerning the problems arising from these factors.

If time permits, we may wish to examine nonpension benefits. I would make these general observations:

1. In the United States death and disability benefits often are sold under separate plans. In the United Kingdom one over-all plan is more typical. Relative to the United States, benefits in the United Kingdom appear higher for death but seem less generous for disability.
2. The United States is the only country of the three without socialized medicine.
3. Group dental and group legal coverages are some of the non-employee benefit developments in the United States.

MR. F. EUGENE SMITH: I am sure that uppermost in the minds of most of you is the effect on pension plans of ERISA, or, as it is better known in some circles, the Actuaries Full Employment Act of 1974. I

think that I will concentrate on pensions, with possibly a few remarks on group insurance if time permits.

Canadian actuaries followed the rather tortuous development of ERISA with a great deal of interest. We could appreciate the jockeying between the Treasury and Labor departments and the eventual separation of responsibilities between them, because we have had a similar split in authority for some years. Up until 1960 the Department of National Revenue regulated all aspects of pension plans in Canada. In that year a legal opinion was given that the department properly could regulate only the tax aspects of pension plans. The department then formally dropped a number of its regulations, particularly in the field of vesting. This led directly to the passing of the Ontario Pension Benefits Act in 1965, followed by similar acts in three other provinces as well as a national act applicable to companies in the communications and transport fields which fell under direct federal jurisdiction. Estimates of the proportion of Canadian pension plans subject to regulation under these acts currently range from 80 per cent to somewhat over 90 per cent.

In case you have any fears, I can assure you that it is possible to live comfortably with this type of dual regulation—as long as the two authorities cooperate with each other and do not take contradictory positions on specific issues.

You have heard the outlines of these acts before. In fact, many of the ideas for ERISA were lifted directly from them, but in several ways ERISA has gone much further. The question of interest to Canadians now is what things will be lifted from ERISA and introduced into our legislation.

Our acts require full vesting after the attainment of age 45 and completion of ten years of service, with a minimum of 75 per cent of the accrued credits being locked in for the provision of pension benefits. This locking-in feature becomes particularly binding on the employee if he has contributed more than 25 per cent of the cost of his benefit. There is still talk of tightening the vesting provisions, probably to an age 40/five years rule, but I think our politicians will also have to review the locking-in requirement.

With tax deferment given on employee contributions, most Canadian pension plans are contributory. The trend, however, is to more noncontributory plans, partly as a result of pressures from international unions, but partly also to avoid the locking-in problems. Where locking in is a prime concern, it is becoming customary for the employer to sponsor a registered retirement savings plan (a Keough equivalent) for independent employee savings to supplement a basic noncontributory pension.

One feature of ERISA that I suspect will be incorporated in our Canadian regulations is the requirement of a maximum waiting period for eligibility. If this should be accompanied by a provision for mandatory membership, the trend to noncontributory plans will certainly accelerate.

A feature of ERISA which I hope will not be introduced in Canada is the plan termination insurance. Our acts require funding of new past-service liabilities over a fifteen-year period and actuarial deficits over a five-year period, somewhat lessening the need for insurance of unfunded liabilities. Market conditions in the past year have unsettled a number of plan administrators, and we are starting to hear comments that these funding limits may be unnecessarily restrictive. Just last week a question was raised in the Ontario legislature about the rate of investment return on Ontario pension funds. The minister of consumer and corporate affairs replied that the Ontario government would consider amending the Pension Benefits Act to provide reinsurance for funds facing bankruptcy. Even without any move toward ERISA's thirty- to ten-year limits, we could well be facing some form of plan termination insurance.

Another aspect of this problem is the method of valuing pension plan assets. Despite some rumblings, our provincial authorities have not yet prescribed any required valuation method, leaving this to the actuary's discretion. The trend in Canada in recent years, due largely to the increased emphasis on actuarial deficits, has been to move to a modified book value which tends to follow, but to smooth out, the wider swings of market. Much work has been done in this area in the last ten years, but more needs to be done. I believe that we must try to reach general agreement within our profession as to reasonable limits for asset valuation. If this is not done soon, we will probably find ourselves hampered by restrictive regulation on both sides of the border.

At the federal level in Canada, there currently is an interdepartmental task force reviewing the taxation regulations affecting pension plans. Its work over the past year has been somewhat hampered as the result of a balky parliament, the downfall of the government, and a federal election. The current government has a very comfortable majority, and the task force should now be able to get on with its job. We hope that statutory limits will be upgraded and indexed. At present our basic limits in Canada are on input dollars, with subsidiary limits on output. Many suggestions have been made that the limits be changed to relate to output percentages. Only time will tell the effect of these recommendations.

Recent changes in the Canada/Quebec Pension Plans have also affected pension plans. These plans originally provided for escalation of benefits and pensionable earnings in accordance with increases in the

consumer price index, but with a maximum increase in any one year of 2 per cent. Historically, in 1966 when the plans commenced, this limit was not unreasonable, but obviously the actual results have been far from satisfactory. Yearly maximum pensionable earnings have now been increased from \$5,600 in 1973 to \$6,600 in 1974, with the intention of increasing the figure further by $12\frac{1}{2}$ per cent per year until it reaches the level which would have been attained if there had been no limit on the yearly increase since 1966. Unless we have some moderation in cost-of-living increases, this could take a long, long time.

The original inclusion of an escalation factor in the CPP/QPP stirred interest in Canada in final average pension plans. There was a substantial move, especially among the larger plans, to a final average or final average minimum over a career average base. Cost-of-living increases in the last couple of years have dampened this enthusiasm considerably, particularly since they have been combined with market trends in the opposite direction. Many companies now are doing periodic updates of accrued credits to a current salary base without making any forward commitments.

Postretirement escalation provides an even messier problem, the one area of serious conflict between our federal and provincial regulation. If a plan provides for automatic cost-of-living increases to pensioners, provincial regulations require advance funding but federal regulations deny tax deferment on any contribution for the funding of future increases. The result is that practically all employers who wish to increase benefits to pensioners do so by way of periodic supplements rather than by plan guarantee.

As in the United States, consumerism is becoming a major force, especially among the ladies, who, I suspect, do not always take a completely impartial point of view. Somehow the logic of special female rates for life insurance combined with unisex tables for annuities escapes me. Currently we have four provinces with Equal Employment Opportunity Commission-type legislation in force. Ontario established a task force to explore the application of its act to employee benefits. Other provinces generally appear to be waiting for the Ontario regulations before enforcing their own acts. I have not yet seen the task force report, but, by rumor, its conclusions appear to be fairly reasonable. In particular, I understand that it did not accept the arguments for unisex tables. Fortunately three of the task force members are actuaries.

Considering actuarial techniques used in valuing pension plans, traditionally the aggregate funding approach used to be the most popular in Canada, possibly because we had a high percentage of British-trained

actuaries in the consulting business. Introduction of the Ontario Pension Benefits Act changed this with its requirement that adequacy be checked every three years and that any actuarial deficit be funded over a five-year period. Rather than go through two complete valuations, one using an aggregate or entry age normal method and another on a unit credit basis, the trend has been largely to using unit credit as the sole valuation method. I expect that this same shift will occur in the United States over the next few years, if the ultimate regulations under ERISA require a strict accounting and amortization of actuarial gains and losses.

In the group insurance area we have had a few interesting developments. In 1970 the provincial superintendents of insurance issued a set of rules applicable to group life insurance. Generally these rules defined acceptable groups, something which had never been included in our law, and acceptable schedules, limited not in dollar amounts but in number of units of insurance which a plan member could elect. This latter limitation had little effect on employer-employee plans but had a substantially depressing effect on association business. Some companies moved to escape the restrictions by doing association business on a franchise basis, only to have the superintendents counter by extending the group rules to cover franchise plans. The schedule limitations in the original rules have been relaxed twice and in the last couple of months have been removed entirely. Now interest is being shown by the labor movement, and by some consultants, in highly flexible plans which would allow the employee almost complete freedom in determining how much group life insurance he will buy. Obviously, this will lead to some rather thorny underwriting problems, even beyond those developing with the cafeteria approach. These group rules also cover the requirement of a conversion privilege, not previously required but allowed almost universally in practice, and transfer provisions similar to those recommended a couple of years ago by the National Association of Insurance Commissioners.

In the group health area, the introduction of government hospital and medical care insurance a few years ago forced health carriers to turn to other forms of cover in order to maintain their premium income. Both group dental insurance and long-term disability plans have been growing rapidly. Recently three or four provinces have started taking a serious interest in dental care, usually by including dental care of younger children as an insured benefit under existing medical insurance plans. It will be interesting to see whether the taxpayer's concern for his take-home pay will outweigh the citizen's desire for additional government benefits. Personally I expect to see a gradual extension of government involvement

in the dental insurance field with, ultimately, a complete government takeover.

Income replacement insurance is not escaping the eagle eye of government either. Our Unemployment Insurance Act, a federal act purportedly funded on an actuarial basis, was amended a couple of years ago to include provision for a disability income benefit. Essentially it provides for a fifteen-week benefit after a fourteen-day waiting period, with a maximum weekly benefit which was set initially at \$100 but which is subject to annual escalation. Current maximum benefit is \$113 per week. There is provision for the individual employer to opt out if he maintains a private weekly income plan at least as generous, with a promise of refund of part of the original unemployment insurance premium paid. Many employers, particularly the larger ones, have opted out in order to retain flexibility of plan design. But with the government having a toehold in the area, will this option last? I suspect that government will discontinue the option within the next two or three years in the interests of a broader experience base and simplified administration.

In the long-term disability market the problem of inflation is causing troubles, with numerous requests for plans to provide escalation of benefits in payment. As with pensions, interest here has cooled off in the last couple of years—especially among insurers!

Of interest, too, in the income replacement market was the recent move of our federal government to make insured benefits taxable to the employee, with an offset for employee contributions to the plan. As a result of this, many group insurance programs have been juggled to make income replacement insurance employee-pay-all, thus retaining benefits on a nontaxable basis.

In general our problems and prospects in Canada are very similar to yours in the United States. In some areas we are ahead of you and in some areas behind. I will leave it to you to judge which is which.

MR. J. GRAHAM HASLAM: I hope you will be patient with me, for after over forty years' work in the field of pensions in the United Kingdom certain words and phrases which are in common use over there come naturally to me. In some cases these have a rather different connotation over here, or perhaps different words are used. For example, it is only in recent years that we in the United Kingdom have had more than a few pension plans. Until then, and indeed still today, we have mostly pension schemes—the word “scheme” referring to the first dictionary definition, namely, a systematic arrangement, rather than the second definition

as an artful and underhand design. So if some of my words sound a little strange to you, I hope that the context will make it clear what I am talking about.

REGULATORY LEGISLATION

Until 1970 approval of the revenue authorities to a plan could be sought under a number of different acts of Parliament, or rather under different sections of a later consolidating act. It should be noted that, if approval is not obtained, then any contribution paid by an employer to provide pension or similar benefits for an employee ranks as additional taxable remuneration of the employee. As a consequence, virtually all pension plans in the United Kingdom are in a form in which approval can be obtained. The 1970 Finance Act, which has been slightly amended by subsequent acts, laid down unified provisions to which all new plans had to adhere if approval was to be granted. All existing plans have been given up in 1980 to carry out any alterations necessary for them to conform to the 1970 Act, although, if meanwhile any substantial alteration is made, the revised plan must conform to the requirements of the act.

The *Practice Notes* issued by the revenue authorities subsequent to the act set out in detail the various types of benefits and maximum benefits permitted. Notwithstanding the vast amount of work that has been and has yet to be done in altering existing plans, it is of great benefit to all those dealing with pension plans to have a unified code of practice. You would not wish, nor does time allow us, to go into them in detail, but in very broad terms the code provides the following:

1. Employee normal and additional voluntary contributions are fully tax-deductible up to a limit of 15 per cent of earnings.
2. All employer contributions are tax-deductible except for large special payments, which may be spread forward for tax relief.
3. Maximum pensions are two-thirds of final remuneration if ten or more years of service have been completed (reduced maxima for shorter service), over and above, at least at present, any social security benefits.
4. The maximum tax-free lump sum in commutation of pension at retirement is one and one-half times final remuneration if twenty or more years of service have been completed (reduced maxima for shorter service. The maximum pension is reduced by the pension equivalent of any lump sum taken.
5. The maximum widow's pension is two-thirds of the member's maximum pension, but some children's benefits may be paid in addition.
6. The maximum lump-sum death benefit, in addition to any widow's pension, is four times final remuneration.
7. There are maximum permitted early and late retirement pensions and preserved pensions.

8. Escalation of pensions in the course of payment is permitted up to a maximum of the increase in the cost-of-living index.

One later piece of legislation is the 1973 Social Security Act, with which we will deal later. On the regulatory side, the only important features are the provisions relating to compulsory preservation of members' pensions and postretirement widows' pensions, if any, on leaving service before retirement.

As to possible future legislation, let us make some guesses. The white paper to which reference will be made gives us some hints: equal rights for women, whatever that may mean, for women will not give up the right to retire at age 60, and the country cannot possibly afford to reduce the normal retiring age for men to 60; universal transferability; escalation of pensions in possession and of pension rights for early leavers; financial solvency (there might be legislation laying down minimum solvency valuation bases); better communication with members; yearly individual benefit statements; greater involvement of plan members; contracting out of requirements for any new state scheme; and, additionally, possible raising of maximum permitted benefits and possibly some control on investments, particularly in a company's own shares.

SOCIAL SECURITY

Here the main pension benefit for very many years has been a flat-rate pension for single persons, with a flat-rate addition for married men. The amount of the pension has, of course, increased from time to time with increases in wage levels but has tended to remain at about 20 per cent of the national average wage in manufacturing industries. Flat-rate contributions were paid by employee and employer, and these also increased from time to time. In 1961 the government introduced a small level of wage-related benefit under which all employed persons and their employers had to contribute at a fixed percentage rate on all earnings in a relatively small wage band, and each pound of contribution, regardless of the age at which it was paid, earned a fixed amount of pension in addition to the basic flat-rate pension. In 1964 the range of the wage band was increased.

Contracting out of this wage-related benefit was permitted if an employer had a suitable occupational pension scheme. In 1966 and on several later dates the range was further increased, as were the contribution percentages, and no contracting out was permitted in respect of these extensions. The Labour party in 1969 introduced the Crossman plan for far-reaching wage-related pensions, but they lost the general election in 1970 and the plan never reached the statute book. The last

Conservative government brought in the 1973 Social Security Act, which retained a flat-rate basic state pension, the amount of which is to be reviewed yearly to keep it in line with cost-of-living increases. The flat-rate contributions were dropped, and all contributions were to be wage-related up to a ceiling of about one and one-half times the national average wage. In addition, a fully funded money-purchase, with-profit type of scheme called the "reserve scheme" was introduced, to which all employees and their employers had to contribute at a combined rate of 4 per cent of earnings up to the wage ceiling just mentioned, unless they were members of a suitable occupational scheme providing at least stated minimum benefits. The act also introduced compulsory preservation for occupational schemes. All this was to take effect April, 1975, but, as you know, the Conservatives lost the general election in February, 1974, and the Labour party announced that the part of the 1973 Act dealing with the state reserve scheme and contracting out therefrom would not be implemented but that they would shortly be producing a comprehensive wage-related state scheme. Details of this proposed scheme have recently been announced in a white paper entitled *Better Pensions*. In very broad terms, the pension will build up to full maturity in twenty years. The fully matured pension, in effect, will be the basic flat-rate pension plus 25 per cent of the excess of the average of the best twenty years' earnings over the basic pension. The basic pension level will be reviewed yearly in accordance with the increase in national average earnings, and, in obtaining the twenty-year average earnings of an individual, each year's earnings will be revalued in line with increases in the national average earnings. The earnings ceiling for both benefits and contributions will be seven times the basic pension figure. On the basis of 1974 figures the basic pension would be £10 per week, and the fully matured pension will be £10 plus 25 per cent of average earnings over £10 per week, up to a ceiling of £70 per week.

Roughly speaking, this means that a man who has been earning half the national average wage throughout his last twenty years will receive a pension of about 60 per cent of final earnings, dropping to about 34 per cent of earnings for a man who has been getting one and one-half times the national average wage. With the victory of the Labour party in the recent general election, it seems likely that their plan, perhaps with some modification, will reach the statute book and we in the United Kingdom will have to plan accordingly. But the victory was a very narrow one, and there is a distinct possibility that we shall be faced with another general election before the new scheme can come into force. This cannot be before 1977 or 1978 at the earliest, since there will be much

preliminary work to be done and there is a chance that the scheme will suffer the same fate as the Conservative party scheme and be quashed before it starts. We in the United Kingdom seem fated never to have a period of stability in the pension field.

PRACTICE

Pension Plan Design

I shall turn now to a brief consideration of current practices in plan benefits and design. Traditionally all but the larger plans have based pensions on average salary, but there has been in recent years an extensive and increasing move toward final or near-final salary plans. A further change is a move to include in pensionable salary as well as basic salary all or most additional emoluments, such as bonus, commission, cost-of-living allowances, and the like.

These changes have been motivated by the effect of inflation and by the feeling on the part of employers that the pension of an employee should be as high a proportion of preretirement earnings as the employer can afford and also by the fact that all the state wage-related schemes which so far have been put forward have been based on total earnings. Perhaps the most important and far-reaching change that has occurred in recent years has been the introduction into most large plans, and, indeed, into many smaller plans, of a provision for increasing from time to time, usually yearly, pensions in course of payment of offset, at least in part, increases in the cost of living. A few plans, particularly in the public sector, are now committed to increase pensions in line with cost-of-living increases; many provide a fixed yearly increase, often as a minimum with the hope that increases will be greater than the minimum, and many do not lay down any firm basis, merely stating that pensions will be reviewed from time to time with the object of granting some increase. In many ways the latter has much to recommend it, since few employers can face the prospect of what may be a vast additional cost of a cost-of-living guaranteed increase. It is interesting to note that the reserve scheme to which we referred earlier provided for pensions to be increased yearly by bonus additions, and the latest Labour party proposals guarantee to provide pensions which increase in line with national average earnings.

On the question of integration with social security benefits, it is only in recent years that much attention has been focused on more sophisticated methods of integration. Salary-grade plans made some allowance, albeit rather crudely, by reducing the pension expressed as a percentage of salary in the lower salary grades. Under many other plans, whether

average or final salary, an allowance for social security benefits was made by a deduction from salary for pension purposes. This salary exclusion method is still used extensively for final salary plans today, but it does suffer from the defect that it is necessary to make frequent changes in the deduction and the fact that it is not always fully understood by employees, who see their pensionable salary and hence their prospective plan pension being reduced notwithstanding the fact that up to the date of change they contributed on the higher salary. Furthermore, it tends not to focus attention sufficiently on the fact of integration.

Two other methods of integration are in use at present, namely, the "formula" method, under which the plan pension is expressed, usually in two or more parts, so that it is paid in addition to social security, and the "subtraction" or "offset" method, under which the plan provides a stated total pension which is inclusive of social security. A discussion of these various methods is inappropriate now; suffice it to say that, for a number of reasons, my own preference is for the offset method.

Death Benefits

As regards death benefits, in the United Kingdom, these almost universally, for a number of reasons, form part of the pension plan. We have very few separate group life assurance schemes, and virtually none of them are contributory. We do have a number of separate widow's pension schemes, some of which are contributory. The main developments in recent years are, first, a continuous move toward the provision of widow's pensions on death in service, often coupled with a small life assurance benefit rather than solely a group life assurance benefit (children's and orphans' benefits are often provided in addition), despite the fact that if the documents are properly drawn the lump-sum benefit is nontaxable and is not subject to estate duty, whereas the widow's pension is taxable as earned income. The change has been due partly to the 1970 Act limitation on lump-sum benefits and partly to the feeling that most widows are not likely to be highly taxed and many are not capable of dealing with and investing substantial lump sums.

The other main development has been in the area of provision of pensions to widows of deceased pensioners. Formerly, in most plans, the pensioner could make provision for his widow only by giving up part of his own pension. In recent years there has been a rapid changeover to the automatic provision for such widows of, say, one-half of the member's pension without the member's having to give up any of his own pension, although normally there is an option for a member to increase the widow's pension over and above the one-half by giving up part of his own. This

changeover has been hastened by the provisions of the 1973 Social Security Act.

Disability Benefits

As far as disability benefits are concerned, here also there has been an increasing awareness of the need to provide adequate benefits where a member is unable to continue his employment owing to serious ill-health or disablement. Suitable benefits now are often provided under a pension plan, but there are some advantages in making separate provision through a salary continuation plan. For example, higher benefits can be paid than the maximum permitted by the revenue authorities under a pension plan.

Employee Contributions

There was a tendency some years ago for noncontributory plans to be fashionable, but at the present time it is, I think, fair to say that the great majority of new plans are contributory and that many existing plans are, on improvement or reorganization, being made contributory. Clearly a noncontributory plan is easier to administer, but there are other factors. First, employee contributions reduce the cost of the plan to the employer. It might be said that because employee contributions are fully tax-deductible the same effect can be achieved by reducing salary by an equivalent amount, but experience has shown that an employer with a noncontributory pension plan is not able to pay lower salaries than one with a contributory plan. Second, it is virtually certain that any wage-related state scheme will be contributory and, if an employer contracts out of such a scheme, he is paying part of the employee's social security contributions. Third, experience has shown that employees tend to take much more interest in the plan if it is contributory.

FUNDING MEDIA

For very many years most big plans have been funded by means of the trustee approach. However, by numbers of plans regardless of their size, the great majority of plans were funded by means of assurance contracts, originally mainly by nonprofit deferred annuities or by endowment assurances. With the introduction some twenty or so years ago of profit-sharing group deferred annuity contracts, the changeover to this type of contract, slow at first, rapidly gained momentum until at the present time virtually all assured contracts, with two exceptions, are with-profit deferred annuities in one form or another. I should add, however, that in recent years there has been a significant switch of larger or medium-sized plans from assured contracts to direct investment.

One of the other forms of assurance company contracts is deposit administration, with which you will all be familiar and which has been available for many years on the United Kingdom market but for a number of reasons has never proved very popular. The other, a much more recent development, is managed funds or, in United States terms, pooled funds. Strictly speaking, this is not an assurance contract, and, indeed, these funds are operated by merchant banks (your investment bankers) as well as by assurance companies. This form of funding medium is suitable particularly for the smaller and medium-sized plans which perhaps are not large enough for direct investment but want to gain the full and immediate advantage of investment performance.

You will all be familiar with the working of these funds, but perhaps I should mention that some assurance companies operate a mixed fund covering equities, bonds, and property, whereas others operate separate funds for each type of investment, the trustees of each plan deciding in what proportions their contributions are allotted to each fund. The use of a managed fund as an investment medium has, in the past few years, been increasing in popularity and, notwithstanding the recent sharp decline in the value of equities and hence of unit values, may be expected to continue to do so.

As to the future, many plans have increased and will increase rapidly in size as a result of takeovers and mergers, and the move to direct investment will continue. For the medium-sized funds the change from deferred annuities to managed fund undoubtedly will continue, but I am sure most of the very large number of small plans will continue to use with-profit deferred annuities.

ADMINISTRATION

On the administration side, the only comments I wish to make concern communication with employees. I think it is fair to say that this has, in general, not been good. Explanatory literature and verbal explanations given when a new plan starts have been quite adequate, but thereafter little has been done to bring to an employee's notice what his current benefits are and the financial position of the fund, nor has there been much employee participation in the running of the plan. At present these matters are receiving much attention, and the government has asked the Occupational Pensions Board to report on them and to make recommendations. This board was set up under the 1973 Social Security Act to supervise contracting-out arrangements under the act for each plan (a function which is, of course, not required at present) and general scrutiny of plan changes brought about by the requirements for vesting. It is being retained for general supervision of plans.

ACTUARIAL PRACTICES

Let us turn now to the question of actuarial practices, first insofar as funding methods are concerned. It is true to say that a great many consulting actuaries in the United Kingdom do use, as Mr. Cooper suggested, an aggregate costing method, but it does tend to produce a funding rate which some regard as a little on the high side. A few consulting actuaries are now using a current-cost method, making proper allowance, however, for future salary increases; in fact, this method or a modification of it is used most frequently by life office actuaries in calculating recommended funding rates under controlled funding plans. This method does tend to produce a somewhat lower funding rate, and in times such as the present, when many companies are experiencing cash-flow problems, they clearly will not want to pay more to the pension fund than is absolutely necessary.

This leads to another matter which is receiving a good deal of consideration at the present time, and that is the feeling that it is most important for there to be full communication between the actuary and the company and also with their accountants. It is very important that the actuary should explain fully to the company the methods he is using and the assumptions he is making with reasons therefor and that he must learn and take note of any wishes and problems that the company may have in connection with their pension fund. In the United Kingdom in the past there has been too much of a belief that the actuary and his methods are things apart which should be kept hidden from the layman.

In my view it cannot be stressed too strongly that in modern conditions it is the duty of the pension fund actuary to have full and frank discussions with the company and to take into account the corporate financial policy of the company in putting forward his proposals and recommendations.

As to the assumptions made in carrying out a valuation, the two factors which have the greatest effect are salary progressions and interest rates, and to a certain extent these are interlinked. Salary increases these days contain two elements, merit or long service increments and cost-of-living rises, and in recent years the latter has been much the more important. Investigations have been carried out which show that in the United Kingdom over a period of twenty or so years the over-all yield on investments (i.e., including capital appreciation) has on average been about 2 per cent above the corresponding increase in the salaries and wages, and, although at this present point of time this does not hold good, it might well be a not unreasonable assumption again in the future.

Thus, if one regarded 8 per cent as a reasonable long-term yield under

a pension fund, by valuing benefits in deferment at 2 per cent interest one would regard the result as allowing for 6 per cent per annum salary inflation. Similarly, by valuing pensions in possession at, say, 4 per cent interest one would be allowing for increases in pensions in course of payment of 4 per cent per annum. Any yields in excess of 8 per cent would be available to offset inflation over 6 per cent and pension increases over 4 per cent. Thus we are able to make a reasonable allowance for inflation in our valuations.

The other major factor affecting pension funds at the present time is the rapid and startling decline in stock exchange prices. In the United Kingdom the equity share price index is little more than a third of what it was two and a half years ago. The effect has been to throw many pension funds into deficiency or apparent deficiency, and indeed a number of companies are bolstering up their pension funds by the injection of further money. But there are many factors influencing the market price of shares which are subject to quite wide fluctuation over relatively short periods of time, and valuing the assets of a fund by market prices on a given day can produce a very different figure from that of a week or two later. One wonders whether the market price is really a reasonable estimate of the value of a security if we view it, as a pension fund can do, as a long-term investment. There is, therefore, a growing belief that the right way to value an asset is by discounting expected future income on the valuation interest basis. We believe that such a basis gives a reasonable value, the only problem being that for equity shares—that is, what allowance should one make for future increases (we hope) in dividends?

All we can hope to do in all these problems is make the best estimates we can, but it is important in rapidly changing circumstances to keep a close watch on the fund and to carry out valuation much more frequently than was done in the past, perhaps yearly if possible. Revenue authorities in the United Kingdom still require valuations only at quinquennial intervals, but perhaps the interval may be reduced in the future.

In conclusion, let me say that the matters which I feel most need our attention at the present time in the United Kingdom are the problems of integration, the need for much fuller actuary-company collaboration, and the importance of ensuring that each plan adopts the most appropriate funding medium and funding rate.

MR. ANDREW U. LYBURN: We have heard about the state of flux in social security benefits and therefore in private pension plans in the United Kingdom. I would like to go further and indicate that, at least with some of us, frustration is almost being superseded by fury.

Because of the flux for the last six or seven years, apart from some

months prior to the scrapping in May, 1974, of the reserve scheme by the Labour government, the private pensions industry was virtually stagnating, to the detriment of the nation's economy, pensioners, and employees—not to mention the private pension plan industry itself. As Mr. Haslam has indicated, it is likely that uncertainty will now continue for several more years. As a result some of us have commented on the design and implications of *Better Pensions* instead of merely on technicalities, as was mainly the case in the past. This is leading to some conflict in various areas, and since I happen to be what still appears to be the minority group, I find it hard to keep quiet on the basis that "united we stand divided we fall"—I think we have already fallen, and it is time to pick ourselves up. Those of us who are actively opposing *Better Pensions* do so on three main counts: design, contracting-out provisions, and lack of all party agreement.

First the design. One of the stated basic aims of all parties has been the elimination of the need for supplementary benefits. When *Better Pensions* was launched, it was claimed that it would do just that—eventually, at the end of the twenty-year maturity period. That leads to the first objection, which is that *Better Pensions* does absolutely nothing for existing pensioners; out of eight million existing pensioners there are only two million drawing supplementary benefits, and that two million would be higher if some old people would overcome their pride and understand their rights. In addition, the current proposals will not eliminate the need for supplementary benefits even when the plan reaches maturity. To eliminate supplementary benefits, it is felt that the minimum basic old age pension for a married couple should be around 50 per cent of national average earnings. Mr. Haslam has told us that a man who has been earning half the national average earnings through his last twenty years of employment will receive a pension of 60 per cent of his earnings. If we allow for a further flat £6 per week payable to his wife, the percentage rises to about 85 per cent but that is still only 42½ per cent of national average earnings—in fact, a married man's average earnings have to be about 80 per cent of the national average before he gets a pension of 50 per cent of national average earnings.

Turning now to contracting-out provisions, like Mr. Haslam I do not want to go into too many details, but I do want to make two points. First, the basis on which the contracting-out terms were calculated has not been released, but it appears to assume that the earnings rate of the fund will exceed the rate of inflation by around 2 per cent per annum. Whether or not this will prove to be realistic over the next fifty years, it is not realistic at present. Second, accrued benefits for those who withdraw after five years have to be retained in the fund, and they have to be

increased in line with increases in national average earnings. Assuming a modest 10 per cent withdrawal rate overall and a zero differential between the earnings rate and the rate of inflation, this will lead to a 50 per cent increase in funding rates over a few years. Unless there are dramatic changes, I will therefore be recommending, as I believe Mr. Haslam will be, that employees be contracted in. I should add, however, that this is one area over which the conflict is widespread. With the ever increasing acceptance of the view that pensions are deferred pay leading to mandatory preservation, it is logical that we aim at final pay pensions largely irrespective of the mobility of labor. This is a costly ideal, and the question is, who is going to pay for it—the current employer or all previous employers? I have fears about leaving it to previous employers, since an individual employer may experience a downturn although industry as a whole is thriving, possibly leading to a position of having to meet ever increasing pension fund contributions from a decreasing payroll and/or from decreasing profit if any. The effect could snowball, leading to bankruptcy and/or to the insolvency of the pension fund, so that all employees past and present suffer. There may, however, be some protection for employees if we reach the position we have here in the United States of having termination insurance. The proposals are also against current practice for something like four million employees in the public sector, where the cost of accrued benefits as they increase is met by the new employer by means of what is known as the “transfer club.” A few major corporations are also members of the club, but largely so far the cost of full final pay pensions is accepted only by government or quasi-government bodies, that is, by the taxpayer if only he knew it.

On my third point regarding all party agreement, I can see no prospect of stability until the major political parties agree on a design or at least agree not to create havoc if and when power changes hands. No matter what may be said, pensions are money and therefore cannot be removed from politics, but it is to be hoped that the redistribution of wealth required by politics could be made by manipulation of the taxation system, leaving the state pension benefits structure unchanged.

On the question of integration, I feel that with the move to final pay plans the United Kingdom has lagged behind Canada and the United States. During the period when we thought that the 1973 Social Security Act (the Conservative plan) was going to come into full operation, there was an increasing tendency to ignore the basic flat-rate benefit. Let me hasten to defend this:

1. The flat-rate benefit for a married employee was less than 30 per cent of national average earnings, so that for those who were members of private

- plans, where pensions had a possible maximum of two-thirds of final earnings and in practice were generally much less, it was extremely unlikely that, at retirement, earnings would not exceed total pension.
2. Under the Conservative plan, the minimum final pay pension unit was 1 per cent for the first five years and 0.6 per cent thereafter. The 1 per cent unit created problems where the design was $1\frac{1}{4}$ per cent of earnings less under the offset method—say one and one-half times the basic single-life state pension. At that time the basic single-life state pension was about £400 per annum, so that for employees earning less than £1,500 per annum (then above the national average earnings) it was necessary to provide additional benefits under a minimum rule. This was perfectly all right for large funds but a real headache for thousands of small funds from the point of view of administration and communication.
 3. Integration automatically reduces the total of state and private pensions, and the number of executives, even of quite small companies, who want maximum benefits would not surprise you.

However, with ever increasing state pensions becoming a worldwide phenomenon, I agree that integration will again become more important, although I would not at this stage like to state a preference for any particular method.

Turning now to actuarial practices, I feel that we have to consider together both the method of calculation and the valuation assumptions. Like Mr. Cooper, I would like to go out on a limb and suggest that, say fifteen years ago, funding rates generally were highest in the United Kingdom and lowest in the United States, with Canada in between. (I say lowest in the United States, taking into account minimal funding of initial past-service benefits.) Ten years ago I think that Canada would have moved into top place following the various preservation acts, with the United Kingdom falling into second place. Five years ago many United Kingdom funding rates may well have fallen below United States funding rates because of a move in the United Kingdom by some organizations to recommend funding rates little if any above those required to produce solvency on an accrued benefits basis. Whatever one's views may be on the pace of funding in these inflationary times, it is my view that preservation of earnings-linked pensions will lead to regulations requiring funding rates in excess of the minima just mentioned.

I would like to make two quick comments on death benefits. With the substantial growth of widows' death-in-service benefits, some insurers are now prepared to underwrite the age difference without evidence of age at entry, subject to a reduction in the pension if the widow is ten or more years younger than her late husband. Second, as a result of the 1973 Social Security Act and the requirements for widows' pensions on

death after retirement, more and more such pensions are payable to any wife, not just the wife, if any, at the actual date of retirement, and furthermore there is a swing away from pensions that cease on legal remarriage.

My final comment refers to practice under pooled funds. True, several insurance companies introduced pooled funds for equities, fixed-interest securities, and property, giving the trustees the right to determine the split between the funds. Other companies operate only one mixed fund covering all three classifications, where the split of money clearly is in the hands of the investment manager. I feel that there has been a swing away from the first type of pooled funds on the basis that complete investment management involves the decision of the split being taken by the investment manager and not by the trustees. The individual pooled funds are likely to remain in existence, however, for those trustees who desire to limit their investments to one or perhaps two types.

THE ACTUARY AS A PROFESSIONAL

1. What is a profession?
2. Do actuaries constitute a true profession?
3. To what public or publics does the actuary have a professional responsibility?
4. Are there questions that the actuary can ask himself to test whether he is performing in a professional manner as
 - a) A company employee?
 - b) A company officer?
 - c) A consultant?
 - d) A regulatory employee?
5. What are the impediments, if any, to performing at the highest professional level? How can these impediments best be overcome?
6. What can the profession do to enhance the sense of professionalism among actuaries, among our employers and clients, and among the beneficiaries affected by our actions?
7. What unique role, if any, is seen for our profession? What threats to our profession must we guard against?

CHAIRMAN WILLIAM A. HALVORSON: I would like to have each of the panelists give us a little bit of background on what his experience has been and what job he is now holding, so that we will know from what base his views originate. Barry, would you lead off and describe your current job and experience?

MR. CHARLES B. H. WATSON: I am the manager of the International Division of the Wyatt Company. Before this I spent four years as Executive Director of the Society of Actuaries. Before that I spent eight years with the Wyatt Company doing domestic employee benefit consulting, and before that I spent five years with the Canada Life Assurance Company.

MR. JOHN T. BIRKENSHAW: I spent several years with a Canadian life insurance company involved in both individual and group. I would have to say that I am somewhat of a generalist, in that I spent several years in the electronic computer area, as a group actuary in life and health, as an investment vice-president, and as a superintendent of agencies in the individual side of the house. Currently I am the president of a small Canadian stock company. The mere fact that 99 per cent of the stock is controlled by a United States parent gives it a position slightly different from that of a normal stock company, you might say.

MR. JOHN C. ANGLE: My experience has always been as a company employee. My first employer was a small stock life insurance company which was one of the early acquisitions of the American General group. I then joined a mutual accident and health company, which soon became a life and accident and health company, and served with that company for twenty years, including a stint as a director of the company. I am now senior vice-president and chief actuary of the Guardian Life in New York City. I am also a director of a life insurance subsidiary of the Guardian Life.

MR. GEOFFREY HEYWOOD:* I started with a life assurance company when I left school, which is rather a long time ago now, and qualified as an actuary with that company. Then there was a bit of a gap of six years when I was serving in Her Majesty's army—His Majesty's army as it then was—which I think is very good training for anybody who is going to pursue any career at all, be it actuarial or otherwise. At the end of the war, in 1946, I joined my present firm, Duncan C. Fraser and Company, as a junior partner, and I have been a partner in that firm since that time.

CHAIRMAN HALVORSON: To get right into the discussion of the actuary as a professional, let me ask each of the panelists to tell me, in one word, are we a profession? Barry?

MR. WATSON: Of course.

MR. BIRKENSHAW: Yes.

MR. ANGLE: Yes.

MR. HEYWOOD: Yes.

CHAIRMAN HALVORSON: The moderator's opinion is "maybe." Now that we have heard that our panelists think we are a profession, we have to ask each of them why? I think that when we do that, we may find that some of them do not agree as to whether or not we are a profession. Who wants to lead off?

MR. BIRKENSHAW: I think that in order to say whether or not we are a profession, we have to define two things—first, "profession," and second, "actuary." If you look up the dictionary definition of "profes-

* Mr. Heywood, not a member of the Society, is a Fellow and past president of the Institute of Actuaries. He is a partner in the firm Duncan C. Fraser and Company.

sion," it is stated very simply to be a vocation or calling, especially one that involves some branch of learning or science, as in the traditional ones of divinity, law, and medicine. In addition, however, I would like to describe a professional as one who has competency in a particular body of knowledge and is skilled in its application. A professional, in whatever calling, must maintain continuous updating in a particular body of knowledge. In his application of the knowledge and skills involved, he must apply this knowledge honestly with full disclosure and accept accountability and responsibility for the advice and service he has personally rendered. A profession must have guides to professional conduct and the mechanism by which the profession can enforce those guides. As to what an actuary is, I do not feel that I can improve on Jack Bragg's statement that an actuary is a professional who is expert at the design, financing, and operation of insurance plans of all kinds and of annuity and welfare plans. I think that actuaries are being asked to expand their mathematical and technical training in probability and risk theory, and this can eventually move them into areas beyond that of just straight life insurance. With this definition of a profession and of an actuary, I have no question in my mind that the actuaries are 100 per cent professional.

CHAIRMAN HALVORSON: Barry, do you agree with the description of a profession as given to us by Jack Birkenshaw?

MR. WATSON: No, I don't think I really do. It seems to me that the question of whether or not you are a professional has little to do with whether you have a certain degree of expertise or knowledge within a certain field. Being a professional is simply being a person who renders advice to someone, and traditionally that someone can be described as your client. I recognize that this seems to limit a professional to being a consultant—at least within the sphere of the actuarial profession. I would argue that an actuary who is employed by a life insurance company is really a person who is in the situation of having one client, and that client is his employer. He is a professional to the extent that he is rendering advice to that client rather than merely carrying out service activities—making calculations, using commutation columns, or what have you. He is a professional to the extent that he gives advice. If you look at all the other professions, they really primarily involve an adviser/client relationship. Therefore, I find that the thrust of Jack's definition of a professional lies too much in the nature of the specialized knowledge acquired rather than in the nature of the actuary's relationship to his client.

CHAIRMAN HALVORSON: Should the definition be based on the relationship, or are there other elements that should be directly involved? John, do you consider your job at Guardian Life to be based on an adviser/client relationship, with you as a professional?

MR. ANGLE: I am strongly conscious of my identification with the Guardian Life and concerned about the face that it shows to the public, how it treats its policyowners, and how well it does. If we were to attempt to agree on one definition of a professional and then from that definition deduce a code of conduct, I think that we would probably spend our entire discussion on that one subject. I shall not burden you with my discussion of Mr. Bragg's paper (which will appear in the *Transactions*), in which I argue that for many years actuaries considered the term "professional" to denote their status as scientists. The fact is that they pursued a science that had a rigorous basis, and, because the discipline had been carried past the amateur stage, they considered themselves professionals. I think that different characteristics apply to one who is a part of company employment. One of the interesting things about the people you deal with is that a company actuary is going to be effective only if people are aware of the skills that he has, and they are not apt to be, unless he makes himself available and actually makes it one of his duties to search them out. So the definitions, I think, will never get past point 1.

CHAIRMAN HALVORSON: Let me ask Geoff whether a client relationship is necessary in order for a person to be a professional.

MR. HEYWOOD: I think this is absolutely fundamental, but before commenting further, I would just like to say that everybody these days tries to call himself a professional. Just before I came over here, I thought it was time I got my house painted, and a chap came around to have a look at it, quoted me a certain figure, and then said, "Well, I have a client two roads away, if you'd like to go and see the job there." He was trying to be professional, but of course he is not professional at all in the sense we are using this afternoon—he is 100 per cent commercial. I think it has been said that one of the fundamentals of a profession is that its members should belong to a body which has a system of training or examinations which gives them a particular and special skill not possessed by the public at large, and I agree that this is the starting point of any professional activity. But there is a second requirement which has not yet been mentioned, at least not specifically, and that is that the body to which

its members belong should have a code of professional conduct with which they must comply, and, if they depart or overstep the line in respect of that professional conduct, sanctions can be taken against them by the professional body. So, in my view, there are these two requirements—one that gives the membership of a body specialized training, and a second that is a code of conduct given by that body, with which all its members have to comply.

CHAIRMAN HALVORSON: Let me interrupt you for a minute, Geoff. You mentioned the painter who said to you, "Look at the job I did down the street." And of course you could walk down and see the job he did and to a certain extent judge whether it was a good job, a proper job, but you probably could not tell whether it was an excellent job or not, because you are not proficient enough in looking at painting to determine that. It seems to me that one of the characteristics of a public profession is that the public generally is not in a position to judge whether the professional is a really qualified or top-notch professional by merely asking him or by picking his name out of the phone book. Would you say that the actuarial profession, in order to be called a profession, must be able to communicate to its clients that a member is a highly qualified professional because it has professional standards?

MR. HEYWOOD: Yes, I think that is absolutely right. In the field of commercialism, if your house is being painted or you are buying a television set, you have some idea of what is likely to be good. But in the case of an actuary—somebody giving actuarial advice—the public generally has no way of measuring and deciding whether Actuary A is better than Actuary B. It is for this reason that one has a code of conduct which puts one's client's interests above everything else, so that the professional acts 100 per cent in that client's interests, as opposed to trying, as in the commercial world, to sell a product in which he has a personal interest.

MR. ANGLE: Bill, you said "top-notch" actuary. Should the profession rate its members as those who are top-notch, and so on? Oliver Wendell Holmes once classified all lawyers as being butcher knives, razors, or stings. Would you have the same sort of rating for actuaries?

CHAIRMAN HALVORSON: I do not think so. But I would think that if you are to be considered a profession by the public, the public has to know that you exist. Could our lack of visibility to the public prevent us from being considered a profession?

MR. WATSON: Obviously it is impossible for an average member of the public to judge whether the work that an actuary has done is really competent or not. I think that is true not only because we tend to be a somewhat undervisible profession but also because the type of work we do is (a) rather arcane and (b) extremely long-lived in the sense that when errors occur they do not come back to haunt us for a few years—quite often after many years. Therefore, I think that, although Geoff was quite correct to refer to the importance of a code of conduct, the code of conduct is effective only in that it regulates our relationships with other members of our profession and with the public at large. It says nothing at all concerning whether we are competent or not. One could be fully professional and yet be absolutely incapable of doing anything. Therefore, I think you have to go beyond the matter of a code of conduct and also have standards, if you wish, of good practice. I think that is another matter that we have to be concerned with.

MR. ANGLE: Those standards are going to end up as just platitudes, aren't they, Barry?

MR. WATSON: I don't think so, do you?

MR. BIRKENSHAW: I do not think that an actuary can subscribe to our Guides to Professional Conduct and offer advice in a situation in which he is incompetent. It says, if I may quote, "The member will bear in mind that the actuary acts as an expert when he gives actuarial advice, and he gives such advice only when he is qualified to do so." Moreover, I think that this is consistent with Geoffrey's thinking about what a profession is—that the actuarial body at least have mechanisms to police the situation when an actuary is, or is not, competent to provide advice.

MR. WATSON: The actuarial body may have the policing obligation, but I would argue that a person will be able to obey that prescription only if he himself recognizes that he is incompetent. One question is whether we have a good enough educational system and sufficient comprehension of the nature of the problems we deal with—and the proper techniques for dealing with them—so that actually we can determine whether a person is competent. I do not think they are platitudes at all, John.

CHAIRMAN HALVORSON: Maybe they are not platitudes, but do I sense that John would say that we are introducing some rigidity and some "cookbook" actuarial practice that he would object to when we try to define standards of good practice?

MR. ANGLE: That is true. My concern, of course, is that we may build in a rigidity. I think that most of us in company work have spent our professional lives trying to change whatever the established practice was and move on to something which we felt better met current conditions. The history of these companies over the last thirty years has been one of continual evolution. If we go back to the study notes, or the details of the problems already solved, they may help us to a certain degree. However, I think that in many of the important problems we face, at least in company work, the best we can do is to reason by analogy from much simpler methods and then think very hard and work very closely with allied professions to find solutions. Much of company work is teamwork rather than solo practice.

CHAIRMAN HALVORSON: What would you substitute for principles and practices, as enunciated by the profession, which say, "Here is the way the profession generally approaches this kind of problem," and which set forth the considerations that usually go into the solving of a particular problem faced by the actuary? What guidelines would you have then?

MR. ANGLE: Well, as an example, how specific can you be on the guidelines for a premium rate? There is still an enormous amount of judgment as to the period of time over which the investment is recovered, the rate of return that the firm wants, and the allocation of expenses, among other things. Clearly, knowledgeable actuaries differ, as you can see by jotting down the premium rates charged by a dozen companies for almost any coverage. I would be concerned only if the companies all started to agree on the same figure.

MR. HEYWOOD: Yes, it is true that there is no precise answer to any actuarial problem. There is a range of values, a range of premium rates, and so on. I think it is fairly axiomatic that, when one has completed the examinations of the Society or the Institute of Actuaries or whatever it may be, one is technically qualified in a theoretical sense. Of course this does not mean that the newly qualified actuary should, as it were, be let loose on the world to advise a life assurance company or, if he is in public practice, to advise clients. What happens is that the newly qualified actuary in the life office probably spends four or five, even seven or eight, years in the actuarial department seeing what goes on in practice before he actually comes to the point of taking the responsibility himself. Similarly, in consulting practice the newly qualified actuary works in the office and gains experience, and it is some considerable time before he takes on himself the individual responsibility. I think this is a matter for

the individual. If at any point of time he is asked to act and he feels that he has not had the necessary experience, then he should decline to act. One of the Institute of Actuaries' rules of professional conduct is that, if you are confronted with a problem and you do not feel that you have the necessary practical experience, then you should either cooperate with an actuary who has such experience or you should decline to act. It is a matter for the individual.

CHAIRMAN HALVORSON: Getting back to the rigidity, however, we do have prescribed standards; they of course relate to the actuary who is working within a specific set of circumstances within a particular economy or social economy. As we have heard the past few days, actuaries will now be playing a much greater role in the area of investments and the analysis of investment risk. We have no standards at this point to guide the actuary in this investment risk area. Barry, is this going to pose a problem? How are we going to keep the standards and the principles and practices up to date with the needs of the actuary as a professional?

MR. WATSON: I believe it is a misapprehension to think that a definition of accepted standards of practice leads necessarily to a rigidity in the results reached. Such standards refer more to the elements you have to take into consideration in coming to conclusions with respect to actuarial problems. John, for example, mentioned the choice of the level of premium rates. Obviously, you do not want everyone to come up with exactly the same premium rate, but what you do want to do is to make certain that all the actuaries who are pricing policies take into consideration all those elements that should go into the setting of a premium rate and then exercise their own actuarial judgment, based upon the experience of their own company. You mentioned pension plans and the new obligations levied upon pension actuaries in the United States by the 1974 Employee Retirement Income Security Act. I believe that we will be faced increasingly with a situation where we have to make some hard decisions on those elements of future experience that we take into consideration. Apparently we will be asked to come up with our best single estimate of costs, whatever that means. In this circumstance I think the actuary in the field is going to need some guidance. He is also going to need some support from his professional body in dealing with this question. That is not a very satisfactory answer, but I think it points to the need for standards of practice as well as codes of conduct.

CHAIRMAN HALVORSON: Jack, what do you think is involved in the setting of price for a life insurance policy? Does the profession have

an obligation, or does the actuary have a particular obligation, and to whom, in setting the price for the product that his company is selling?

MR. BIRKENSHAW: I do not find that question quite as difficult as it seems to be. The actuary, by my definition, has been trained as a professional. There are guides to professional conduct. I really do not care what environment the actuary is working in; if he is not applying the principles and practices combined with the practical experience that he has gained, he is not offering the appropriate advice to his client. Actuaries, on the basis of their individual experience—be it in government or in a life insurance company or as a consultant—should be able to come to the same conclusions without any qualms. There is, as Geoffrey said, a great deal of latitude in the decisions that are reached, and for this reason different sets of premium rates can be significantly different. But within the environment of a particular company, which the actuary must take into account, there are all kinds of ways of looking at these various sets of values, and I think that the actuary must bring it all together.

If I may, I would like to return to an earlier point in our discussion. Geoffrey made a comment about the definition of the profession and of a professional, and he said there were two criteria: one was the need for a body of specialized knowledge, and the other one was the need for guides to professional conduct. A third one that had been brought up earlier was the question of, shall we say, the doctor/patient or the actuary/client relationship, and I am just wondering whether he would expand his remarks a bit further. As a company actuary, I feel that I am operating in a professional manner, and I do not really have any qualms of conscience in that regard. I am not sure whether Geoffrey regards company actuaries as being in a position where they can operate as professionals, as opposed to operating in a professional manner.

MR. HEYWOOD: I think company actuaries can act as professionals. There are a number of principles springing from the code of conduct, and the first principle of all is that the actuary or any other professional adviser must identify his client. Now, in the case of the actuary employed by a life assurance company, his client is his employer, and there is undoubtedly a professional relationship between the employed actuary and his client, which is the employer. Again, in the case of the consulting actuary, he must first of all identify his client, be it the employer, the pension plan, the trustees, or anyone else. Although the relationship for the employed actuary is slightly different from that for the consultant,

this principle of establishing an actuary/client relationship is fundamental to professionalism and is applicable both to the employed actuary and to the actuary in practice.

CHAIRMAN HALVORSON: You say that the client relationship is fundamental to being a professional. But is it a sufficient requirement that the actuary serve his client if, as you have defined it, the client is the person who is paying his fee? Is that a sufficient requirement for a professional, or must he also serve a public different from the client himself? What is the public that we serve as a professional?

MR. HEYWOOD: They (the public) are, as it were, once removed in the case of the employed actuary. A second point is that the actuary's relationship with his principal, which is his client, is a direct relationship. There must be no interposition of another body between the actuary and the client, and, of course, it is a confidential relationship. Third, the advice which the actuary gives to the client must be absolutely impartial and completely independent. He must not be biased in any way by any outside influences. I think that if you take those three factors, they establish, under my second requirement, of a code of conduct, what a professional man is. Within that definition, as I said at the beginning, the actuary is a professional in my view if he is (1) employed, in which case his client is his employer, or (2) in private practice, in which case he may have a whole host of clients. There are slight differences from that point onward, but perhaps we could leave it there for the moment.

CHAIRMAN HALVORSON: Would anybody like to comment on this point, or shall we get to the question that we have been wrestling with in this country, that is, who is this public to whom the actuary has a responsibility as stated in our Guides to Professional Conduct? John, who would you say is our public?

MR. ANGLE: The insurance company's public is its customers. In the case of the Guardian Life, it would be those who have purchased life insurance or group insurance from the company. I think that, to a certain degree within a life insurance company, the employees are a public and the agency force is a public. We are a regulated industry, and a fairly closely regulated industry at that, and to that extent we are accountable for our actions. That probably has a different meaning from "responsible," and I am sure that we are also accountable to the courts and to the legislators, who are increasingly telling us how to run our business.

CHAIRMAN HALVORSON: You answered that question by saying that the responsibility to the policyholders is the company's responsibility and not the actuary's responsibility, except to the extent that he is employed by that company. Is that what you mean?

MR. ANGLE: I am in no event making a case for low standards. I think quite the opposite. The actuary must live with his own conscience, and, as has been pointed out, no one can really judge the results of his work except as time progresses. Moreover, there is no visiting committee from the Society of Actuaries dropping by to look over the actuary's worksheets or to eavesdrop in the conversations he has with his president to see whether or not he is candid about his assumptions and makes clear the possible risks of decision. So I think that the standards and the professional goals of the individual actuary have to be at the highest conceivable level.

CHAIRMAN HALVORSON: Under the Employee Retirement Income Security Act, we appear to be placed in a position where the actuary has a direct responsibility to the beneficiaries. Have you worked on that with various committees of the Academy of Actuaries, Barry?

MR. WATSON: Not as yet. That is a relatively recent development. I would here like to serve perhaps as the devil's advocate. I would like to argue that it is entirely possible to make too much of this question of responsibility to a great variety of publics. If you believe that the actuary is a professional and that his basic responsibility, his basic reason for being, lies in the adviser/client relationship, then I think you must be very wary of saying that the actuary has responsibilities to all sorts of other people. Take a look at the example that John gave, of an actuary working for an insurance company. To the extent that he is an actuary, his major obligation is to give advice to the insurer, who is his employer. Granted, the insurance company may have service to the public, as its reason for being, but the actuary functions directly in that area only insofar as he is functioning as an employee rather than as an adviser. This is not to say that you should have low standards of behavior or act counter to public policy, but you meet these requirements as a citizen rather than as a professional adviser. Your client comes to you with a problem, and your major obligation is to help the client—whoever that is—and, as Geoffrey says, you have to identify your client. You have to help the client solve that problem consistent with certain over-all standards of decency. You have a range within which you can choose an answer, but, given that range, you have to choose an answer. That is why

I have some very serious difficulties with what the new act in the United States is saying. It may be helping us a bit in the sense that it says we really should consider ourselves as employees of the beneficiaries. To my mind one question is, who then gives advice to the other people who are involved?

CHAIRMAN HALVORSON: It seems to me that the legislators clearly are defining our responsibilities in a much broader sense, that is, directly to the participant or the beneficiary. This is being forced on us; are we willing to accept it? Or do we want to hide behind the statement that was made here that we have a responsibility only to our client, the one who is paying our bills?

MR. WATSON: I do not believe we are hiding behind the statement. I think that obviously we have to act decently, humanly, in accordance with law and morality. But beyond that, except insofar as we are given specific identifiable obligations—and I grant you the new law is doing that—we are offering advice to solve problems.

MR. BIRKENSHAW: I will take a slightly more naïve position. I feel that the public of the actuary really is an unlimited public. I think that every one of us, for example, hopes to retire some day and probably live on a pension of some form or another. There was a front-page article in a Toronto newspaper about two weeks ago about the unease of the public concerning the fact that some corporations are going bankrupt because of pension obligations and that employees are not going to receive their pensions. I do not know any group of people who are better qualified than actuaries to put their reputations or their professional qualifications on the line in the area of pension plans of this kind. Admittedly, you have to be working for a client, but with the advent of consumerism in the past few years and the moral issues that go along with that, I think that all professions become much more public-oriented. I think it is the responsibility of the actuarial profession to bear in mind the unlimited public, particularly when you think of the long-term implications of what we are offering advice on and the financial implications for the country at large.

CHAIRMAN HALVORSON: That is a very good answer. I think I would like to hear from Mr. Heywood with respect to the actuary's role. He is being thrust more and more into a position of being an aid to the regulator of insurance companies, as I understand it, in the United Kingdom. Would you enlarge on this?

MR. HEYWOOD: Yes. I think I agree with most of what has been said, but I do emphasize again that the actuary's prime responsibility is to his client. However, having said that, I would add that he must not do anything which is contrary to the public interest; I think I like the words Barry Watson used here, and I go along fully with what he said. Before coming to the United Kingdom position, I would just like to comment on another aspect which you were touching on a moment ago. The situation in the United Kingdom is quite different from that here in the States, and I would not dare say to this audience which was right and which was wrong. All I am saying is that they are different. In the case of the United Kingdom the employed actuary, if he is concerned with a pension product of his employer, an assurance company, advises his employer on the funding rate, the general structure of the plan, and so on. But at that stage the assurance company moves from the field of professionalism into the field of commercialism, because the assurance company is never going to say, "Well, go and get a plan from somebody else"—they are in business to sell their plan. One of the rules of the Institute of Actuaries is that the employed actuary, in advising the assurance company, his employer, must make clear that, in passing that advice on to the ultimate consumer, the assurance company is acting in its own right, on the basis of advice given to it. It is not retailing the advice of the actuary in passing it on to the ultimate consumer. In other words, there must be no interposition of a third party. Now I think the position here in the States is rather different, in that the employed actuary will advise his employer, the client, and that will be passed on as actuarial advice—independent actuarial advice, which it clearly is not, because the assurance company is commercial and is selling its own particular plan.

CHAIRMAN HALVORSON: I want to pursue this one point just a little further. The guides which are adopted by the Academy, the Conference, and the Society state that the individual member will act in a manner to uphold the dignity of the profession and to fulfill its responsibility to the public. Now they do not say *his* responsibility to the public, they say *its* responsibility to the public, and I am sure that what is meant is the *profession's* responsibility to the public. If you read the history written by Mr. Mitchell, it appears that the actuaries in the late 1800's and early 1900's did not have principles and practices with respect to life insurance level reserve systems. When many of the abuses that led to the downfall of some of the insurance companies became very obvious and were scandalous, the profession itself, a group of actuaries, went to work with the New York department to develop the Armstrong legislation—to establish

standards by which the insurance companies would set up necessary reserves. They acted as a profession because they were called upon as a profession by the legislators. It appears that this is happening in this country again. The National Association of Insurance Commissioners seems to be very interested in seeing whether our profession can help the commissioners and the regulators to provide a clear-cut statement on the adequacy of life reserves. As you know, we do not have a statement of adequacy right now; we have minimum valuation standards. This would impose additional responsibilities on the profession, and, as individual professionals, we would still have our clients to work with, but the new standards probably would have to be established by the profession at large. But this is what was interesting to me about what was going on in the United Kingdom, and I wonder whether you would describe that briefly now for us.

MR. HEYWOOD: Yes. The situation in the life assurance world in the United Kingdom has changed and is changing very considerably at the present time. In the past, the actuary has had complete freedom to fix his own premium rates, to carry out the actuarial valuation by whatever method and on whatever assumptions he chose to adopt. But in doing this he had to state quite clearly what those assumptions were, what the method of valuation was, mortality rates, interest rates, expense allowances, and so on. He had complete freedom, and it was entirely his responsibility. This is now changing because of the Insurance Companies Amendment Act of 1973, which was passed last year. Next year minimum valuation standards probably will be prescribed, and a life office must pass that minimum. This is something which is quite new to us, and the basis on which the minimum will be calculated will be set out in regulations. At the present moment the regulations are not being published. The act is an enabling act which gives the minister power to make regulations on valuations of liabilities, assets, and so on. It is quite clear that we shall have minimum valuation standards to meet in the not-too-distant future.

Now the other aspect of the 1973 Amendment Act which is of interest to the actuarial profession is that there has to be a named actuary. Every life office conducting long-term business must appoint an actuary and must inform the Department of Trade of the name of that actuary. If there is a change—if the actuary retires or is sacked or chooses to resign because he is not satisfied with what is going on in the company—then the insurance company must inform the Department of Trade of this change and must appoint another actuary. This, I think, strengthens

very considerably the position of the actuarial profession, because, if one is not satisfied or not happy about what is going on in a particular company, then one resigns. This is reported to the Department of Trade, and presumably the actuary who does resign will have to state his reasons, and any other actuary appointed in his place will have to be fully apprised of all the facts before he accepts such an appointment. This is quite new, but this is the kind of thing which is happening at the present time under the new act.

CHAIRMAN HALVORSON: Thank you very much. John, would you like to be appointed the actuary for the Guardian to be a watchdog for the regulator in New York? Or are you?

MR. ANGLE: First, let me ask a question of Geoffrey. Can you be an appointed actuary for more than one company? That is, could you, Geoffrey Heywood, be the appointed actuary for twelve companies?

MR. HEYWOOD: In the main, where there are employed actuaries there will be one named actuary for each company, but in the field of consulting practice, because there are not sufficient consulting actuaries to go around, it is not impossible that an actuary, a partner in a firm, may be the statutory actuary of more than one company.

MR. ANGLE: I asked this because I think that an actuary always has a major problem in obtaining sufficient information about company affairs to feel sure that he knows what is happening. I think that consultants for very small companies often find themselves sitting down at the companies and agreeing that they will design rates that are adequate for, let us say, a 60 per cent commission, only to discover a year later that the company is paying 95 per cent plus a trip to Bermuda. I wonder whether someone who drops in once a month just to say, "how are you, have there been any changes?" and then goes off again can have a sufficient feel for the aims of the company or how it is being conducted to really render such an opinion; or are we limiting the opinion there to the mere statement, "Yes, the company has posted legal reserves in accordance with the applicable section of the state law"?

CHAIRMAN HALVORSON: You have asked a good question, and I would like to hear Mr. Heywood's answer to that, as he is a consultant to many smaller and medium-sized companies.

MR. HEYWOOD: I think it is a very good question, indeed. There is no doubt that the consulting actuary who has a life assurance company among his clients, which is one of perhaps a hundred clients, cannot be as closely identified with that company as somebody who is in full-time employment there. Nevertheless, he has the statutory duties to perform, which consist of making an actuarial valuation at the year end. He must satisfy himself fully that the data which are given to him are correct; he must satisfy himself by accepting the auditor's certificate that the assets are physically present; and he must carry out the valuation on the assumptions which he considers appropriate.

CHAIRMAN HALVORSON: Let me turn that around to another point of view. If the chairman of the board of an insurance company happened to be an actuary also, would he be able to be the appointed actuary as far as the Department of Trade is concerned?

MR. HEYWOOD: I am not sure that I know the answer to that question, because, as I have indicated, this legislation is very new. However, before the new legislation it was possible for the actuary to be a member of the board of directors, and there are a number of companies at home where the actuary of the company is also a member of the board. I would think, although I am not certain of this, that under the new rules the actuary may possibly be a member of the board; this may be permitted. Whether he may be permitted to be chairman I am not sure.

CHAIRMAN HALVORSON: Even if he were a member of the board, I could see that there might be a distinction between his being a board member who has the actuarial responsibility only and his being the 100 per cent stockholder and chairman of the board and the actuary of the company. Does he have sufficient independence?

MR. HEYWOOD: I am very glad you have asked that question, because this goes back to one of my old hobbyhorses, which is this: As we heard this morning, the actuarial profession is the best part of two hundred years old at home, and the Institute of Actuaries was formed in 1848. If we were going back to 1848 and—I know this is not practical at all—if we were starting with the knowledge we have now, I believe that the actuary should be completely independent and not employed. He should be in exactly the same situation as the auditor. It is quite inconceivable that an auditor in this country or at home should be an employee, that he should be a director, chairman, or anything else. This is not permitted.

He must be 100 per cent and completely independent. If we were going back that far, this is what I would like to see, except, of course, it is not practical in this day and age.

MR. BIRKENSHAW: I would like to ask, then, are we really saying that there is a bar to professional practice if an actuary holds a unique position in a life insurance company such as that of chairman? It seems to me that this is not necessarily so, if we do have guides to professional conduct. There are many large corporations that hire doctors or lawyers on a full-time basis, and in any instances that I have heard of, these men or women are still expected to act in a professional manner. I think that the corporations themselves respect the guides to professional conduct of those particular professionals, and I do not see why, because of the unique nature of the actuary in a life insurance company, this would not also hold true for the actuary.

MR. WATSON: But surely there are much greater impediments to functioning in a professional manner in that situation, Jack. You have one client, your employer, but if your client decides he no longer is satisfied with your services, you have more difficulty in carrying on your consulting, don't you?

MR. BIRKENSHAW: I think that is just a matter of degree. If you are going to worry about professionalism, the same thing could happen with the medical profession or the legal profession. I do not agree that an actuary cannot act as the chief officer of a life insurance company in the same way as a doctor who is running a medical clinic or a hospital. I do not see why an actuary cannot do that and still act professionally.

CHAIRMAN HALVORSON: Do you have an answer for that, Barry?

MR. WATSON: Yes. I never said that he could not serve as chief operating officer of a life insurance company. Obviously many do. At the same time, I think there comes a point where he has to decide whether he is functioning as an employee or as a professional, and it becomes much more difficult. There are some differences of degree that have eventually become those of quality.

CHAIRMAN HALVORSON: Let me suggest something and then get some further comments. The history of the actuarial profession as I have read it (thanks to Mr. Mitchell) is that Professor Charles Gill, identified as probably our first professional actuary—a mathematician who applied his great talents to life insurance problems—apparently had many run-ins with his management. I assume that many of these were of a fundamental nature. Apparently there always has been a sort of an adversary role expected of an actuary in a life insurance company. How can the chairman of the board get quality arguments from his actuary when he is the actuary?

MR. WATSON: I would like to give a sort of illustration of that. I recall vividly a very practical example that occurred when I was a young actuary. This is when I was back in Canada, back when life insurance companies were first beginning to come out with variable annuities. There were two large American insurance companies who operated in Canada, and all of the actuaries for one of those companies, oddly enough, to a man believed that variable annuities were the greatest thing since sliced bread. And all the actuaries of the other large company to a man rendered it as their professional opinion that variable annuities were the spawn of the devil. It always struck me that it must have been wonderful for each of those insurance companies to have been the recipient of professional advice that was absolutely unanimous within that company. I think this example illustrates a serious problem that is very easy to gloss over. I can recall going round to various meetings of actuarial clubs, and discussions of professional conduct would come up and somehow professional conduct problems were always the problems of the consultant; they were never the problems of the insurance company actuary. Yet I can recall back when I worked for an insurance company that very often you were told to do something and you did it. You tended to view yourself as an employee.

CHAIRMAN HALVORSON: Apparently this is not new. Again quoting from our history, Mr. Fackler was quoted as saying, "Not infrequently the actuary's position was rendered doubly unpleasant because his company had adopted some rule or method which his own judgment condemned but which loyalty required him to defend as far as practicable." Now, does this still occur today? That is a rhetorical question. I do not expect anybody to have to answer that.

MR. WATSON: Well, actually I think that question is better asked of persons who are at a somewhat lower level than either John or Jack. I think that they are more in a position where they make the policy. Perhaps we should ask your employees, John.

CHAIRMAN HALVORSON: John, you are the chief actuary of the company, and I would like to put you on the spot. Are you the chief actuary, or are you one of the officers of the company?

MR. ANGLE: I think it depends on the question being asked, of course.

CHAIRMAN HALVORSON: The serious part of this question would be: Is there a distinction, and can we make a professional distinction between the responsibility we have to the policyholders or stockholders and our role as the professional actuarial adviser to our client. In your case, John, you have not bought the idea that there has to be a client relationship in order to call yourself a professional.

MR. ANGLE: I think that one needs professional integrity and needs to speak out to be effective in any management group, whether he be actuary, lawyer, or investment man. I think one of our great difficulties here today is that we are putting into a single pot all sorts of decisions that we are calling actuarial. We begin by dwelling on those which are equivalent to matters of financial condition, which in the United States are so closely prescribed by statute that the degree of latitude is quite small. Moving on to more complicated questions involving, let us say, distribution of surplus, in which there can be much judgment involved, often as pure actuarial technique, or matters which involve the priorities for the company, or even matters which involve untested and new products, I think that in these areas it has been very difficult. People will size up the future differently. I cannot help remembering four or five years ago when Paul Barnhart presented his paper on return of premium benefits at an annual meeting that was presided over by Jack Moorhead. Before the paper was presented, the actuary and a consultant representing a company very active in the field but taking a contrary view appealed that the paper not be presented. Mr. Moorhead ruled that we were a scientific body and that the paper would be presented, and there was a long debate. Interestingly enough, the company in question is now in insolvency, perhaps because of the benefit that they were writing. But I cannot see that the Society was in a position to take sides at that point.

CHAIRMAN HALVORSON: As a learned society and as a research organization, we have an obligation to encourage development of better insight, do we not, into the problems that we are trying to solve—better mathematical applications, better understanding of the factors that go into determining whether a benefit can be offered on a sound basis. By that I mean, do we not have a responsibility to those policyholders for whom our companies are promising to pay certain benefits or, in the case of our pension plans, do we not have an obligation to make sure that the companies can perform on the promises that they make?

MR. WATSON: I still think you are putting it a bit backward. An insurance company can continue to survive only insofar as it does render service to the public, only insofar as the products it sells not only provide a decent return to the company if it is a stock company but also represent value for money to the public. Therefore, it is in the insurance company's best interests that the advice we give is, in the long run, beneficial to the policyholders. That is part of the problem that the insurer is asking us to solve. It seems to me that when we go beyond this, to say that we have some vague, amorphous over-all responsibility to the public which lies far beyond and at a far more general level than this, we are getting beyond the level that we should be thinking about. I recall vividly Dwight Bartlett's letter in the December, 1973, issue of *The Actuary*, in which he protested that somehow he as the actuary for an insurance company was being asked to be the conscience of mankind on a level which was far higher than anyone else's. He was objecting to the burden of being put upon, and I think Dwight was quite correct in objecting to that burden. I think that we do have certainly the responsibility of citizenship, of humanity to the public; we have the responsibility to function as decent public spirited citizens, moral and within the law (they are not always the same thing). But I think that to go beyond that to some sort of generalized burden as a conscience for humanity is too much.

MR. BIRKENSHAW: I really do not think that what Barry has said is anything more than a reiteration of just exactly what I was saying earlier—that the public at large is our public, and if you are going to act in a professional manner either as a consultant or as a company officer or company actuary, you really have to offer the advice in the long run that is going to be the best for the beneficiaries, which is exactly what the Society of Actuaries president said yesterday was our public, and I agree with him.

CHAIRMAN HALVORSON: He said it yesterday, but will it be said tomorrow? I think I heard it last year, or the year before, or the year before that—that the public was the ultimate beneficiary of our insurance plans—and I certainly did not get the feeling that that is the way things had developed in the United Kingdom. I think that we are being forced in this country to take on that posture whether we like it or not. I can appreciate Dwight Bartlett's uncomfortable feeling that he is being made to take on a greater moral responsibility than he thinks he should have, but as a profession we probably have no choice.

MR. WATSON: Yes, as I recall it—and I don't want to put words into Dwight's mouth (or I guess, in this case, ink into Dwight's pen)—his complaint was that, from the tenor of some remarks that were going around in the profession, he was being asked to establish himself as the ombudsman within his life insurance company, so that he should protest anything that the life company was doing if there was any remote possibility that this was counter to consumer interest. He felt that this was just too much, that the actuary was not an ombudsman for the public within the insurance company.

CHAIRMAN HALVORSON: The sense of professionalism that we are attempting to define is very difficult, as you can see. We are emerging as a profession, and we do not have a hard and fast prescription so that we can say "Here's what it is to be a professional." We talk in terms of integrity, honesty, competence, but we have not said to whom we owe this responsibility. We seem to be relying on an adviser/client relationship. Let me ask one further question of the panel and then open this up for questions from the floor. In order to create a greater sense of professionalism among company actuaries, what would you think of establishing a corporate actuarial position in the company whose obligations are clear cut—as nearly clear cut as you can define them—as being actuarial rather than so-called management. Would this work in a company such as yours, John, or do you have such a structure now?

MR. ANGLE: Many companies have a corporate actuarial spot. As I understand it, a corporate actuary is concerned with financial statements and projections; an actuary is concerned about pricing.

CHAIRMAN HALVORSON: Maybe we could call him something other than a corporate actuary—*the* actuary of the company.

MR. ANGLE: I think it is becoming difficult to generalize because many larger companies now have a number of companies within a company. The Guardian Life is organized along product lines, so that there is an actuary identified with each product line. I think it is a successful venture in that the actuary has some sense of what is going on; he knows the underwriting people, he sees claims being paid, he keeps track of expenses and is also very close to the marketplace—all of which makes him more effective than if he were *the* actuary for all lines.

CHAIRMAN HALVORSON: We may all agree with you that the actuary who is operating within an operating division gets a better feel and understanding of that particular line's requirement and, therefore, does a better job as a professional actuary. But is he then responsible to another actuary (if not *the* actuary for the company)?

MR. ANGLE: Yes.

MR. BIRKENSHAW: I think what you are trying to do, if I interpret correctly, is to see whether you can isolate the actuary in his professional capacity from the pressures of the business world. I do not think you can, nor do I think you should. I feel that the company actuary must understand his company as a whole and interpret his company's goals and objectives in a professional manner in the area in which he is professionally trained. I do not think you can isolate the actuary into a corporate actuary or anything else.

MR. ANGLE: I want to ask you a question, Bill. I assume that, as a consulting actuary, you sign the annual statements of the companies that you do business for.

CHAIRMAN HALVORSON: No, I do not sign the annual statements of the companies I do business for.

MR. ANGLE: Why not?

CHAIRMAN HALVORSON: Because the statements say, "We, the officers of this company declare that this statement is a true statement of assets and liabilities." I am a consulting actuary working for those companies, but I did not have anything to do with selecting the controller or the investment man, or the vice-president in charge of operations or administration, or even the president. I do not consider myself to be their partner, and so I do not see how I can sign the annual statement in its present form.

MR. ANGLE: Is the company actuary more professional?

CHAIRMAN HALVORSON: The company actuary is apparently a partner with the other officers in the running of his business. My professional goal would be served by having a more clear-cut statement of what I, as a consulting actuary, am signing and am doing for the company. Then I would have no reluctance to sign that which I am doing, and I feel that, if I were able to have such a certificate in the annual statement, I would be prepared to sign it as a consulting actuary. If we had such a certificate, then I would think that your corporate actuary or *the* actuary might also be able to sign that particular form of certificate rather than signing on as one of the partnership of officers.

MR. ANGLE: Looking ahead ten or fifteen years, I think there is a development that we may see. I would not be surprised to see in some company an actuary who reported independently to the board of directors. The corporate directors in the United States are now finding themselves in court, finding themselves being held accountable for the operation of the corporation they have graced with their presence, and boards are starting to become very much concerned about the caliber of information reaching them and whether all information coming through the chief executive office is selective information.

MR. HEYWOOD: Could I just say, though, that the situation that you would like to see here, if I understand correctly, is the situation which we have in the United Kingdom at the present time. In other words, the statement of the valuation of liabilities must be signed by the actuary. That is the actuary's job. And he must also append the certificate to the company's accounts to say that in his belief the liabilities as set out in the corporate schedules do not exceed the value of the assets as set out in the balance sheet, but he does not necessarily sign the balance sheet—certainly not in his capacity as actuary.

MR. EDWARD FRIEND: I am a consulting actuary in Washington, D.C. I am a bit concerned here about this word "independence" that we heard in some of our discussions yesterday. We have been talking about independence, yesterday and again today. Geoff Heywood pointed out that if he were back in 1848 he would be trying to promote the concept of the independent actuary working apart from the company. But things have started out differently, and we find ourselves without this concept among employees of our insurance companies and others. I think that this concept of independence has been overdone; I think that it comes

from the accounting profession. Bill Halvorson told me a few minutes ago that the Securities and Exchange Commission would not accept an actuary's statement about an insurance company as it does an accountant's statement, because the accountant is independent and, therefore, the insurance company actuary's statement intended for the accountant is not accepted and the accountant must stand alone. This may be because the SEC is staffed by accountants. Its principles and practices emerge from the accounting profession, where independence has been promoted as an essential ingredient for qualification and signature. I think that the key here is professionalism, disclosure, and, most importantly, accountability. If we can, as a profession, find ourselves in a position of making certifications, signing them, being accountable, suable if we must, standing up and being counted in this way, then this may be the answer and independence really not an essential ingredient.

CHAIRMAN HALVORSON: I think we all agree with that statement. The question we have, that the panel is trying to work on, is, how do we achieve this definition of professionalism that we say is the better alternative to independence?

MR. ROBIN B. LECKIE: I am a company actuary. This is probably the most difficult, complex subject we can deal with, and I always wind up a bit confused, although the panel has helped to clear up many of the issues. In my daily capacity, I think I am both an employee and a professional. My client is a commercial enterprise, and I would look upon that client as being somewhat different from the public at large. The client is protected by legislative regulations. The company is a commercial enterprise, and it is in business to assume risks. I may be acting as, or I believe I am acting as, an employee with my client when the client may be thinking I am acting as a professional, and that is one of the very difficult problems of the relationship between the two of us. At the same time, I would think as a company actuary, although I have a responsibility to the public at large, that I have to see through this client to my other clients, if I may, that is, to the public at large. With regard to written actuarial principles, I might cite two cases as examples. In setting non-participating premium rates, where the risk is assumed by the company and the public is protected by legislation, I believe that you do not need written actuarial principles. However, in the establishment of dividend projections, you are dealing with the public and the public is relying upon those dividend projections. There, perhaps, I would say you do need written actuarial principles.

MR. HEYWOOD: I think the point you have made is much more important in the field of pension plans. Consider the ABC Company, Ltd., which is about to establish a pension plan and comes to your employer or your office and asks you to set up a plan, and the office in due turn comes to you as actuary and asks for your advice. I say quite clearly that your responsibility is to your client employer and not further. If you were to act solely in the interest of ABC, Ltd., you would set up this pension plan and you might give that company completely different advice. You might tell them to go to another assurance company, or to set up a self-funded program. This you cannot do if you are acting as the employee of the assurance company, your client.

MR. WATSON: I would like to make a brief comment on that, too. I think the question whether you owe a certain degree of responsibility to the public beyond your employer depends very much on the nature of the reliance that is being put on your work as a professional actuary. If you are giving advice to your employer which is essentially internal, then I think you need not worry at all, or the extent of the worry is quite minimal. If, on the other hand, you make some dividend projections, then you have to be quite concerned. Incidentally, I did think that perhaps you reversed the emphasis in the two examples you gave, because, after all, if nonparticipating premium rates are inadequate, the company goes out of business and the insured loses everything. On the other hand, if the dividends are wrong, he still has the basic policy, his coverage. All he has lost is the dividends.

MR. LECKIE: No, I would disagree there. The legislative authorities are helping to protect the client as far as the nonparticipating premiums are concerned, and naturally the actuary has a very great professional responsibility to ensure that his premiums are adequate. The premiums could be more than adequate. In the case of dividend projections, however, the public tends to place a reliance upon them primarily because agents are involved, and they misunderstand what is intended there. One merely needs to read the Society's report on the philosophy of dividends¹ to appreciate the different practices the various companies are using. I doubt very much whether even I understand this, and most certainly the public does not understand.

¹ Society of Actuaries, Committee on Cost Comparison Methods and Related Issues (Special), *Philosophies in The Computation and Dissemination of Dividend Illustrations* (Chicago: Society of Actuaries, 1974).

CHAIRMAN HALVORSON: Do you think we need a set of practices and principles on dividends that the profession should set forth?

MR. LECKIE: Yes, and I think we need it for pension funding.

MR. HEYWOOD: Could I come back to my question, on which no comment has been made? To put it even more pointedly, suppose that ABC, Ltd., is setting up a pension plan and employs, let us say, a quarter of a million people. They come to your company as an insurer, and naturally, because they are commercial, those in the management of your company want the business. I do not blame them. That's fine—that's what they're there for. What do you do as actuary? You must advise your own employer/client, but you are not really advising ABC, Ltd. Do you agree?

MR. JOSEPH W. MORAN: I am a company actuary with New York Life, and I am in the group business, which focuses a little more on what I wanted to ask. The comment about the corporate actuary visualizes him primarily as a scorekeeper and a detached observer. Now most of the actuaries in the Society are people who are engaged not only in keeping the score of the game but also in playing it. The question I am posing is, if an actuary is charged with the responsibility of being the scorekeeper, are there limits on the extent to which he is allowed to participate in playing the game—for example, in the group business, the extent to which he is allowed to participate in sales calls?

CHAIRMAN HALVORSON: I guess my answer on that would be that under the purest circumstances he would not be able to "play the game."

MR. ANGLE: Two comments—maybe both of them will be wide of the mark. One of them relates to this question of advertising. The actuary should not advertise. He is supposed to obtain clients by word of mouth, I guess. Yet, interestingly enough, the chartered life underwriters who work for life insurance companies have as one of their rules of ethics searching out people who are in need of insurance and selling it to them, which would include pension plans and group plans. The second comment (completely unrelated) is on a question we are still wrestling with at Guardian Life. We had a review of our internal controls by an accounting firm. One of the partners wrote the report for the auditing committee of the board. He was concerned that the group actuaries might be so closely identified with the results of the profit center that, if profits were

slipping, they might not post adequate claim reserves—that there needed to be someone else in the company verifying that they in fact had adequate health claim reserves. We had no particular framework for doing that, so I simply said that for the time being I would regard this as a personal obligation, but it crops up from the auditor's point of view, and it is the sort of thing we will undoubtedly be hearing more of.

MR. WATSON: It seems to me that, if the business—the product you are selling in the group department—has been designed properly by the actuary, and he has taken a properly professional role in designing it—then there really is not any problem. Maybe I am being naïve for a change. If you have a proper product, then, provided that you behave once again in a reasonably professional manner—not making false statements and not making inflated statements and merely presenting your product with the virtues thereof—it does not seem to me that there is anything wrong in that.

CHAIRMAN HALVORSON: But would he hand out his card that says he is group actuary when he made the sales call? There is a question of whether he is using his actuarial credentials in trying to engineer a sale that could not be made unless those credentials were there.

MR. ANGLE: Perhaps it is a complicated health and welfare plan and the client wants his advice, or he is there because a salesman is afraid to tell the client that the rate is going up 20 per cent. Often the group actuary will find a client, the prospect, represented by a consulting actuary; in those cases there will be an adversary relationship with actuaries on both sides of the table, and I think in those cases we all know who we are.

MR. MORAN: It is a question, to my mind, of the extent to which the actuary would be obligated to present, from other than an advocacy position, a limited perspective, as distinct from a balanced pros and cons presentation that might be expected of a professional consulting actuary.

CHAIRMAN HALVORSON: Let me attempt to answer it another way. We as professional actuaries, whether we are in consulting practices or in companies, often feel very involved with a specific issue—perhaps even a political issue. When we write letters to legislators, we do it as individuals rather than as actuaries. This is the way we have attempted to answer this question. The same thing happens with certified public accountants.

If they write a letter in defense of a specific item or to promote a specific item, they may not use their C.P.A. designation at the bottom of their letters when they are engaged in something that really has nothing to do with their competence as C.P.A.'s. Perhaps this is what we have to do in many more instances if we want to preserve our image as a professional actuary.

MR. WATSON: Opinion S-2 on our Guides to Professional Conduct has a fair amount to say about when you should use your title.

MR. ARTHUR J. STEEDS:* I am a visitor from England. Would the panel like to tell me whether any questions of professional conduct arise from employment of actuaries by a professional partnership such as chartered accountants?

MR. HEYWOOD: I presume that Arthur Steeds is talking about the situation in the United States, where I think many actuaries are now joining the larger firms of accountants, and in the circumstances, then, it seems to me that the position is very much that of the employed actuary in the United Kingdom. The actuary in the partnership of accountants would not be a partner in his own right. Therefore, any actuarial advice he gives is to the partnership, and they must pass on such information, making it quite clear that it is given to them and not to the ultimate client. This has not as yet happened in the United Kingdom. I do not think any of the firms of accountants in the United Kingdom employ actuaries at the present time. However, this does lead off to the other interesting question of mixed partnerships. Can you have a partnership of accountants, actuaries, lawyers, and so on, so that they possess between them all the various techniques and expertise which one requires in the field of pensions and can give the client, as it were, a package? There are problems here because in the United Kingdom solicitors (attorneys) and accountants are not permitted to go into partnership with anybody outside their own professions, and this is the situation with actuaries also at the present time in the United Kingdom. If, in due course, mixed partnerships are permitted, I think it is essential that the people one goes into partnership with should have the same sort of high professional standards that we have in the actuarial profession.

* Mr. Steeds, not a member of the Society, is a Fellow and past president of the Institute of Actuaries.

CHAIRMAN HALVORSON: To get to the question as I interpret it, as it applies in this country, we are concerned with the professionalism of the actuary and not with his employment relationship. Our professional guidelines state that the actuary must be identified to the publics that may be affected by his findings. We were unable to get the actuary identified in the auditor's scope paragraph or in his opinion paragraph with respect to generally accepted accounting principles for stock life insurance companies in this country. The accounts would not identify the actuary, and the users of accounting reports could not identify the actuary on whom they were relying. It seems to me that our profession failed in that regard. We tried to insist that the actuary be identified either in the scope paragraph or in a footnote to a financial statement put out by a certified public accounting firm. If the individual actuary were identified, along with his relationship with the company being audited or his relationship with the auditing firm or with a consulting actuarial firm, then it would all be disclosed, and the public would have the right to pursue with that actuary whether there was anything in his findings that was not brought forth, or at least to question him on what he had stated and set forth. We are trying to go the route of emphasizing professionalism rather than independence. We failed in that one instance, I feel, by not identifying clearly who the actuary is. Professionalism, if it is going to be the alternative to independence, certainly will require that the identity of the individual professional actuary be apparent to the public affected by his actions.

MR. KENNETH R. MACGREGOR (Mutual Life of Canada): The actuary has been recognized in legislation in Canada, federal legislation, since 1927. In that year minimum standards of policy valuation were prescribed, and ever since 1927 the actuary has been required to certify in the annual statement that the reserves are not less than those required by the act and that, in addition, in his opinion, the reserves make good and sufficient provision for the unmatured obligations of the company. That certificate, of course, is simply part of the annual statement and is not addressed specifically to the board or to the policyholders or shareholders or any party. As a matter of practice some companies, including our own for quite some years, in their annual statements to policyholders have been publishing the certificates of the actuaries and giving them equal prominence with the certificates of the auditors. It has already been suggested in Canada that the actuary should be appointed by the board specifically, and a system not unlike that which Mr. Heywood has described in the United Kingdom may well evolve in Canada before

very long. That is to say, where the actuary had been named by the board, if his appointment were terminated for whatever reason, his resignation or dismissal would have to be reported to the regulatory authorities and the new appointee likewise reported. These are suggestions that have been made. I think it likely that more and more companies, if not practically all companies, will begin to give the actuary's certificate equal prominence with that of the auditor in their annual financial statements to the policyholders and shareholders. It does seem to me that, even with all this talk about accreditation and professionalism, unless the actuary has an independent position and is given the status that the auditors presently enjoy, the auditors are going to take over, if they have not to a significant extent already.

MR. WILBUR M. BOLTON: I am an employee of a stock company. I have a couple of observations. Occasionally, a company management may decide to take a course of action which an actuary as an employee or as a consultant might regard as either unsound or unethical. In either case, as an extreme measure, resignations of protest may be the only course. I have not been involved personally in such a situation, but I am aware of a situation on the West Coast where an actuary did resign shortly after the close of a calendar year because he felt his management was doing some manipulation in the financial statement and that ethically and in good conscience he could not sign it. This could apply either to manipulation of financial statements or to the introduction of any product which in the actuary's judgment could have above-average potential for deceptive use in sales situations.

This brings us back to this client/adviser relationship. It seems to me that you have an obligation to keep your client out of trouble in the same sense that a lawyer in the client's best interests should keep him away from situations in which the client is likely to end up eventually in jail. The relationship is similar to that in which a doctor might advise the client as to how to restore health in a situation where he is ill or how to maintain good health to the best extent practicable.

Further, in the areas either of advertising or of explaining seldom-used or unusual contracts—group products, perhaps—the actuary has an obligation to see that the agent, the sales force, or the advertising people are aware of the product's limitations. This may sound a bit odd, but salesmen are used to the idea that most life policies have change provisions. Sometimes, on single premium annuities, which are sold infrequently, you may have to tell the agent, "Look, once the guy buys this thing he is stuck with it; he can't change his mind after he's had his annuity

for half-a-dozen years and been collecting payments." So we do try to train people who are dealing with the field force to at least make product limitations known to the field man who is dealing with the client. I have heard much discussion about professionalism dealing with the question of whether people know that the actuary is the source of the information, but not much touching on the ethical questions which I think may be involved here.

CHAIRMAN HALVORSON: Is there some forum that could be developed that would give the actuary someplace to go to ask whether such a particular action by his company is proper and, as a professional, what his reaction to that should be? Should we have such a forum?

MR. ANGLE: I think, as a practical matter, an actuary may easily seek out some of his peers to talk things over. I have on at least two occasions had younger members of the profession in my office who were extremely dubious about what they were being asked to do.

CHAIRMAN HALVORSON: But should the profession itself provide some opportunity for the person to get counsel in this regard?

MR. WATSON: I am a little doubtful, Bill, as to how your suggestion could be implemented. I do tend to agree with John that a sort of informal process of approaching one's peers is perhaps the best. I cannot imagine that an Ann Landers type of column in *The Actuary* would be very helpful, but I do want to commend Mr. Bolton. I think the points that he raised were very good. Certainly, if you view your employer as being your client, then you do have an obligation to keep your client out of trouble, and I think that both the examples brought up are very good ones of that type.

MR. BIRKENSHAW: At the risk of putting in a plug, I would have to say that surely this is an excellent use for consultants. I think that no actuary should be so proud that he will not seek independent advice as a client of a consultant.

MR. HEYWOOD: Could I make a comment on that? The Memorandum on Professional Conduct of the Institute of Actuaries does indicate that, if a member finds himself in the circumstances which have been outlined, then, if he would like the advice of a senior actuary in regard to any matter of behavior, he is invited to communicate with the honorary secretaries, and this, I am sure, will be arranged.

MR. HARLOW B. STALEY: I have two related questions. For the stock company actuary, my question is this: Does one of the publics to whom he has responsibility include the investors and potential investors of the company? Related to that, Is he acting professionally if he overstates a liability?

MR. BIRKENSHAW: In answer to the first question, there is no question that he does have an obligation to the shareholders with respect to offering advice as to what he expects the return to be. I do not see any conflicts there. I think that the actuary who deliberately overstates anything out of context is acting unprofessionally, but again I think that you have to take the whole company or the whole environment into account when you are offering that type of advice. I think that if you are offering advice deliberately to form a fraudulent statement, that is singularly unprofessional. I think that in light of all the various contingencies the actuary takes into account, he has to offer advice accordingly.

CHAIRMAN HALVORSON: Does the actuary, though, feel as much of an obligation to the shareholder as he does, say, to the policyholders? We find that we have difficulty with trying to go beyond the client itself, and I guess going from the board of directors to the stockholders should not be much of a step.

MR. ANGLE: I think that the board really represents the stockholders, if I may go back to my comment about boards ultimately wanting independent actuarial advice. The Equity Funding case certainly is going to indicate that an obligation to shareholders exists, because the suits being brought there are by shareholders rather than policyholders.

MR. JOHN C. MAYNARD: I would like to refer to some of the content of the questions we have been discussing. It seems to me that the discussion at some points has been made more difficult because we have not identified some of the aspects as clearly as perhaps we might. I am thinking first, of the professional responsibility that is in the picture; second, of the functional duty of the person who is involved; and, third, of the organizational relationships that are concerned. Some of the questions we have been discussing have been a mixture of these, and I think it is helpful to keep them separate.

For instance, no one would disagree with the obvious point that there is a large professional actuarial responsibility to be undertaken by the actuary of a life company. Coming back to the question of whether or

not he can also be a chairman of the board, it seems to me that the answer, obviously, is no, because, if he were, there would be an organizational conflict of interest. For one thing, the supreme authority for hiring and firing in a company is the chairman; if the actuary were incompetent, how could he fire himself? I think that answers that question.

Coming again to the other actuarial responsibilities in a company, Barry has referred to the argument that took place on this in *The Actuary*, with Dwight Bartlett saying that he did not think he could be the conscience of all mankind. But the argument went on in *The Actuary* (and I remind Barry of this), with Jack Moorhead as the very outspoken advocate of the other side, and he was supported by two or three others. I am not the one who is going to try to paraphrase Jack Moorhead's ideas, but I point out that the argument was very active, and it seems to me that you could look at it this way: Dwight quite naturally feels he does not want to be the conscience for mankind, and this could be true in varying degrees, depending on his position in the company. If he were a person with or without actuarial training who found himself in a sales position, that would be very different from being a corporate actuarial officer. It depends on where you are in the company, what responsibility you have, and what action it is possible to take.

Nevertheless, somewhere in that company there are other actuarial responsibilities, and I think Robin Leckie was drawing attention to them. How does the company decide that it is going to make illustrations of dividends? It is no answer to say that it is not this or that person's responsibility. The company ought to organize itself so that the job is dealt with carefully, and, it seems to me, by an actuary, because the actuary is the only person who can see so many aspects of that important problem. I do not think we can say (for the reasons I have mentioned) that certain people do not feel it is their responsibility, therefore it does not exist.

Coming back to the very first question in this discussion—that of professional responsibility—I shall not offer my own comments. Rather, I shall mention comments made by Mr. Clifford Graese, who represented the accountants at the panel discussion on professional conduct held earlier in this meeting. After the discussion was over, I asked him a question: "If you were trying to apply this question of professional responsibility to actuaries, what advice would you give them?" He came up with two suggestions. He referred to the question of the actuary and private pensions and emphasized that there is a large public responsibility to be exercised in this area. Whether actuaries like it or not, there are many people in private plans relying on someone to use a great deal of

forward-looking judgment. Whether anyone says so or not, they must be looking to the actuary, who is the trained professional in this field. The actuary must think about his responsibility in any discussions that are taking place. He may feel the main point at issue is that he is representing an employer; nevertheless other people may be relying on the result of those discussions, and their reliance may not be apparent immediately. It may come up five or ten years later, if that pension plan does not work out well. So his first suggestion to actuaries was to think about this.

Second, and again concerning the same question, Mr. Graese advised us to think about forms of certificates that would make that public responsibility clear. These forms of certificates must be understandable to a layman, so that a person without much education can read the actuary's certificate on a pension plan and feel confident that the pension plan is sound. So I throw out these two ideas for further consideration.

CHAIRMAN HALVORSON: Personally, I do not see how we can do anything but what he suggests, either in the pension field or in the life or health insurance area. Does the panel want to respond to this very good suggestion?

MR. HEYWOOD: Yes. I would like to make a comment on this, in that the situation in the United Kingdom is, as I tried to explain earlier, completely different from what Jock Maynard has in mind. Again, it comes back to the identification of the actuary's client, which in the case of an assurance company is the assurance company. Be it a pension plan or an illustration of future bonuses (dividends) or whatever, it is put out to the public by the assurance company as a commercial operation. The actuary advises the assurance company, but it is not his advice which is passed on as actuarial advice. It is the company passing on something which is commercial. I think you can test this by saying that if, in the event that something went seriously wrong with what the company put out and somebody were to be sued, it would not be the actuary—it would be the company.

MR. BIRKENSHAW: I think that in this country the advent of consumerism is such that you really have to agree with Jock about the way in which we must operate—that you must have the final consumer in mind when you are offering advice, regardless of the client. A tremendous number of people in this country rely upon the actuaries as professionals, and if, a year from now or five years from now, actuaries appear to have acted in an unprofessional manner in their original advice, it will be the client groups that say the actuaries failed to act professionally.

MR. WATSON: I think that what Jock says is quite true, but still I would be inclined to view it with a little more limitation than perhaps Mr. Graese had in mind. It would be highly desirable that there be a certificate which could be used for disclosure not only to the employer (as is done typically by a consulting actuary today in giving what amounts to a certificate to the employer) but also to the participants. However, remembering that really we are talking about the distant future—and remembering also that even under the new law in the United States there is a considerable degree of flexibility still allowed in terms of the period over which the liabilities are funded, even over what funding method is used—I think that the actuary still has a responsibility to give advice to the employer within a range of permissible alternatives. Once that advice has been given and once some advice has been taken, then the major problem is disclosure. The thing that I fear about the consumer movement, and the desire to disclose everything and make everything extremely clear for the participants in a pension plan, is that, in trying to protect the participants in the pension plan, you may bankrupt the employer who is funding the plan and therefore everyone loses in the long run. There are many responsibilities lying in both directions in this situation.

MR. ANGLE: I want to make a comment here that I think needs to be made and that is a major challenge in every area we are in. We need better communications. I would start with some of the pension reports. To give an instance of what I mean, my wife, as a school board member, received a full actuarial report on the pension plan for the school system; there was then a private meeting of all school board members to which I was asked to come to explain the report, because the report could not be read by a layman—and these were educated laymen, some of them attorneys—they simply did not understand the jargon and the technical terms.

CHAIRMAN HALVORSON: You would include communications, then, as one of the necessary skills for the actuary if he is to be an effective professional?

MR. ANGLE: Yes. Perhaps the sort of report that Jock Maynard is talking about puts the actuary on the line and makes him more sensitive to the responsibility he has, but I do not think it is going to do anything as far as the customer is concerned.

MR. WATSON: What you are saying is that we need to have reports that are clearer than the usual letters from attorneys or accountants.

MR. ANGLE: Absolutely. Hasn't this been the root of many of the problems involving professional conduct—a failure really to communicate? The employee who is having trouble with what his boss wants to do may not really have explained the implications to his boss in a way that his boss could understand.

MR. NICHOLAS BAUER: Just two or three random thoughts. First of all, bringing the discussion back to the definition of a professional, I thought that I would add two or three ideas which I do not think were mentioned previously and which I feel are highly important in defining what a profession and a professional are. First of all, a unique body of knowledge was mentioned, but no mention was made of the importance of the professional's obligation to continually update his knowledge. As the world around him evolves, as his knowledge and the knowledge of other professionals evolve, as research is done, he has a duty to keep himself updated. For example, if I were to practice what I learned in order to answer the questions in the Fellowship examinations, I think I no longer would have my job.

The second aspect is one of discipline. I think a profession has an obligation to discipline itself, aside from the obligation of each member individually with his own conscience; that is, the profession has a collective obligation to be vigilant as to the activities of its individual members and to take action where action seems to be indicated. I think this obligation springs from the fact (and this is the third point about professions that I think was not mentioned) that a profession has delegated to it by the public, by society, by governments, certain privileges that are reserved to that profession. For example, no one may give medical advice except a medical doctor who is a member of that profession, and similarly, for legal advice. In the case of actuaries, to some extent, this has not been formally recognized, although in the case of Canada, at least, it is a fact insofar as signing government statements is concerned. Insofar as the responsibility of the actuary and his professionalism are concerned, I found myself in a fortuitous position concerning the Bartlett-Moorhead dialogue, in that I agreed with everybody. On the one hand, I do not want, nor do I feel that I am able, to be the conscience of mankind. On the other hand, the standards that Mr. Bartlett proposed, and, I think, to a large extent those that Barry Watson proposed, leave me very much up in the air because I do not know at which point my professional responsibility stops or starts or how far I ought to go. Therefore, I suggest that the Society's president, Edward A. Lew, has proposed a much better guideline, namely, that the professional actuary's respon-

sibility is to the ultimate beneficiaries of the products on which he advises. I think in this regard that it is highly necessary to separate the actuarial advice that an actuary gives from the commercial advice that he gives. In giving commercial advice, his opinion is one of many; but in offering actuarial advice, because of the special body of knowledge to which he is privy, he places himself in a unique position.

The third point I wanted to raise relates directly to the certificate of the actuary in Canadian statements. In studying financial reports, the Canadian Institute of Actuaries made the following recommendations: first, that the auditor's certificate be unqualified, because this is what the general public is used to, but that the actuary's certificate be made a part of the financial statement (the statement of a life company is not complete unless both the auditor's and the actuary's certificate are part of it), and, second, that the statement wording "good and sufficient," which is now required in the Canadian annual statement, be changed to "appropriate and sufficient," which, if you think about it, is a rather onerous burden to put on an actuary.

Finally, one last comment concerning the actuary's involvement in the selling of pension plans and where his responsibility lies. I think his responsibility is twofold. First, since he designed them, it is his responsibility to ensure that his own company's pension products are sound. Second, it is his responsibility to disclose clearly to the client his professional relationship, to make it clear that his is an independent judgment concerning the relative merits of various products. Then I think he has satisfied his responsibility.

MR. FREDERICK P. SLOAT: This goes back to earlier comments about the identification of the actuary in the auditor's certificate. It is true that the battle was lost with the life insurance stock audit guide, but I have reason to feel that the war may not have been lost. I think I see some light at the end of the tunnel.

There is one other comment I want to make on a question that has come up on the professionalism of an insurance company actuary. Five or six years ago, as chairman of the Professional Conduct Committee, I was asked a question by an actuary of a small company that was introducing a new policy form. He had recommended a certain interest basis. The president had decided to accept the recommendation of the agency people to use a higher interest assumption which the actuary did not think was right. Should he resign? My reaction at the time, and I still think it is the same, is that if you gave the president your best judgment and that was your recommendation, and he, as the executive

head, decided to adopt the other basis, that was his privilege. If he wanted you to change your recommendation to what he wanted, that would be different. Then I think you might have to consider resigning.

MR. MACGREGOR: Does the panel see any significant difference between the responsibilities of the actuary as a professional and those of the auditor? The employer, if it is an insurance company, is the client, but in Canada many of the auditor's certificates are addressed not to the employer or the company by name but to the directors and, very frequently, to the policyholders if it is a mutual company. In what way is the position of the actuary as a professional different from that of the auditor? I think that at the present time the board of directors, the policyholders, and the shareholders are all seeking reassurance from the actuary just as they are from the auditor.

CHAIRMAN HALVORSON: I would say that ultimately we think our responsibility is to the board of directors, but it may be in an ultimate sense rather than in an operational sense. Does anybody else have an answer on that?

MR. WATSON: I think it depends very much on the particular type of advice rendered. If you are preparing a statement addressed to the policyholders, then I think you have a responsibility to them, but if the type of advice you are giving is of an internal nature, I think the question is different. The point is that an auditor never does other than stand outside and really measure the internal performance of the company. The actuary, to my mind, if he is an employed actuary, is at times contributing to that internal performance, and therefore, to this extent, his nature and functions have to be different from that of the auditor.

CHAIRMAN HALVORSON: But don't you feel that he has an ultimate responsibility to the board and, if he sees, as part of management, that things are not working out correctly, that he must call it to the attention of the board of directors, or is it sufficient only to notify the president of the company?

MR. BIRKENSHAW: We seem to be drawing a big distinction between a company actuary and a consultant. As I happen to represent a very small company, I can easily conceive of our asking a consulting actuary to come in and develop premium rates in our behalf. I cannot see that consulting actuary coming in to develop premium rates in a sort of

"blue skies" area. He must understand what we think our marketing force is, what markets we are operating in, what we think our expense rates are, or study the company at least to that full an extent. From that point of view I cannot really see that a consulting actuary is in a position any different from that of a company actuary. I fail to understand why we have to try to draw this line between consultants and company people in this regard.

MR. A. HENRY KUNKEMUELLER (American International): I have always been a company actuary. I think I go the other way. I think the company actuary is part of company management, and the entire company management has an obligation to balance the requirements of everybody connected with the company. That includes employees, beneficiaries, group policyholders, the general public, people who use the funds you generate, and others. The whole survival of any organization is the successful serving of the needs of everybody involved, and certainly, as a company actuary, I see a responsibility to all of these people. There may be matters of degree. The question of when you go to the entire board rather than just to the chairman may very well depend on how serious you feel the matter is. I also feel that you could hire a consultant and ask him to answer a specific question. Even there, however, if the consultant saw that the building was burning down, he would probably say that the building is burning down. I think that common sense and personal ethics are the basic requirements.

MR. WILLIAM A. DREHER: I am an employed consulting actuary, and I am mainly dependent on the corporation that employs me. To a lesser degree, I am dependent upon the clients who retain that corporation. I would like to speak in reply to Jock Maynard's comments. I think that the form in which we express our opinion is extremely important, and it ought to be responsive to the substance of the relationships we have with our fellow workers and with the clients we serve and the public beyond them. My own view is that our profession is making a serious mistake in focusing on the first person singular in our Guides to Professional Conduct and in discussions like this. It should be recognized with respect to the relationships of consulting firms and their clients that the firm is an integral and essential part of that whole relationship. The firms are hired. The firms are paid. The firms will be sued. The firms determine the compensation of the staff members, including shareholders and officers of those firms. My feeling is that we should involve the firms very deeply in accountability and responsibility. The expression of opinions by

the firms ought to include the firm name and the name of the actuary speaking on behalf of that firm, and until we cross that bridge we are dealing with an unreal world when we speculate on the questions we are addressing in this discussion.

CHAIRMAN HALVORSON: In conclusion, I would like to go back to the first question we asked and let each panelist repeat his original answer, or, if he wants to change it, do so. Are we a profession?

MR. HEYWOOD: Yes, undoubtedly, whether we are employed actuaries with life assurance companies or actuaries in private practice, we are professional.

MR. ANGLE: Yes, but I am not sure that we are one profession. We may—it is just possible—be several professions; also, I think our taproot to science is something we cannot forget, because there is a professionalism related to being a good scientist. I think that is what Nick Bauer had in mind—our obligations to our science, where we cannot give any quarter—we must pursue the truth at all costs.

MR. BIRKENSHAW: Yes, I feel that we are also recognized as professionals by our clients, our employers, and our fellow actuaries. I do have one comment, however: I think that, as actuaries, we are recognized almost universally as general practitioners, and I think that there are many specialties within the actuarial sphere and that in all these specialties we are professionals.

MR. WATSON: Yes, we are a profession, but we've got a few more gray hairs.

LIFE INSURANCE PRICE DISCLOSURE AND COST COMPARISON METHODS

A discussion of two reports by the Committee on Cost Comparison Matters and Related Issues (Special).

1. The results of applying various cost comparison formulas to the policy cost data on two hundred insurance companies, based on the data assembled by the NAIC and the United States Senate's Hart committee, and an analysis of those results.
2. The revised version of the Committee's preliminary report released May 10, 1974, reflecting input from Society members and additional research subsequent to that date.

CHAIRMAN BARTLEY L. MUNSON: Our presentation and discussion will be centered in the report *Analysis of Life Insurance Cost Comparison Index Methods*, produced by the Committee on Cost Comparison Methods and Related Issues (Special). Serving on the committee were those of us on the panel—Daphne Bartlett, Lee Kemper, Ian Rolland, and I—as well as Norm Peacor and Don Schuette.

This report, as its introduction indicates, is in response to a request by the National Association of Insurance Commissioners that the Society of Actuaries conduct specified research on the subject of life insurance cost comparison. The Board of Governors gave our committee a charge to do that research; the Executive Committee accepted the report and approved its release to the NAIC on October 9, 1974.

Our committee has also produced a report entitled *Philosophies in the Computation and Dissemination of Dividend Illustrations*. This was referred to in a different concurrent session at this meeting, where it was highlighted by Ian Rolland. We will make some reference to that report, to the extent that it relates directly to the subject of cost comparison.

For reasons which I will comment on again at the end of our session, you will notice in the report that we do not recommend the "one right way" to go with life insurance cost comparisons. However, there are many opinions and recommendations within the report, and there will be others within the comments of the panel; I would ask you to watch for them.

The report which we are discussing is fairly lengthy, at least in terms of the 202 pages it contains. We believe it will be more easily read because the text is double-spaced. More importantly, we have attempted to furnish data to support our conclusions and opinions; this, we hope, will

have the advantages of adding to the acceptance of those conclusions and opinions, of permitting the reader to adopt his own conclusions and opinions, and of drawing out appropriate questions from our professional brethren beyond those expressly addressed by this report. Finally, we believe the inclusion of a large amount of these data will enable you to analyze your own company's or client's policies and relate your findings to the pricing patterns within the industry.

MRS. DAPHNE D. BARTLETT: The first chapter of the report deals with the distinction between the subjects of cost comparison and disclosure. Essentially, the material in this chapter is the same as was included in our Committee's preliminary report. Very briefly, the points raised are as follows:

1. The problem under study breaks into two major parts: the search for a method of determining which policies are competitively priced in a general way, by use of a single index, and the search for a way of presenting the *details* of a specific policy to a prospective purchaser in a more detailed way. (Included in the former category is the search for a method which can be used clearly and without prejudice in the various cost-ranking publications.) We do not believe that any one single method exists which will combine successfully the requirements of these two separate and distinct categories.
2. The report does not deal at any great length with the subject of disclosure and the various methods which have been suggested for accomplishing it, other than to point out that consistency in the requirements of the various states is essential to avoid excessive costs of compliance.
3. The chapter points out that most of the cost comparison methods which have been suggested fall into two major categories. The first includes "event-specific" methods, which produce the true cost of a policy when a specific, if unlikely, set of circumstances occurs. An example of such a method is the twentieth-year interest-adjusted net cost. The second category of methods is what we call the "group average" methods, which never, other than accidentally, represent true costs. An example of a group average method is the company retention method.
4. We discuss the difficulty of determining the true cost of a life insurance policy at the time of issue, with relation to the event-specific group of methods, and show that the "true cost" of a policy will vary dramatically, depending on the actual events which occur. The point here is to show that "cost" is an inappropriate name for the result of any comparison index calculation.
5. The question of the use of average assumptions has resulted in considerable discussion over the past few years. The report points out that, at issue, the true cost *cannot* be determined under any circumstances or by any method. Therefore, the use of average assumptions may not necessarily be as shocking as some may think, if the use of such assumptions provides the prospective

purchaser with more valid information by which to determine whether or not a policy is competitively priced. However, we emphasize that any such method should use uniform assumptions from company to company rather than those of each individual company.

6. A section on the use of ratios of cost comparison indexes points out to readers of the report the degree of misinformation which can result from the use of such ratios.

The balance of the report does not discuss directly the question of detailed disclosure, although, as mentioned previously, it is different from the cost comparison index question. However, disclosure currently exists in many forms. The use of the ledger statement is common in the industry and was recommended by the NAIC Task Force on Life Insurance Cost Comparisons. Its use also appears to be somewhat less controversial, although the rules which eventually may be required for its use may cause expensive problems for the industry—the policyholder sign-off, for example. However, these problems are not specifically actuarial in nature. The controversial subject of comparison indexes *is* of actuarial concern, and so we have concentrated on that.

MR. IAN M. ROLLAND: The second chapter of our report is entitled "Guarantees and Cost Comparison Indexes." This relates very closely to the report our committee has compiled dealing with the question of dividend philosophies, so, as appropriate, I will make comments about that report also.

The problem of making comparisons between guaranteed cost policies and participating policies is one of the most difficult that the committee has encountered. There is a distinct possibility that there is insufficient similarity between participating and guaranteed cost policies or between two different participating policies to permit proper comparisons. We have all been particularly aware of the problems encountered in comparisons between participating and guaranteed cost policies, but we have not been aware of the potential difficulties involved in comparing two different participating policies.

In making these choices, the buyer is faced with three types of not necessarily independent decisions in regard to the degrees of guarantees in the policy. These three choices are as follows:

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 involves the choice between policies with high gross premiums and correspondingly high dividends and policies with low gross premiums and correspondingly low dividends.

3. The choice between the relative credibility of two illustrated dividend scales relating to the conservatism in the assumptions underlying the dividends. Thus the committee has concluded that there may be a lack of similarity between two participating policies as well as between a participating and a guaranteed cost policy.

The NAIC's model regulation, "Life Insurance Interest Adjusted Cost Comparison Index," states with regard to the use of that index that only similar plans of insurance should be compared. The "plan," as used in the regulation, is determined on the basis of the length of the premium-paying period and the amounts and patterns of the guaranteed death and endowment benefits. Occasionally, other characteristics are also included in the determination, such as the pattern of premiums. However, the extent to which the cash flows in a policy are guaranteed is usually not considered in the plan determination. The committee believes that, in interpreting the meaning of the "similar policies" provision in the regulation, one could conclude that guaranteed cost policies are "similar" to participating policies, in which case all comparisons of like plans are permitted, or, conversely, that similar policies must include those with identical dividend philosophies, in which case all comparisons would be prohibited. Either interpretation presents problems.

The committee's report entitled *Philosophies in the Computation and Dissemination of Dividend Illustrations* contains considerable information regarding the use of dividends in cost comparison illustrations. The questionnaire, which is the basis for the report, asked whether dividends should be included in cost comparisons between participating policies. One hundred and five out of 107 respondents answered in the affirmative. However, 21 of the 105 indicated that the comparison should be both inclusive and exclusive of the dividend element. The questionnaire then asked whether dividends should be included in a comparison between a participating and a guaranteed cost policy. All the mutual company respondents answered yes. Ninety per cent of the actuaries from stock companies writing participating business said yes, but only 40 per cent of the actuaries from stock companies not writing participating business said yes. In fact, in answering this question, most mutual company actuaries opposed presenting indexes both with and without dividends.

The committee has given a great deal of thought to how dividends should be included in cost comparison index calculations. The report under consideration today describes five methods which have been suggested for assisting a buyer in making a choice involving a policy with nonguaranteed elements. All these methods attempt to assist the buyer in determining the value of the nonguaranteed portion of a cost compari-

son index, but there are severe drawbacks with each. The report summarizes the problem as follows: "Much of the problem arises because dividends which will actually be paid will differ from those illustrated, to varying degrees, as future experience and management philosophies dictate. In making a purchase decision, the buyer must make some judgment with regard to both the presently considered policies and the future if he is to choose the policy with the most favorable costs. Giving the buyer fully adequate assistance with that difficult judgment may be an impossible task."

To understand better the role assumed by dividends in cost comparisons, the committee in its questionnaire on dividend philosophies asked, "To what extent are dividend scales on new business set to achieve a certain cost position?" and "Do you believe that dividend illustrations can be manipulated to produce favorable cost comparison results?" The responses made it evident that a given cost comparison position is very important in determining dividends, but not to the detriment of the company's general dividend philosophy. It is also apparent from the responses that actuaries are well aware that dividend illustrations can be manipulated to produce a favorable cost position, but the impression is strong that such practices are not in use.

MR. LEE H. KEMPER: The third chapter of our report offers a compilation of the various cost comparison index methods of which we were aware and which we deemed worthy of presenting. Many of these methods were described in 1970 in the *Report of the Joint Special Committee on Life Insurance Costs*. Methods introduced since the publication of that report have appeared in the *Transactions* of the Society of Actuaries, in the *Journal of Risk and Insurance*, or in other life insurance publications. Included in this chapter are some, if not all, of these methods. Most of the methods not included here can be found in the *Report of the Joint Special Committee on Life Insurance Costs*. These methods have been excluded from our study either because they represent what might be termed "disclosure" rather than "cost comparison" methods or because they are very similar to methods which we have included.

No judgment as to the value or usefulness of a particular method is implied by inclusion in this or subsequent chapters.

The chapter includes thirteen cost comparison index methods. The thirteen methods are as follows:

1. Traditional net cost
2. Traditional net payment
3. Interest-adjusted cost

4. Interest-adjusted payment
5. Interest-adjusted cost with mortality
6. Interest-adjusted payment with mortality
7. Standard mortality cost index
8. Linton yield
9. Company retention
10. Risk premium index
11. Ryall net cost
12. Present value of premiums
13. Equivalent level annual premiums

The first ten methods defined here were used in the statistical studies on the data bank. The last three were not studied specifically because they were a special case of another method (Ryall net cost method), data were not available over the full number of years to be studied (present value of premiums method), or the method was either invalid for comparison as originally defined or the same as another method as subsequently defined (equivalent level annual premium method).

Most of the methods included in this chapter were also included in the preliminary report of our committee, presented at the 1974 later regional meetings.

MR. JOHN M. BOERMEESTER: The policies of some companies provide a benefit which provides essentially for the return of the unearned gross premium on the date of death. This benefit is significant not only for the higher issue ages but also for the younger ages in the case of some limited premium payment plans. If no recognition of this benefit was given in the reports prepared by the committee, I submit that a serious omission was made, and I suggest that an appraisal of this matter should be documented by the committee, possibly as an addendum to their reports.

CHAIRMAN MUNSON: In the fourth chapter of the report we have attempted to summarize the various characteristics of and criteria for cost comparison index methods. We recognize that any effort to state criteria, let alone to summarize them in tabular form as we have done at the end of the chapter, is fraught with dangers. Our definitions can be misunderstood or overlooked. The reader can, erroneously but understandably, assume that some of this is more objective than it really is capable of being. Yet we felt we should attempt to push this as far as we could in order to focus attention on this important aspect and also to force us to see where we agree and disagree.

MRS. BARTLETT: This fourth chapter is very little changed from that appearing in the preliminary report. It is broken down into three sections: characteristics of cost comparison index methods, objective criteria for such methods, and subjective criteria. By an "objective" criterion, we mean one for which a determination of whether or not the method satisfies the criterion can be made from analysis of the formula, while a "subjective" criterion is one for which "satisfaction is in the eye of the beholder." The report contains two tables showing how each of the methods studied compares with respect to the various characteristics and the objective criteria. The application of such judgments to the subjective criteria is left to the reader.

The text and definition of the criteria are fairly self-explanatory. It is important, however, to use the tables in conjunction with the text and, most particularly, not to add up all the "Yes" answers on the tables to find out which method gets the best score. Obviously, some criteria have more weight than others.

The discussion on one of the objective criteria—"Can the method be used to fairly compare any one policy with any other?"—is possibly worthy of special mention, since the model regulation provides specifically that only similar policies shall be compared. This criterion is related closely to that of whether the method can be adapted for use in replacement situations where, frequently, nonsimilar policies are involved.

Another section of this chapter which personally I find quite interesting is the discussion on whether each index method is capable of being understood by either the agent or the consumer. It certainly is true that computers have created situations where many sales proposals themselves involve calculations which possibly neither the agent nor the consumer "understands" in more than a very general way. I am not sure whether the committee is in unanimous agreement on this point, but certainly I feel quite strongly that, in the cost comparison context, our interpretation of the word "understanding," particularly understanding on the part of the prospective purchaser, should relate only to the purpose and general meaning of any index and not to the mathematical basis for its calculation.

MR. GEORGE W. SHELLY: The very basis of the committee's report is the premise that disclosure and comparison "should be treated separately" and that neither the prospective purchaser nor the agent needs to understand fully the meaning of the comparison index. Precedents such as the Dow Jones index and the consumer price index are given as examples of indexes which are not fully understood by the consumer but are accepted by him. It should be pointed out that the consumer rarely,

if ever, makes purchases solely on the basis of either of these indexes. I rather doubt whether even the most active consumerist would advocate the blind purchase of one policy over another just because some mysterious index gave the lowest figure for that policy.

Just about all the methods studied by the committee differ from each other primarily in the degree of discount applied to future payments. Intuitively, I note that the relative comparisons resulting from each method's indexes probably could be reproduced closely by the interest-adjusted method, using an appropriate interest assumption (including variation by policy year).

The "high discount" methods, either by formula or by assumption, inevitably will favor insurance with "low going-in cost," such as term plans or modified premium permanent policies or nonparticipating policies. At the other end of the spectrum, "low discount" methods should favor high premium/high dividend/high cash value plans. To expect the consumer to sort this out is asking too much. Obtaining agreement among various interests in the industry as to an appropriate index (formula and assumptions) is also going to be a very large order.

The report implies in Table 3 that two of the methods, Linton yield and company retention, can be used to "fairly compare any one policy with another." I would raise the question as to whether this conclusion has been thoroughly verified. For example, I would find it difficult to compare any term policy with a permanent plan without taking the conversion situation into account. Further, unless these methods produce rankings completely independent of assumed interest, mortality, and lapse, they will surely distort comparisons of "high going-in cost" plans with "low going-in cost" plans.

MR. JOHN T. GILCHRIST: The chart of index methods for objective criteria (Table 3, p. 43) shows two methods, Linton yield and company retention, as methods which can be used to "fairly compare any one policy with another." Possibly this is too hasty a reading, but this seems to conflict with the introductory statement (p. 5) that "no cost comparison method can adequately take into account all the factors a buyer should consider in the purchase of a life insurance policy." Indeed, the chart indicates that one need search no further for a fair comparison index. Would the panel care to comment?

CHAIRMAN MUNSON: There are dangers in attempting to articulate and then summarize in tabular form the degree to which cost comparison

methods satisfy certain criteria. Nevertheless, as evidenced by this material's appearance in the committee's preliminary report last spring and its continuation here, we believe that the advantages of attempting to focus attention on specifics and force objectivity to the extent possible outweigh the dangers of the tabulation's being misunderstood or misused.

With regard to this specific question, we would point out that the criterion referred to is classified as an objective criterion, that is, a criterion against which a method's formula can be judged objectively, because of the standard adopted in the text of this chapter of the report, namely:

The tabular results shown for this criterion assume that, in order to satisfy the criterion, the cost comparison index method includes in its components all the cash flow characteristics which are likely to vary in a particular policy. Any method which fails to consider any one of these components (premiums, death benefits, cash values, and dividends, at all durations in the period covered) is assumed not to satisfy the criterion.

In addition, the cost comparison method must include all four cash flows in such a way as to yield a nonmisleading conclusion.

It was difficult to summarize this in a heading for a tabular form. We did feel that, in order to be useful for fairly comparing any one policy with another, a method should reflect the four cash-flow elements as we have defined them and should do so in a nonmisleading way. Personally, I would concede that such would seem to be a necessary condition; whether or not it is sufficient is not quite so clear.

Certainly at no time have we wished to suggest that all elements which a prospective purchaser could reasonably and properly consider for a purchase decision are or can be reflected in a cost comparison formula. The chart, however interpreted, is not intended to suggest that. In fact, as you correctly point out, earlier chapters of the report make very clear the need to consider other factors in the purchase decision. This chapter itself identifies several subjective criteria which, by their definition, cannot be measured objectively; the committee feels, however, that their lack of objectivity in no way detracts from their importance.

MR. BRUCE E. NICKERSON: In Table 3, on page 43, the fourth question asks whether the method can be used to *fairly* compare one policy with another. Is it in fact correct that this question could be restated as, "Does the method result in a 'yes' answer to questions 1(a) through 1(d) and 2, without producing anomalies?" If this restatement is not correct, what other criteria were used in the judgment of fairness?

CHAIRMAN MUNSON: It has been observed, and correctly so, that another way to state this criterion is: "Does the method result in a 'yes' answer to criteria 1(a) through 1(d) and 2 above, without producing anomalies?" In the development of this tabular summary, I believe the committee felt that it would be somewhat more useful to focus on the need to reflect the various cash-flow elements if one were to fairly compare virtually any policy with any other, and hence the wording—albeit imperfect—that we chose.

It is with some embarrassment that I wish to point out that the answers under the Linton yield method are incorrect for these two criteria, even when the criteria are correctly understood. The Linton yield method reflects the policy's cash value only at the ending duration of the time period over which the comparison is being made, and not the interim cash values. Thus the answer should be no for criteria 1(c) and 4.

Incidentally, the same error occurred on page 100 of the report, where the Linton yield method should have been included with the other three of our ten selected methods which relate to only the n th cash value.

MR. RICHARD B. WYMAN: I have four comments on the report prepared by the Society committee. The first questions two of the seven objective criteria listed, the second disputes one of the four subjective criteria, and the third and fourth relate to the participating versus guaranteed cost question.

The fourth objective criterion asks, "Can the cost comparison index be used to fairly compare any one policy with another?" The sixth asks, "Does the cost comparison index method reflect, in some way, any and all changes that might occur in the cash flows of a policy, either as to their amounts or incidence or both?" I agree that to satisfy the fourth criterion a cost comparison index method must include in its components all the cash-flow characteristics which are likely to vary in a particular policy. My disagreement arises when intermediate cash values are considered a cash-flow characteristic. With the exception of loan values, the benefits of which are not discussed in the report, intermediate cash values are of no concern to the insured who intends either to hold his policy until death or to surrender it at some specific duration—and indeed that is exactly what he will do. Admittedly, when assessing the *real* cost paid per thousand of actual life insurance protection, intermediate cash values (or asset shares) are of importance, but this is an actuarial concern, not the concern of a prospective insured. The only important monetary elements to an insured are the premiums he is paying, the dividends he expects to receive, the amount of benefit payable in the event of his

death, and the cash values available at specific policy durations. Some prospective insureds are thinking of keeping the coverage for only a few years, some for about ten or twenty years, many to age 65 or 70, and a good number forever. In the latter case, cash values are of no importance.

The fourth subjective criterion asks, "Is the cost comparison index method simple to calculate?" The discussion of this criterion ignores completely the availability of inexpensive pocket calculators. Within a few weeks of the life insurance industry's adopting a standard cost comparison method, there would be a preprogrammed calculator available with keys labeled "Premium," "Cash Value," "Dividend Accumulation," and so on. The agent would not have to understand the calculation steps at all. He would need only to input the correct numbers.

I question the conclusion reached in the report with respect to comparing cost indexes of otherwise comparable participating and guaranteed cost policies. I do not believe that the data presented justify the statement, "There appears to be some room for actual dividends to fall short of those illustrated and still enable participating business to compete reasonably well with guaranteed cost." For the first time in the report, forty-year comparisons are introduced in support of this statement. If only ten- and twenty-year indexes had been calculated, as was generally done elsewhere in this report, relative ranks of participating and guaranteed cost policies would be shown to be greatly affected by relatively modest reductions in dividend scales.

My experience has been that the choice of the interest rate is very important in comparing participating and guaranteed cost policies. For this reason I would have liked to see the participating-guaranteed cost comparisons made at 8 per cent (and perhaps also at 4 per cent) as well as at 6 per cent and, more important, participating and guaranteed cost policies ranked together (as the report later says is valid). Then the conclusion might not have been reached that changes of 1 or 2 per cent in interest rates do not significantly affect rankings.

MR. WILLIAM J. SCHNAER: I would like to comment on the necessity of including all cash values in an effective comparison of cost. Consider two policies, one with high early cash values and one without, with identical benefits in all other respects. Obviously, the premiums on the high early-cash-value policy should be higher. This policy would therefore have a higher cost index if only one isolated cash value (after the early period) is used. Yet each policy could very well be of equal "value" to a purchaser.

In my mind the danger is that, if only one cash value is considered, the

impression is given that the cash-value scale is taken into account in the index. As indicated by the example, it is not *fully* considered and may give erroneous results.

CHAIRMAN MUNSON: Prior to discussing the results of the statistical analyses we did on the pricing data from some two hundred companies, we would like to share a bit of information with you about the data bank that was compiled and, basically, the type of calculations we performed on it. This is covered in the fifth and sixth chapters of the report.

A considerable amount of data was collected by a questionnaire jointly sponsored by the United States Senate Antitrust and Monopoly Subcommittee and the NAIC. In fact, I was reminded of this yesterday when Dr. Moos referred to T. S. Eliot's question regarding something to the effect of "where did we lose the knowledge in this vast sea of data?" At times, that is the way the committee has felt during the past six or eight months. We have occasionally felt in danger of losing whatever knowledge we previously possessed as we floundered momentarily in a great sea of numerical data. However, I do believe it is possible to give a brief overview of the numerical base and the statistical studies done upon it.

The questionnaire was sent to approximately two hundred companies. It asked each company to submit information on its three largest-selling individual cash-value policies paid for in 1972, as measured by number of policies sold. For each of the three policies, the company was to give policy cost data to attained age 75 for male issue ages 25, 35, 45, and 55. Requested were the year-by-year death benefit, cash value, illustrated dividend (if any, and from the scale in effect July 1, 1973), and premiums per thousand for policy sizes of \$5,000, \$10,000, \$25,000, and \$100,000.

This great amount of input data was placed on computer magnetic tape by the Massachusetts Mutual Life Insurance Company, which served voluntarily at the direction of the Senate Antitrust and Monopoly Subcommittee as its computer facility. The accuracy of the input data was verified by each of the two-hundred-odd companies before the computer input tape was compiled in its final format.

A copy of the input tape was made available to the NAIC office, which in turn provided a copy to our Society of Actuaries committee in May, 1974, so that the requested research could be conducted.

Our studies dealt with only the ordinary business in the data bank, as opposed to the premium notice or debit ordinary business data also compiled. Each ordinary policy was classified into one of ten plan groups on the input tape. Because our studies had to be based on reasonably homogeneous data and also on data of adequate volume, we determined,

after a review of the data bank, that we should analyze the data for only three plan groups: whole life, life paid up at age 65, and limited payment life (which we later purged to strictly twenty-payment life).

For purposes of our analysis, we defined "cells" into which policies were categorized and on which our studies were performed. Cells were defined according to five criteria, as follows:

1. Type = Participating or guaranteed cost.
2. Plan = Whole life, life paid up at age 65, or twenty-payment life.
3. Age = Issue age 25, 35, 45, or 55.
4. Amount = Death benefit of \$5,000, \$10,000, \$25,000, or \$100,000.
5. Duration = Policy duration 1, 2, 5, 10, or 20, attained age 65, or attained age 75.

The fifth criterion, while different from the other four in that it is not a policy characteristic, was essential to our cell definition and our studies, for each of the cost comparison methods studied produced a different answer for each policy duration.

For each of the cells so defined, ten different cost comparison index methods were considered, and, for each of these methods, several different assumptions were employed, where applicable. The result was 41 method/assumption combinations studied for each cell. These 41 method/assumption combinations were applied to each policy within a given cell to produce 41 different index numbers for that policy. For a given method/assumption combination, a ranked list of policy indexes was produced, so that you might envision 41 ranked lists of indexes for each cell, each list being of equal length and containing anywhere from 22 to 162 index numbers, depending on the number of policies in the cell.

For each of these ranked lists of index numbers, the computer produced the mean value and the standard deviation; it also divided the range from the lowest to the highest index number into an arbitrary seven equal intervals. It calculated the percentage of the total number of policies in the ranked list which was found in any one of the seven intervals, and this produced a frequency distribution for each ranked list.

The order in which the policies were ranked for each of the 41 method/assumption combinations was compared, in turn, with the order in which those same policies were ranked according to the results of each of the other 41 method/assumption combinations. This gave us $(41)(40) \div (2)$, or 820 pairs of columns of ranked policies on which to perform a comparison of rank order. In so doing, the Kendall and Spearman rank correlation coefficients were calculated, as was the Pearson product moment.

The mathematical definition and interpretation of these various statistical tools are offered in Appendix C at the end of our report.

After a chapter which gives a general description of the computer output—and to which we believe you will have a reasonably easy time relating the results of your company's or client's policies—there follows the lengthiest chapter in the report, the one dealing with the findings on the data bank. Lee Kemper will describe the comparisons between the policy rankings from the ten methods which we studied.

MR. KEMPER: To start the analysis, the first section of the seventh chapter asks the question, "How do the results of the ten methods correlate with each other?"

To aid in that study, twelve matrices are shown in Tables 10-12. The entries in each of the matrices are the Kendall rank correlation coefficients.

To find the Kendall rank correlation coefficient between methods A and B, merely locate the entry in row A and column B or in row B and column A, depending on which order produces a number in the matrix. For example, in Table 10, duration 20, we see that the Kendall rank correlation coefficient for the traditional net cost method and the interest-adjusted payment method at 6 per cent is 0.365, representing very low correlation. However, in the same table we see that the correlation coefficient between the interest-adjusted cost method at 6 per cent and the interest-adjusted cost with mortality method at 6 per cent is 0.977, representing very high correlation.

Any trends or patterns in the correlation between the methods thus can be observed by looking at the entries in one or more of the matrices. There are many interesting and useful patterns occurring between certain methods, and a close study of these matrices can reveal many important facts.

In studying the matrices it should be kept in mind that the high correlation between the traditional net payment, interest-adjusted payment, and interest-adjusted payment with mortality methods should be disregarded for guaranteed cost policies; these three indexes are nothing but the annual premium for that category of policy and thus are identical, resulting in perfect correlation.

In general, the observation can be made that the correlation between methods is not very high.

To say that two cost comparison index methods produce materially

different rankings does not, in itself, produce the ability to say which, if either, is to be preferred, but it is an acknowledgment that, for ranking purposes, it makes a difference which method is selected.

The effect that a choice of methods can have on the ranking of a particular policy, due to its particular pricing structure, can be considerable. An example of this was found for one policy in the participating/whole life/age 35/\$25,000 category. For this particular policy the rank for the interest-adjusted cost method at 6 per cent was 1, while for the traditional net cost method the rank was 40.

For another policy we found that the rank for the interest-adjusted cost method at 6 per cent was 12, while the rank for the interest-adjusted payment method at 6 per cent was 1. For that same policy the traditional net cost rank was 86 and the traditional net payment rank was 2. In this case, we found that the cash values were unusually low, and the effect of dividing the twentieth-year cash value by the accumulated value of an annuity-certain of 1 for twenty years, rather than dividing by 20, does not dilute the value of this policy as much as it does those with high-cash-value schedules.

Table 13 shows that there are many interesting patterns of ranks from using different methods when one looks at a given policy. For example, in Table 13, which is for the participating/whole life/age 35/\$25,000/duration 20 cell, the rank of policy 9 ranges from 9 under the traditional net cost method to 107 under the interest-adjusted payment with morality at 6 per cent method. For policy 11, it is interesting to note that it ranks 60 under the traditional net cost method but 4 under the risk premium index method at 6 per cent.

MR. HARWOOD ROSSER: In August, 1972, a release appeared containing a modest preview of a high rank correlation between two index methods. This foreshadowed some of the results in Tables 10, 11, and 15 of the committee's report.

This release was reprinted in *Best's Review* for October, 1972, under the title "An Alternative Method of Viewing Life Insurance Costs." Officially, it was coauthored by then Commissioner Herbert S. Denenberg and by Harwood Rosser. The former's chief contribution was that his name ensured publication.

This alternative method is a benefit-cost, or ratio, method. It is a blend of the Belth retention method (*Journal of Risk and Insurance*, March, 1969) and the Baird method (which appeared in the *Report of the Joint Special Committee on Life Insurance Costs*). It is related to the

method outlined on pages 148–49 of the report we are discussing today. However, dividends were subtracted from premiums, and the net figure (premiums minus dividends) used as a denominator in obtaining ratios. Rankings based on these ratios were very similar to those obtained by using the interest-adjusted cost method. The latter were used in the original Pennsylvania *Shoppers' Guide*.

The most distinctive feature of this approach, however, is the calculation of benefit-cost ratios separately by category. In the published illustrations, they were determined separately for those who die and those who survive. Thus the present value of the death benefits is related to that of the premiums to be paid by those who will die, and similarly for survival benefits.

This means that the Denenberg-Rosser approach, besides furnishing a cost comparison index, has a foot in the disclosure camp as well. The main justification for referring, at this stage, to this variation on other methods is that it gives a prospective buyer some information that is self-contained. It shows him how much of the premium dollar he can expect back if he lives, how much if he dies, and how much, overall, whether he lives or dies. The remainder represents “company retention.”

Thus, for example, for age 35, the figures for the lowest-cost company (by this standard) state that, in the aggregate over a twenty-year period, on the assumptions used, the beneficiaries of those who die will receive 385 per cent of what was paid in, and those insureds who survive will be entitled to about 74 per cent of what they paid in. When both groups are taken together, on a weighted-average basis, the figure becomes 99 per cent. This last figure (or its complement) seems the most logical of the three for cost comparison purposes.

This approach could be expanded to include nonzero lapse assumptions. Given more spare time and access to a computer, I might have attempted a paper along such lines. Just from a single-company viewpoint, there are intriguing possibilities. For example, if the benefit-cost ratio for those lapsing, which is cumulative, begins to approach that for survivors, which is not, the company would certainly want to re-examine its cash values and, if any, its dividend scale. The usual profit-test calculations might not reveal such a situation.

The appearance of this method was attended by a sharp exchange of open letters, in the *National Underwriter*, between Professor Belth and me. More perceptive comments were made later by William Scheel (*Journal of Risk and Insurance*, June, 1974). His main point is that such a ratio method is more vulnerable than is a dollar index to manipulation by insurers.

MR. ROBERT S. ROUFFA: I congratulate the committee on a highly competent job on an extremely difficult and controversial subject. I would, however, like to criticize the choice of labels ("guaranteed cost" and "participating") used by the committee for what I have always known as nonparticipating and participating insurance.

Our business is in competition with other types of financial institutions for the consumer's dollar, and the most important features that we have in our favor are our guarantees. Perhaps the stock company members of the committee were more persuasive than those from the mutuals, but it looks as if nonparticipating policies have an "exclusive" on guarantees.

If the reports of the committee were solely for members of the Society, then I would not be concerned about the labels. However, these reports will be read by consumerists, regulatory officials, the press, and other people outside our industry. Our business has already been strongly criticized for its complex and difficult-to-understand terminology. If the labels are adopted by these people, is it possible that a consumer might now be misled to believe that a \$120 "guaranteed cost" premium is guaranteed, whereas a \$140 "participating" premium is not, and that the mutual company may assess an additional premium to the insured if warranted (like "assessment insurance")?

In a way, the labels are analogous to calling Actuary Jones a "good actuary" and Actuary Smith a "New York actuary." Both labels may be correct, but is there implied doubt about Mr. Smith's ability?

As we all know, both types of insurance are guaranteed. Nonparticipating policies have a guaranteed fixed cost, and participating policies have a guaranteed maximum cost. I am flattered that the committee pointed this out as a footnote after I had written to them. However, I think it is unfortunate that the labels themselves were not changed, since footnotes have a way of becoming lost.

CHAIRMAN MUNSON: I would like to underscore a point which the report makes in a couple of places and which Lee Kemper commented upon. Anytime one compares the ranking of two lists of numbers, as we do when we quote rank correlation coefficients, we are merely observing to what extent the two rankings are similar or dissimilar. To say that two cost comparison index methods produce materially different rankings does not, in itself, produce the ability to say which, if either, is to be preferred.

The next section of our findings deals with the matter of adding a non-zero interest rate assumption to the calculation and will be discussed by Daphne Bartlett.

MRS. BARTLETT: In section 2 of chapter 7, the results of the testing of the data bank indicate that introduction of an interest assumption does affect significantly the rankings of policies. The mean correlation coefficients of the rankings produced by the interest-adjusted cost method at 6 per cent and the traditional net cost method were 0.691 for participating policies and 0.782 for guaranteed cost policies. This slightly better correlation for guaranteed cost policies possibly indicates the relatively greater effect of the interest assumption on a dividend scale than on other cash-flow components of a policy.

There are probably only a few remaining who would argue that an interest assumption does not belong in a cost comparison method. The arguments are still raging, however, as to what interest rate should be used. Therefore, we tested the effect on rankings produced by various methods under different interest assumptions. The correlations are quite high for all methods when a 2 per cent difference in interest rates is used; as might be expected, they are somewhat lower when a larger disparity is involved. Again, the correlations for guaranteed cost policies are somewhat higher than those for participating policies.

These results indicate that rankings of any pair of policies under two interest assumptions varying by 2 per cent will be identical in a minimum of 90 per cent of the cases, whatever comparison method is used.

MR. J. ALAN LAUER: There are legitimate reasons for various patterns of dividend scales for participating policies issued by different companies. These include such things as variations in levels of gross premiums, variations in company experience, and variations in company philosophy with regard to the factors in the dividend scale. A steep dividend scale, that is, one in which the dividends payable in the later policy years are significantly higher than those payable in the early policy years, tends to result in more favorable values under most of the cost comparison index methods. It should not be concluded from this that a steep scale is necessarily a sign of manipulation or impropriety. Interest rates currently are relatively high, and the interest factor in the usual three-factor formula represents a major part of the dividend. Since the interest factor is increasing naturally by duration, high interest rates lead to steep dividend scales. Another consideration is the tendency for expenses to be increasing in the current inflationary period. It is prudent to amortize initial expenses as quickly as practicable in order to retain margins to cover possible future increases in maintenance expenses. Amortizing initial expenses over a short period tends to steepen the dividend scale, but this is a matter of prudence rather than manipulation.

CHAIRMAN MUNSON: One cannot speak of the introduction of a nonzero interest rate assumption without thinking first and almost exclusively about the introduction in recent years of the interest-adjusted cost method and its use as contrasted with that of the traditional net cost method. The industry, and to a considerable extent our profession, has been slow to move from the traditional method to one which recognizes the time value of money. Nevertheless, I believe it is safe to say that our committee feels that is a direction which is inevitable and proper. I cannot help thinking, in this regard, of the statement by Mark Twain: "Habit is habit, and not to be flung out of the window by any man, but coaxed downstairs a step at a time." I think we are approaching the lower steps on this issue, but clearly there seem to be several more to go.

Several other issues are far less settled. Some of these involve the use of mortality and/or lapse assumptions, the handling of the policy cash values, and the choice of policy duration. These are covered in the next sections of chapter 7.

MRS. BARTLETT: In section 3 of chapter 7 we studied the effect of introducing a nonzero mortality assumption by correlating the rankings of policies on the interest-adjusted cost method and the interest-adjusted cost with mortality method. For all cells the correlations were very high, although they tended to decrease with advancing issue age. This was expected, since, obviously, mortality is more significant at the older ages.

The correlations also increased as the interest rates were increased. This also was to be expected, since the higher interest rate tends to discount the effect of the high mortality at the later durations.

Further analysis described in this section indicates that the effect of mortality in a comparison index calculation can be approximated roughly by an increase in the interest rate. As an example, Table 17 shows the very high correlations produced between the ranking on the interest-adjusted cost with mortality method at 4 per cent and the interest-adjusted cost (without mortality) method at 6 per cent.

Only one mortality table was used in this analysis. However, on the basis of the relatively high correlations obtained through the use of differing interest assumptions, which have the same directional effect on the actual index numbers as does the introduction of a mortality table, it can be concluded fairly safely that any concern over what mortality table to use (if any) is unfounded, at least when similar plans are being compared.

MR. KEMPER: In sections 4–6 we looked at the effect of introducing a nonzero lapse rate assumption and then attempted to see what effect there would be on the rankings if we varied the actual lapse rate assumed, both as to the magnitude of the rates and the basic pattern that they exhibit.

Of the ten methods studied, only the company retention and risk premium index methods involve a nonzero lapse rate assumption, and, of these two, only the latter was also calculated on a computer with an assumption that all lapse rates were equal to zero. However, a manual recalculation on a sample of policies of a modification of the company retention method, without lapses, permitted some further analysis.

The first analysis was made involving the risk premium index method, and the results are given in Table 18 of the report. The methods correlated were the risk premium index at 6 per cent with no lapse rate and the risk premium index at 6 per cent with S lapse rates. The correlation was very high for both guaranteed cost and participating policies. The correlation coefficient under the Kendall rank correlation method was 0.982 for guaranteed cost policies and 0.977 for participating policies. This table indicates that the introduction of the Moorhead S lapse rates had a very small effect on the ranking of the whole life policies. Thus, with regard to policy ranking on this method, the decision of whether to include a lapse rate assumption is not a crucial one.

Because the company retention method has been defined to be calculated only with nonzero lapse assumptions, our results for analysis of that method without lapse rates was confined to a reasonably practical, small sample of policies on which manual calculations were performed.

The company retention formula was modified so that it could be applied without lapse rates. The modified formula was designated the “company retention without lapse” method. This modified formula was applied to an arbitrarily chosen sample of fifteen \$25,000 participating whole life policies issued at age 45.

The correlation between the ranks of the fifteen policies as produced by these two formulas is not particularly strong. The Kendall rank correlation coefficient is 0.752; the Spearman rank correlation coefficient is 0.882. From this sample, it would seem to make a reasonable difference in policy ranking whether or not a nonzero lapse rate was used in the company retention method.

We then asked ourselves, “What is the effect of varying the nonzero lapse rate assumption?” To answer this, we computed cost index figures for the company retention and risk premium index methods, using the lapse rates of the modified Moorhead R, S, and T tables. The results of

the study, as shown in Table 20 of the report, indicate that the company retention and risk premium index methods each are fairly stable under the different lapse assumptions and that it is really not of great importance to the policy ranking which set of lapse rates is chosen. In fact, for the risk premium index method, changes in the assumed lapse rates had almost no effect on the actual value of the index produced.

To test the effect of different lapse *patterns* (as opposed to levels) on the index values and their rankings, a study again was made of the company retention and risk premium index methods. It was decided that to represent a population of consumers who have spent time shopping intelligently for life insurance, a lapse rate pattern that is near zero in the first few years and steadily increasing could possibly be a better assumption. In making this study we used what was called a "reverse S" table. This consisted of the reverse of the first twenty years of the S lapse table. We also tested the results from assuming a flat 5 per cent lapse rate for all policy durations.

This analysis revealed that vastly different choices in lapse rate assumptions do not affect appreciably the ranking produced by the index methods.

MRS. BARTLETT: With respect to the inclusion of cash values, covered in section 7 of chapter 7, the methods studied in the data bank were of three different types: those methods which did not include cash values at all (such as the traditional net payment method); those methods which reflected only the cash value in the last policy year (such as the interest-adjusted cost method); and those methods which reflected the cash values in each policy year (such as the risk premium index method).

The effect of totally ignoring cash values was studied by comparing the rankings produced by the interest-adjusted payment indexes at 6 per cent with those produced by the methods which reflect cash values in all policy years. The correlations, which are shown in Table 23, were extremely low, as we probably might have expected.

Then we measured the effect of using the cash value at the last duration *only* as opposed to not using it at all, by testing the correlation between the rankings produced by the various *cost* methods as against the various *payment* methods. Again, correlations were very low.

A third test was performed to determine whether use of the last cash value produced rankings similar to those produced by methods which use cash values in each policy year. These correlations were somewhat higher than in the previous two tests, indicating that, on the average, use of the last cash value is a fairly good approximation to use of the values

at all durations. However, it is very important to note that the correlation coefficients varied quite substantially according to the duration at which the indexes were calculated. The coefficients decreased sharply with increasing durations. In other words, the fifth-year interest-adjusted cost correlates quite well with, for example, the fifth-year company retention index. The corresponding twenty-year indexes produce significantly lower correlation. Therefore, the longer the duration at which an index is calculated, the less well the last year's cash value approximates the effect of all the cash values.

MR. KEMPER: In section 8 we find that policy rankings do not correlate very well at all between two policy durations. This is true for all cost comparison methods.

The report gives a complete array of Kendall's rank correlation coefficients for one hundred and forty-four participating/whole life/age 35/\$25,000 policies in the study, comparing each possible pair of durations from among durations 1, 2, 5, 10, 20, 30, and 40. Values are shown for each of the ten methods in the study, each with its central assumption. The table suggests these observations:

1. Correlations generally are poor.
2. Generally, the closer two durations under consideration are, the better the correlation, as one would expect.
3. No particular method produced correlations notably superior to others.
4. The general impression of the table is influenced by the very poor correlation between extreme durations, which one would not seriously consider as alternatives anyway.

From these statistics it can be seen that the choice of years over which the prospective purchaser wishes to compare cost comparison indexes is a critical one.

CHAIRMAN MUNSON: We also did a study in which we attempted to relate the size of the annual premium and the size of the policy's cost indexes on various methods. This is described in section 11 of chapter 7. The study was done by examining the policies in one of the larger cells, with what might be termed central characteristics in terms of plan, age, amounts, and duration, and relating the quartile rankings of the various policies' premiums with the quartile rankings of the various cost indexes.

For the most part, there was a clearly discernible trend, in the direction one would expect, when the quartile rankings by premium were compared with the quartile rankings by index. That is, there was a definite tendency for the policies with the lowest premiums also to have the lowest cost

indexes, while those with the highest premiums tended to have the highest indexes. This certainly was not unexpected.

However, there were some notable exceptions to this general relationship. In general, the results were such that we concluded that, although annual premiums are an important element in cost comparisons and undoubtedly deserve to be considered carefully in the buyer's decision, they are not an accurate ranking substitute for the index methods which we considered.

In this context, I cannot help thinking of the preliminary findings of the Institute of Life Insurance as they did their pilot program related to the NAIC's research project dealing with the consumer's knowledge and desires with regard to cost comparison information. As I recall, that preliminary report indicated that the consumer in almost all cases considers the policy's premium to be equivalent to the policy's cost. I believe that our industry and certainly our profession has an obligation to educate the consumer in that regard and not to accept erroneous equation of these two different elements.

MR. SCHNAER: I am a member of the Part 7 examination committee and therefore am interested in the feelings of the Committee on Cost Comparison. The "unusual" dividend scale shown on page 117 of the report is, on analysis, nothing more than a "plain vanilla" monotonically increasing scale with extra dividends of \$2.50, \$5.00, \$7.50, and \$10.00 in years 5, 10, 15, and 20, respectively.

The Society's study material supports periodic extra dividends as a reasonable adjunct to annual distribution, and, if I recall correctly, the New York Insurance Law specifically permits these. Do you feel that the use of nonannual periodic extra dividends is a "manipulation," and, if so, should we so indicate in the instruction of our students?

MR. LAUER: The pattern of dividends in which extra dividends are paid quinquennially has been used in the past by a number of companies, including some of the large mutual companies. *Actuarial Studies No. 6* states (p. 65): "The practice of allotting periodical 'special' or 'extra' dividends in addition to those provided by the regular dividend formula and as a definite feature of the dividend system is a not uncommon one." In the thirty-seven years since that text was published, this practice has become much less common, and by today's standards may even be classified as "unusual." I do not know the reason why many companies have discontinued this practice, but Maclean does point out the likelihood of "troublesome questions with policyholders who will want to know the

reason for the unusual increase in one year or for the corresponding decrease in the following year.”

MR. LOUIS GARFIN: I do not have an authoritative answer to the question, but I can offer a conjecture. Years ago Pacific Mutual issued deferred dividend policies under which dividends were calculated annually but held by the company and distributed if the policy remained in force to the end of the next five-year period. Laws were then enacted which required that dividends be available in cash each year, and this type of contract was discontinued as to new issues. The practice was gradually discontinued as to existing policies as well. The peculiar dividend pattern illustrated on page 117 may well reflect the result of making annual dividend distributions in accord with modern practice, but with a higher fifth-year dividend which recognizes a policyholder's expectations of a special distribution at the end of each period.

MR. ANDREW F. BODINE: There seems to be a concern about the ethics involved for an unusual dividend pattern. A key point not yet mentioned is the understanding by the policyowner at the time of purchase of the intention of the company to provide such a pattern of dividends. I feel that such an understanding is often not achieved.

CHAIRMAN MUNSON: Daphne, at this point perhaps you could discuss some of the interesting effects we noticed when we compared the cost indexes on policies with dissimilar premium-paying periods.

MRS. BARTLETT: Section 12 covers this question. The data bank did not include any plans other than permanent, so, unfortunately, we were unable to study specifically the rankings produced on, for example, level term versus whole life policies.

We were, however, able to study the index numbers produced for plans dissimilar to the extent that the premium-paying period differed. This was done by analyzing the cells for the limited payment plans.

Table 34 in the report shows the twentieth-year interest-adjusted cost at 4, 6, and 8 per cent for all the policies in one particular cell—the guaranteed cost/limited payment/age 55/\$10,000 policies in the study. Most of these plans are twenty-payment plans; there is one ten-pay policy, one thirty-five-pay, and one twenty-one-pay. The correlations between the rankings under the various interest rates are very low when these “oddball” plans are included; when they are excluded, the coefficient is 0.995, indicating that the rankings of the “odd” plans jump all

over the place. For example, the ten-pay life plan is second at 4 per cent, eighteenth at 6 per cent, and twenty-third at 8 per cent.

Our only conclusion from this particular study is that care must be taken in deciding what method and what assumptions should be used in comparing dissimilar policies. We do not have enough data to really be able to determine whether any one method is better than any other in the performance of such comparisons. Also, unusual benefit periods generally do not receive as much rate-setting attention as the more common ones, and hence analysis of actual data may not necessarily produce any accurate conclusions. Personally, I suspect that the final decision, if any, on this subject will be made on a theoretical basis.

MR. PAUL J. OVERBERG: My brief review of the report indicates that the committee should be congratulated on an excellent job. However, all readers of this report should be cautioned that the various conclusions reached may not be valid if two or more dissimilar types of plans are being compared. The committee's conclusions are undoubtedly correct when based on the assumption that the various methods of comparing cost were to be used only for comparing "one or more similar policies in the same or different companies."

In the real world the consumer needs and wants help in deciding which type of plan to buy and whether to buy participating or a guaranteed cost contract. An important element of his decision of what type of contract to buy is cost. Any cost comparison method which is endorsed by an official body will be used to compare dissimilar plans and participating with guaranteed cost contracts—despite any and all admonitions to the contrary.

CHAIRMAN MUNSON: We performed some tests on the data bank on the null hypothesis that the populations of cost comparison indexes for participating and guaranteed cost policies are the same. We tested this hypothesis with the data that were presented in the data bank as a result of the questionnaire; we then further tested this hypothesis by modifying the illustrated dividend on the participating policies, in a fashion which I am about to describe in a moment.

We should recognize that this was an attempt to substitute some "facts for appearances" with regard to the sensitivity of the policy cost indexes to the possible variations in the illustrated dividends. We all recognize that illustrated dividends probably, perhaps almost certainly, will not be paid exactly as they are illustrated. We wondered what effect some changes

in these illustrated payments would have on the rankings of the various policies.

These sections of our report, you will recognize, tie in quite closely with the report's second chapter relating to the question of guaranteed versus nonguaranteed cash flows and the other report our committee has produced on the subject of dividend philosophy.

MR. ROLLAND: Section 13 covers the question, "Is there a bias in favor of participating or guaranteed cost policies in cost comparison methods?" The Mann-Whitney *U* test was used to determine whether any cost comparison method produced more favorable rankings for either participating or guaranteed cost policies. The test was run on a single cell—issue age 25 for a \$25,000 life paid up at age 65 policy. In this cell were included thirty-five participating and twenty-seven guaranteed cost policies. The test was made at durations 0, 10, 20, and 40. This test produced the following findings:

1. There is a definite bias in favor of guaranteed cost policies at duration 0 where the cost comparison index consists simply of the gross premium.
2. There is a definite bias for all methods in favor of participating policies at duration 40.
3. At duration 20 there is a very strong bias in favor of participating policies, except for the interest-adjusted payment, the company retention, and the risk premium index methods.
4. At duration 10 there are conflicting conclusions depending upon the cost comparison method studied.

Section 14 attempted to determine how important the illustrated dividend scale is to the cost comparison index ranking of a participating policy. This section addresses the contention that participating policies cannot be fairly compared with guaranteed cost policies, since dividends are not guaranteed. To answer this question, the Mann-Whitney *U* test was used on the same policies as were studied in section 13. The test was conducted for the interest-adjusted payment method at 6 per cent and the interest-adjusted cost method at 6 per cent, at durations 20 and 40. Shorter durations were not studied, since guaranteed cost policies were generally more favorable at earlier durations. Four separate tests were run. The first used dividends as illustrated, while the second, third, and fourth assumed 10, 20, and 30 per cent reductions in dividends, respectively. The findings of these tests were as follows:

1. At duration 40, even with a 30 per cent reduction in the illustrated dividends, participating policies showed significantly lower cost comparison indexes for both methods.

2. At duration 20 it took a 30 per cent reduction in dividends before participating policies had generally higher indexes under the interest-adjusted cost method. Under the payment method, a reduction of 10 per cent or more produced higher indexes for participating policies.

The results of this test would seem to indicate that a comparison of participating and guaranteed cost policies should not be ruled out simply because illustrated dividends may not be realized.

CHAIRMAN MUNSON: The Linton yield method, as Lee mentioned earlier, was one of the ten which we studied on the data bank. It was also one of the four methods identified specifically in the research requests from the NAIC. Lee will tell us of the results we found by applying this method to the policy cost data on the computer. Then we would like to move on to chapter 8, with Daphne summarizing some of the committee's thoughts on a subject which we have called "cost comparison deficiencies."

MR. KEMPER: In studying the Linton yield method, we developed three sets of yearly renewable term (YRT) premium rates. These rates were designated as low, average, and high. A test of the relative position of the premium in the marketplace was made by analyzing Part II of "A Guide to Life Insurance" in the February, 1974, issue of *Consumer Reports*. The test of the results of the Linton yield method was made using the low scale of YRT premiums, for typically it would be assumed that one who seriously considers the two alternative programs upon which the method is based would attempt to obtain a low-priced YRT policy. Furthermore, using the results of the low YRT scale tends to show the permanent life insurance policy in the worst light and thus is less susceptible to criticism of bias in favor of that alternative.

Table 44 in the report summarizes the yield for the three plan groups. Several observations may be made on the results shown in that table:

1. The mean yields on guaranteed cost policies are uniformly lower than on participating policies.
2. The mean yields do not vary greatly by the number of policy years over which the calculation is made for the whole life and life paid up at age 65 plans. For twenty-payment life the yield increases substantially beyond the premium-paying period of the policy.
3. For a given issue age the mean yields decrease as the policy size increases.
4. The mean yield decreases as the issue age increases.

MRS. BARTLETT: Chapter 8 deals with some of the dangers or deficiencies which we see in the subject of cost comparisons, both as applied to the characteristics of certain types of cost comparison methods and as

applied more generally to the entire thrust of comparing costs on life insurance. Part of this subject is known more generally by the rather unattractive name of "manipulation." However, we believe that, since the chapter covers more than the changing of the cash-flow elements of the policy to produce more favorable indexes, at no cost to the company, the entire subject is better described by the more general term "deficiencies."

The report analyzes three major types of deficiencies: cost comparison deficiencies, product design differences, and company experience deviations from the standards used in the method.

Cost comparison index deficiencies are those more commonly associated with the word "manipulation." The report describes such deficiencies as existing when any cash-flow element of a policy can be changed upward or downward with no resulting change in the index value for that method. Within this category, the four cash-flow elements (premiums, cash values, dividends, and death benefits) are all discussed.

The twentieth-year interest-adjusted cost is not affected, as you all know, by the cash values in the policy other than the one for the twentieth year. Therefore, two policies with otherwise identical components, except that one has high early cash values and another has low ones, would produce identical twentieth-year costs on the interest-adjusted cost method. Some have argued that this is proper if the policy is continued to the end of the twentieth year and surrendered at that point, since the "true costs" are identical on the two policies. The report points out, however, that the existence of high early year cash values on a policy is of value to the prospective purchaser and hence has a cost, whether the values are used or not, and therefore at issue the high-cash-value policy is "a better buy" than the other, not an "equivalent buy." The situation is exactly like the one of the expired term insurance policy, which was of value to the policyholder even though the benefit was not paid.

Another area where deficiencies exist is in the death benefit. The NAIC model regulation on interest-adjusted cost specifically and properly excludes from comparison situations policies with varying face amounts. It is important that mandatory use of the interest-adjusted cost contains this exclusion, since application of the method to, for example, a decreasing term policy produces a very favorable, and very misleading, result, since the formula assumes a level face amount throughout.

The second major area in which deficiencies occur results from product design, the components of which are not included in the calculation of any of the cost comparison indexes discussed in this report. One

example of such a deficiency is a built-in option, such as a guaranteed insurability benefit, which does not have a specific cost associated with it. Other benefits or policy provisions which create deficiencies in any cost comparison situation are items such as the level of the policy loan interest rate, settlement option guarantees, or the conversion provisions of a term policy. A possibly more substantial difficulty exists with respect to built-in waiver of premium benefits. Some of you may recall the proposed Pennsylvania disclosure regulation, which required removal of an estimated amount of premium for such a benefit before the interest-adjusted cost index was calculated. Such a requirement creates a difficult situation for the actuary, since the temptation to overestimate the premium for such a benefit in order to be more competitive might be great; even if such a temptation were resisted, the regulation was theoretically deficient in that it did not require any comparable adjustment to the dividend scale to remove any components relating to the benefit.

The third section of this chapter discusses an area of deficiency which could cause substantial concern if the use of comparison indexes becomes widely accepted by the buying public—the fact that company experience will always deviate from any standard used in the index calculation.

Such deviations in experience create situations similar to those I described earlier, where index values can be improved through such maneuvers as changing the slope of the dividend scale. However, they are different to the extent that they are deficiencies not of the formula for the method but of the assumptions inherent in the method. This can be clarified best by considering the impact of changing the slope of dividends under the traditional net cost method to improve the cost position. This was possible under this method because a company's earned interest rate was higher than the 0 per cent assumed in the index calculation. By analogy, similar improvements in index results are possible with respect to the interest-adjusted cost (and other) methods calculated at 4 per cent interest, to the extent that the company's experience exceeds 4 per cent.

A further problem exists in the reverse situation, where a company's experience on, say, mortality is worse than the standard used in the calculation of an index. Such experience might be the result not of poor underwriting but of experimental marketing in above-average mortality classes of risks. Presumably, the adverse actual experience of such business would lead to higher-than-normal premium rates or lower-than-normal dividend scales and, consequently, poor cost comparison results. Undue emphasis on such results could cause efforts to serve such markets to cease—hardly a desirable social consequence for the consumer.

MR. LOWELL H. LAMB: Is it proper to compare preferred risk contracts with standard risk contracts?

MR. LAUER: If we are talking about a single prospect who would qualify for a preferred risk policy in one company and a standard policy in another company, it would be proper to use a cost comparison index to compare those two policies. On the other hand, I believe that it is improper to publish for general use a ranking according to some cost comparison index of various policies, some of which are standard policies and some of which are preferred risk policies, unless the preferred risk policies are clearly identified as such. Similarly, I believe it is improper to publish a ranking of this kind that includes both participating and nonparticipating policies unless the nonparticipating policies are clearly identified.

MR. OVERBERG: I have two comments regarding the report and some of the prior discussion. The first comment concerns comparing a preferred risk policy with a standard issue policy. Such a comparison must be viewed from two points of view:

1. If a list is being published comparing several policies, it is obvious that any policy not available to the general public should be either excluded or noted appropriately as to its limited availability.
2. From the consumer's standpoint, anyone who is interested in shopping should look at all policies for which he is qualified. In some instances, he may discover that the preferred risk policies are not his best buy.

My second comment relates to nomenclature and what might be termed a deceptive practice. Throughout the report the committee used two methods which they referred to as the "interest-adjusted cost" and "interest-adjusted payment" methods. I submit that these are both misnomers. Within the insurance industry they are well understood, but to the consumer these misnomers could be classified as a deceptive practice which is contrary to the model regulation adopted by the NAIC.

The method referred to in the report as "interest-adjusted cost" only indicates the cost if the policy is surrendered for its cash value. Thus a more accurate title would be "interest-adjusted surrender cost." The index is meaningless if the insured dies and there was a cash value on the policy. If we do not properly note this index as a "surrender" index, then we must be prepared to live with the critics who claim that we confiscate the cash value upon death of the insured.

The method referred to in the report as "interest-adjusted payment" is meaningless to the general public. On page 9 of the report it is recognized

that the "true cost" can be determined only after the contract has been terminated by death, maturity, or surrender. Thus it would appear somewhat ridiculous to have an index which attempts to measure the "continuing" cost. The public, I am sure, could understand much better a "death cost index" which shows the consumer what the cost would be if the insured died at the end of a given period of time (this would be the same as the payment index adjusted for any mortality dividends that may be payable under some participating policies).

MR. RICHARD V. MINCK: The two reports prepared by the Committee on Cost Comparison Matters and Related Issues quite obviously reflect an enormous amount of work performed under great time pressures. The careful work of the committee should provide convincing answers to a number of questions that have been a matter of considerable debate—one example being the need for and impact of reflecting mortality rates in constructing price indexes.

One key area in which I disagree with the work of the committee lies in chapter 8 ("Cost Comparison Deficiencies") of the report entitled *Analysis of Life Insurance Cost Comparison Index Methods*. The chapter discusses deficiencies in cost comparison indexes with regard to each of four elements of cash flow, namely, premiums, cash values, dividends, and death benefits. These four items may be thought of as cash-flow items from the point of view of an insurance company, but cost indexes are constructed from the viewpoint of the policyholder. Each of these four items has a different impact on the policyholder. Premiums are an annual cash outlay in an amount specified by the contract. Dividends are receivable annually, but the amount will be determined by the company in the light of emerging experience; the policyholder has several options as to how dividends would be used. Increments in cash value do not result in any cash flow to the policyholder until and unless he surrenders his contract. Death benefits result in cash flow only at the point of death.

The reason I make these obvious comments is that I wish to suggest that constructing indexes which would correct deficiencies by reflecting each of the four items labeled "cash-flow elements" may not be desirable, because the elements are so dissimilar in their impact on a policyholder's cash flow. Professor Joseph M. Belth remarked in his paper "The Relationship between Benefits and Premiums in Life Insurance" (*Journal of Risk and Insurance*, March, 1969) that he gave no consideration to the utility factor in his calculations and suggested that some enterprising student would someday expand his methodology to reflect utility considerations. I endorse Professor Belth's implication that premiums,

dividends, and cash values differ greatly in their importance to policyholders.

Rather than conclude that a cost index constructed from premiums, dividends, and cash-surrender values or annual increments in such values does not consider utility, I would suggest that such indexes implicitly assign the same utility to a dollar of premium paid in a policy year, a dollar of dividend illustrated for that year, and a dollar of increase in cash value during that year. This approach of failing to consider utility leads to some conclusions that I believe fallacious. For example, the Pennsylvania Insurance Department published a second edition of their *Shoppers' Guide to Straight Life Insurance* in June, 1973. Included were lists of the ten highest- and ten lowest-cost policies sold in Pennsylvania. For a male aged 20, two of the ten highest cost *nonparticipating* policies shown had annual premiums of \$113 and \$114 for \$10,000 of insurance. These were both lower than the annual premium for all but one of the ten lowest-cost policies shown. A policyholder buying one of the "lowest"-cost policies and keeping it in force until he died would pay as much as \$8 per year more than if he had bought one of these two of the "highest"-cost policies.

The dilemma posed by the differences between premiums, dividends, and cash values should not lead to attempts to assign different utility to these items and to construct an index reflecting such utility differences. Each individual policyholder is in a much better position than anyone else to determine the importance he gives to premiums as opposed to dividends or as opposed to cash values. If a policyholder knows that one index measures net outlay and a second index measures net outlay less a cash-surrender value, he can give appropriate weight to each index in deciding which policy to buy. In any event, in making a final decision between two policies, a comparison between disclosure documents such as ledger statements is much more likely to be useful than one or more cost indexes would be.

In chapter 4 of the report, "Characteristics of and Criteria for Cost Comparison Index Methods," the committee listed two sets of criteria as being perhaps desirable for the "ideal" cost comparison index to satisfy. The committee concluded that, while it is important that the consumer understand the purpose of any cost comparison index method and that he accept its results "perhaps on faith," the need to understand the mathematical basis for such an index is more subject to debate. I believe that there are some semantic difficulties in this discussion. The consumer should understand the assumptions underlying any cost index and the impact of such assumptions on the resulting index. Otherwise,

he may attribute undue significance to an index that is strongly affected by some components to which he would attach relatively little significance. This does not require that a consumer be able to reproduce a calculation, but he does need something more than an understanding of purpose and an appropriate amount of faith.

These two reports are of such substance and detail that I am sure that members of the Society, including me, will wish to offer comments to the authors once they have had time to give the reports the careful reading they deserve. I hope that some way can be found for the committee to expose such comments to a broad audience.

MR. RICHARD M. STENSON: In the choice of an interest rate to be used in a cost comparison method, I think some of the considerations which went into the choice of 4 per cent as the interest rate commonly now in use with the interest-adjusted index should be borne in mind. That is, the interest rate should relate to an after-tax rate reasonably attainable by an individual over a long term in safe, savings-type investments. This viewpoint, in my mind, makes a rate in excess of 4 per cent somewhat questionable for cost comparison index purposes.

I would also like to add to comments made as to the understandability of the index from the consumer's point of view. While I agree that the consumer should not necessarily be able to reproduce the figures mathematically, I believe it should be possible for him to understand intuitively the nature of the index calculation in general terms. If he does not, he is faced with a choice of either disregarding the index completely or viewing the index as a "true cost." I think all actuaries are agreed that none of the group-averaging indexes developed to date could be properly termed "true cost" figures.

CHAIRMAN MUNSON: Chapter 9 of the report, headed "The Relationship of Cost Comparison Index Methods to the Gross Premium Formula," is much as it was found in the preliminary report of our committee last spring. While we all have contributed to this development, Lee had initially conceived of this approach, and he will present some of the highlights at this point.

MR. KEMPER: The purpose of this chapter was to relate the various cost comparison index methods to one another and to show the relationship of the methods to the gross premium formula. It was hoped that by relating the formulas in this way it would be possible to have a better understanding of the indexes resulting from the various formulas without

going through the difficult task of applying the formulas to vast amounts of data.

CHAIRMAN MUNSON: There are several concluding remarks which need to be made, both with regard to our committee and the report itself and with regard to some speculation about what the future may hold.

As I indicated initially, you will have noticed that the report does not make any specific recommendation or take any definitive position about which particular cost comparison method (or methods) should be used. Likewise, it does not state specifically that certain methods should be avoided at all costs (no pun intended). Some of you are disappointed that we have not taken such a definitive position; others seem to be relieved that we have not. There are several reasons for the position we have taken in this regard, and I think you deserve to be reminded of them:

1. It was not our charge to go exactly that far. We were attempting to respond to a very specific charge from the Board of Governors to do the specific research projects requested by the NAIC. Perhaps some have been misled by what I referred to as the "brief description" of our committee in the *Year Book*, which says that "the Committee is . . . to develop recommendations based on [its] findings." We did not receive a specific charge to do that, and it was our clear understanding that such was not to be read into the charge under which we were operating.
2. It was at least the chairman's personal opinion that what we did and said has gone far enough in the direction of an opinion, at least at this time and for this particular purpose.
3. The committee recognizes that these three research projects with which we were presented are not the totality of what needs to be reviewed in order to enable a considered recommendation to be drawn.
4. This is a complex and elusive subject. In many ways, in doing the research the committee has not stepped back to see the entire forest but rather has been busy planting some of the trees.

The committee will be transmitting copies of our two reports to Wisconsin Insurance Commissioner DuRose, who is chairman of the NAIC Task Force on Life Insurance Cost Comparisons. It is my understanding that the results of the other nine research projects on the NAIC list either have been conveyed to the NAIC at this point or will be within the next few months.

Bill Kingsley, vice-president of the Institute of Life Insurance, is in the audience. As you know from the introductions yesterday morning, he is a guest of the Society at this meeting. Bill, I wonder whether you

could give us an up-to-date report on the status of the interesting consumer research you are engaged in as requested on project 11 from the NAIC.

MR. WILLIAM E. KINGSLEY:* I would like to comment on the status of two research projects being undertaken by the institute at the request of the NAIC Task Force on Life Insurance Cost Comparisons.

The first dealt with the nature of the whole life contract, taking into consideration the assumption that it may be separated into protection and savings elements. The objective of this paper is to provide the consumer with an accurate understanding of what he is purchasing. The work on this paper has been completed, and copies of the report, entitled *The Nature of the Whole Life Contract*, have been submitted to Commissioner Stanley DuRose and to the chief executive officers of all United States life insurance companies, as well as to Canadian member companies of the Institute of Life Insurance.

The second research project concerned a consumer research study on what the life insurance consumer knows about life insurance and what he expects to know at the time of purchase. This project is being undertaken in conjunction with the Life Insurance Marketing and Research Association and consists of three phases. The first was a review of all previous research touching on these subjects and resulted in a report entitled *Life Insurance Consumers*, which was distributed to the NAIC task force and to life insurance companies in December, 1973.

The second phase consisted of an exploratory research study among three hundred life insurance consumers. This phase was completed in the spring of 1974. A second report entitled *Life Insurance Consumers: An Exploratory Study of Attitudes and Expectations Regarding Cost Comparison* was distributed at that time.

The third and final phase consists of a national sample survey of two thousand heads of households between the ages of 18 and 45. Each respondent in the study was questioned about his life insurance knowledge and his expectations concerning life insurance information, including costs and cost comparisons. Each was also questioned on several alternative methods of comparison. The field work of this phase has been completed and tabulated, and analysis has been begun by the LIMRA staff. A preliminary report will be made to the NAIC prior to their meeting in December, 1974, and a final written report is expected early in 1975.

* Mr. Kingsley, not a member of the Society, is vice-president of the Institute of Life Insurance.

CHAIRMAN MUNSON: Once the NAIC has received these various reports, it is my assumption that the NAIC task force and its consultants will read them, consider them, and probably meet with representatives of each of the parties contributing to them for some thoughtful deliberations. In that regard, our Board of Governors has authorized our committee to respond in a helpful way to any invitation that might be extended by the NAIC to us to visit about our reports.

With regard to the federal scene, you are all aware that Mr. Dean Sharp, who has been doing the bulk of the work for the United States Senate's Antitrust and Monopoly Subcommittee, has announced his resignation from Senator Hart's staff, effective the end of November. In the meantime, it is my understanding that Mr. Sharp continues to work on the draft of what has become known as the "truth in life insurance" bill, and it is the staff's hope that that bill will be introduced to the Senate in early 1975. Of course it has been the assumption of many of us, on the basis of various speeches or press releases we have read, that such a bill would deal not only with cost comparison and disclosure but with several other subjects as well.

I might conclude by referring to an article in the November, 1973, issue of *The Actuary*. It was written by Jim Hickman, then and now a member of the Board of Governors, and it dealt with the subject of life insurance cost comparison. With reference to that subject and the search for a magical solution, Mr. Hickman stated, "This haystack is important, but it may not have a needle."

To a considerable extent, the committee would tend to agree. However, whatever it is that we have been searching for and probably will continue to search for, it is our hope that we are a bit closer to it than we were a year ago. And it is also our hope that we are aware of those areas that profitably can be considered, argued, and debated, as well as those areas which just are not worthy of the heat that has been generated in the past.