

TRANSACTIONS

OCTOBER, 1966

PANEL DISCUSSION

THE FUTURE OF THE ACTUARIAL PROFESSION AS IT APPEARS TO THE YOUNGER ACTUARIES

Panel Members:

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ALLAN D. AFFLECK:

In considering the future of the actuarial profession, I would like to examine three main areas—the role of the Society, the responsibility of our profession to the public, and the education of the actuary.

First, let us consider the role of the Society. During the last few years the Society has made many changes in its fields of activities and in the type of meetings held. These have been a step in the right direction and go part way toward meeting the problems created by our size and diversified interests. I feel, however, that further changes will be required if we hope to meet the needs of our ever growing profession, and I would especially like to examine the format of our meetings.

As a starting point, I believe that we should recognize that all actuaries cannot be experts in every area of our profession. I therefore suggest that the presentation of papers at our meetings be broken down by subject in much the same way that we now set up panels or have informal discussion. Papers of broad general interest or papers that the Committee on Papers believes to be major contributions to the literature in their fields would be presented to the entire Society. All other papers would be presented during informal simultaneous sessions in which individual actuaries could question the authors rather than simply present formal discussions. This procedure would also help the Committee on Papers, which I understand is having some difficulty in applying the requirement that every paper must be of interest to a reasonably large

proportion of Society members. In order to promote serious discussion of the papers, it would be essential to have them distributed earlier than has been the practice in the past.

I think that the Society might also re-examine the definition of the word "informal." Before attending my first Society meeting, I mistakenly assumed that the informal sessions were really informal. Since that time, I have reluctantly adopted a definition that appears in the April, 1965, edition of *The Actuarial Record*. This definition reads:

To an actuary, informal discussion means reading from a carefully prepared document, either previously censored by the boss or actually written by more knowledgeable subordinates—most probably both—neatly typed in triplicate and limited to a double spaced single page using pica or larger type.

In a more serious vein, I think that the large numbers, the formal physical arrangements, and the recording of all comments eliminate any possibility that we can have truly informal sessions. While I believe that our programs should continue to have a limited time for what we now call "informal discussion," I also believe that we should experiment with workshops patterned after those held by the Health Insurance Association of America. Some of you may be concerned that the workshop approach will require us to entertain topics more appropriately discussed at trade associations. I personally feel that there are sufficient problems of a truly actuarial nature that this tendency can be avoided.

As the Society grows, another area that becomes increasingly important is communication between the Society and individual actuaries. I was therefore very pleased to learn this morning that the Board of Governors has approved a second publication to supplement the *Transactions*. At the present time, the *Transactions* is the only regular means for informing members about the work of our many active committees. Unfortunately, it is published six months in arrears and contains only a brief summary of any reports made by committee chairmen. Many committees are never heard from at all until they report on some major activity. I would like to suggest that all committees report to the membership at large at least once each year. I believe that these reports should be included in our new publication along with other informal actuarial articles, so that they can be distributed to us all.

The second part in my examination of the future deals with the responsibility of our profession to the public. I found it very interesting to hear Mr. Klem's report this morning, because the recommendations of his committee go a long way toward meeting the feelings of many younger actuaries. While this question about actuaries' expressing an opinion

will no doubt be discussed thoroughly on Wednesday, I would like to comment on it as a young actuary.

In the years ahead, we can reasonably expect our fields of endeavor to become more complex and generally less understandable to the layman. As an individual citizen, I believe that actuaries will have a responsibility to inform the public on those issues within the field of actuarial science. I therefore support the recommendations of Mr. Klem's committee and would add that, from my viewpoint as a recent Fellow of the Society, this is a change the Society must make if we want to continue as a true profession in the future. If we do not comment on those questions that the actuary is uniquely qualified to consider, who will?

Remember, however, that this change does not imply that we will take a position on political, social, or economic issues, but rather that we will meet our public responsibility by making our actuarial knowledge available to others. It is no longer sufficient for us to simply discuss professional and technical questions among ourselves. We can make a contribution to the general education and knowledge of society as a whole, and we should recognize that our profession must play its part in satisfying the current demand for knowledge.

There are other less important reasons why I feel that the Society should take a position on current questions of interest. Any such statements are bound to assist in making actuaries better known to the public. They may also act as a catalyst and lead to more individual actuaries' making personal representations on such issues. This direction and leadership by the Society as a whole will naturally result in a more informed and a more responsible profession.

Finally, there is the education of the actuary. In his presidential address last year, Mr. Henningsen commented that the most important activity of the Society has been its education and examination work. Let us look at some of the recent changes before attempting to examine the future. During the last five years our syllabus has undergone many modifications—the old Part 1 has been deleted, multiple-choice questions have been introduced in Parts 5–8, and specialized Fellowship examinations are now in effect. These fundamental changes in our examinations have been accompanied by revisions in the course of reading, and we now require students to study such topics as risk theory, reinsurance, and investment of pension funds. In addition, they must have a deeper understanding of areas such as group insurance, social insurance, employee benefit plans, valuation, gross premiums, and distribution of surplus.

What about the future? What changes in our course of reading will be required to ensure that future actuaries receive the proper training? Per-

haps the most important new field for the actuary has been electronics. I hope that within the next five years our syllabus will contain the subject of operations research as well as an expanded discussion of risk theory. It is interesting to note that this very question is scheduled for discussion in one of tomorrow's simultaneous sessions.

Looking further ahead into the future, I believe that our marketing techniques will be altered substantially, thus requiring the actuary to have a better understanding of agency problems. In this area I would include market research, more sophisticated statistical sampling techniques, product research, and perhaps even an introduction to consumer psychology.

While one might go on and suggest other areas that could be added to the syllabus, the problem is to keep the amount of reading material and references within manageable limits. The only way to increase the course of reading without increasing the number of examinations or their duration is to have more than two Fellowship options. I predict that within ten years we will have at least four specialized Fellowship examinations—group life and health insurance, group pensions, individual insurance, and operations research. As at present, topics such as law and social insurance will be covered in more than one option.

Before concluding, let me comment on two unrelated questions in the education area. First, there has been a good deal of discussion at the Canadian Institute meetings on the relationship between the Society and the Institute. This becomes increasingly important in the educational field. We are a Canadian profession requiring our members to pass examinations set by a United States organization. The Canadian opinion on this question is by no means unanimous, and I can only give you my personal position. I strongly feel that during the foreseeable future the Institute should continue to utilize, and contribute to, the Society's examination work. Up to the Part 8 level we should continue to write the same examinations. I would like to see the Institute establish its own specialized Fellowship examinations, since these contain the particular topics where practices in our two countries are most diverse. I am specifically referring to social insurance, law, disclosure, taxation, and the more detailed study given to employee benefit plans, valuation, and so on. While the earlier Fellowship examinations introduce a subject and explore the principles, the later examinations expect a deeper understanding of the material and involve solving problems of a type likely to be found in practical actuarial work. It is in this area that I think we should give our own Canadian examinations.

Second, during my days as a student I always wanted the opportunity to suggest drastic revisions in the type of examination given by the Society. Now that I have this opportunity, I find it very difficult to suggest practical improvements that we could consider. Aside from the adoption of short-answer questions—which I hope can be extended to more examinations in the future—I have no suggestions to put forward. As much as I hate to admit it, the painful process of passing ten five-hour examinations seems to be the best practical testing device available.

RUSSELL M. COLLINS, JR.:

I will devote the first part of my discussion to the future of the actuary as the individual practitioner of his profession. I will naturally emphasize the actuary's role in the insurance industry, as most of my experience is in the life insurance field. I would then like to discuss ways in which the actuary can equip himself for his future, with special emphasis on public relations, education, and the role of the Society in these areas.

The future of the actuary is closely linked to that of our industry, which, in turn, depends on future developments in our rapidly changing society. I am further convinced that the future of our industry depends fundamentally on how effectively it is managed. There has been a great deal of emphasis placed on scientific management in recent years, and in many industries management is relying to an increasing extent on modern management principles and methods. The insurance industry, however, has been slow to take advantage of these developments. Happily, we are observing a change in this pattern, which is exemplified by the discussion of the subject of long-range planning at our spring meetings this year. In this age of rapid change, no corporation can afford to make decisions at the zero hour. More and more companies are installing formal long-range-planning activities and utilizing modern management techniques.

The actuary is clearly destined to play a vital role in these developments. One of his most effective tools will be the high-speed electronic computer. Our industry recognized early the value of the electronic computer. Actuaries had a significant influence on the early development of electronic data-processing equipment and have continued to play an important role in the utilization of this equipment. This has led them into new and fascinating activities. Most applications in our industry today, however, have been in the data-processing field, and until very recently few management-science-oriented applications could be found in our industry. This was quite natural for at least four reasons:

1. Data-processing functions have an immediate and large payoff.
2. Many operations-research programs were developed for scientific machines rather than data-processing machines.
3. Inertia has had a *dominant influence in the insurance industry*.
4. The mathematicians in the industry, namely, the actuaries, have been scarce and preoccupied with other matters.

Now, however, there seems to be a growing recognition of the potential of computers in providing better information for better management, and, just as actuaries played a major role in data-processing developments, it seems natural that they should play a leading role in the future development of the application of computers to our management problems. Indications of this trend are numerous and include the establishment by the Society of a Committee on Research and the lively discussions of operations-research subjects at several of our recent meetings. I would like to mention just a few ways in which the actuaries can use the computer to provide better management through better information.

Visualize, if you will, the life insurance executive pushing a few keys on what looks like a television set on his desk and receiving in a matter of seconds an image on the screen of a financial statement, based on the company's operations up to the minute at which he requested the information. By pushing a few more keys, he receives the projected effect on his company's financial results of a new marketing strategy that he is considering. These events are made possible because a corporate model of the company is stored in the memory banks of the computer. The construction of this model depended heavily on the knowledge and skill of the company's actuary.

The imminent appearance on the scene of so-called real time systems points to exciting possibilities to help our salesmen do a more effective job and to improve the speed and quality of our service, which is such an important element of our product.

It has been suggested that there is a need for an actuarial programming language. Generally available computer languages, such as FORTRAN, have many features which are rarely, if ever, used by actuaries. Conversely, there is a need for numerous actuarial subroutines which are not available in these languages. Possibly the Society of Actuaries could be of service to the profession by encouraging a co-operative effort among its members to produce an actuarial programming language.

One of the greatest challenges which the management of a life insurance company faces is the effective marketing of its products. Let us examine a few specific ways in which the actuary can contribute in this field. First, a great amount of research is necessary to lay the groundwork

for the sound development of marketing strategies. Of course, the factors influencing the market are so diverse and complex that knowledge and skill in the fields of economics, sociology, and public relations (to name just a few) are needed as well as actuarial know-how and expertise in mathematical research techniques. It is imperative that the actuary work hand in hand with the experts in these other fields, as well as agency management, to develop and carry through sound marketing strategies. Again, simulation techniques can be used. At our spring meeting in Chicago, Dr. John Hogan described the construction and use of agency manpower and financial models. Making use of our asset share analyses, combined with projection techniques such as those described by Dr. Hogan, we might be able to measure the return on investment in agency development.

I would ask whether those of us in the life insurance business are doing the job that we should expect of ourselves if we cannot develop a valid and understandable method for measuring the cost to the consumer of our products? Most of us either denounce the use of so-called surrendered-net-cost illustrations without offering a better alternative, or else we continue to ignore the deficiencies in this widely used cost measure, depending on how well the measure suits our purposes. The use of this fallacious and highly misleading measure is, in my opinion, an industry scandal, and responsibility for initiating responsible action in this area lies squarely on the actuaries' shoulders.

Then there are exciting challenges for the actuary in product development. Equity life insurance and mutual funds will be discussed at one of our meetings tomorrow. Most of us deplore government encroachment in the insurance field, but this development creates opportunities for new product innovation and leads to the recognition that some benefits can be better provided through social insurance than through private insurance. In such cases, it would seem wiser for us to offer our help in the development of these social insurance programs than to resist them until it is too late to influence their development.

Also, there is room for creative thought in approaching the task of pricing our products. One of our members, John Bragg, in his recent paper in the *Journal of Risk and Insurance*, points the way toward a new, and in many ways eminently more satisfactory, approach to this problem, using the principles of game theory.

With so many challenges ahead of us, we must be sure that we are equipped both as individuals and as a profession to take advantage of these opportunities and fulfill our responsibilities.

First of all, we must communicate this exciting vision of our future to

the youth of our nations, with the goal of increasing the number of qualified young persons entering our profession. We are already doing many worthwhile things, including the High School Mathematics Contest, the actuarial aptitude test, summer jobs for qualified young college students, and college relations programs, both formal and informal. However, there remains much to be done not only to improve the image of our industry and profession on the college campus but also to make a business career attractive to these young people. Popular opinion to the contrary, the beatnik crowd is very much in the minority, and the vast majority of our young people has a desire, which is perhaps stronger than that of any generation before them, to be of service to their fellow man. We must convince them that one can pursue a business career and still be idealistic; that, in any successful business, service comes first and profits follow. This is a task that deserves all the ingenuity which we can summon. It requires the personal efforts and witness of each one of us. As an example of what we might do collectively, perhaps the Society should consider sponsoring a professionally produced nation-wide television program on the subject of the actuarial profession. Further recognition of actuaries by the public and government is a significant element in this problem, and the Academy of Actuaries is an important step toward obtaining this recognition.

What about our education and examination programs? Some will say that there is too much mathematics in the examinations; others feel that there is too little. There is no question that it is difficult to keep our education program sufficiently broad and yet within reasonable limits. All actuaries need the basic tools of the profession which include, in addition to subjects on the current syllabus, a basic understanding of the capabilities and use of the modern computer to solve actuarial problems, a basic understanding of new management techniques, and a more extensive mathematical training, especially in statistics and linear algebra.

While continuing to give the young actuary a broad educational base, we must inevitably allow for more specialization in our educational program. Perhaps a third branch in our Fellowship examinations will be a management-science branch. I believe that we will find it increasingly desirable, and ultimately necessary, to look to the academic institutions to play a fundamental role in the training of the actuary. The total task will simply become too formidable for our volunteer education and examination committees. Some have suggested that we establish a Center for Actuarial Studies, which could be a focal point for basic actuarial research, for conducting courses in actuarial science, and for administering

the actuarial examinations. Several such programs could be developed throughout the continent, and we might ultimately follow a course similar to that of the legal profession before us. At any rate, I am convinced that the burden of educating the actuary must ultimately be shared by the profession, the industry, and the academic institutions. There is already a pronounced trend toward a greater number of our new members coming to us through actuarial schools.

Also, if we are to take maximum advantage of developments in the management sciences, we must establish greater rapport with the academic community. We must not only improve communications but share experiences. For example, there is a great deal of advantage to be gained by lending insurance executives to academic institutions for part-time teaching activities and likewise giving members of the academic community the opportunity to spend some time working in our industry on problems of interest to them and of importance to us. In one respect, on account of their common profession and membership in the Society, actuaries have fared relatively well in this area. On the other hand, there seems to be a definite need for better communication between practicing and teaching actuaries.

We must also consider how those of us who have completed the Society's education and examination programs can most effectively continue and supplement our education, for many of the tools which we will need were not included in our formal actuarial education. Perhaps a Center for Actuarial Studies could ultimately serve us here, but in the more immediate future should the Society accept some responsibility in this area by perhaps sponsoring correspondence courses for its members? The rapid increase in the size of the Society makes it more and more difficult for the Society to maintain contact with its members.

At this meeting, the Society is experimenting with six simultaneous discussion sessions. I am hopeful that this experiment will be a success, and I look forward to the day when the Society has a large enough staff to experiment with workshop sessions similar to those conducted by the Health Insurance Association of America. I believe that such sessions, perhaps at our spring meetings, would vastly improve the caliber of our program. Seminars in special subjects, bringing together smaller groups with a common interest, might also prove very valuable to our membership.

PETER R. WILDE:

I do not believe that we can consider the subject of the profession's future without first giving attention to the future of the industry, as it is affected by both internal and external changes. Many of these changes

bear directly on the subject of marketing, as you will quickly see from a brief listing.

First of all, the following internal changes seem virtually inevitable:

1. Ever increasing use of computers—not only for basic record maintenance but for preparation of sales illustrations, prods, and reminders to the field force, and basic statistical research; a truly exciting area for actuarial involvement.
2. The trend to go after the higher-income markets for individual life insurance sales, spurred on by the inroads made by mass marketing techniques, social legislation, and the like. The steady movement by a number of the large mutuals into this area is bound to have enormous impact on the rest of the industry with respect to how we design and merchandise our products.
3. Strong indications that there is a drift toward the use of salaried personnel in the sales role—a strong suggestion that commissions will be used more and more as bonuses and incentives for outstanding production rather than as basic compensation. The pressures to draw out the length of time we finance a new man are growing; is this not a form of salary rather than commissions?
4. The trend to composite companies selling all lines of insurance; the explosion of the life/casualty affiliations is truly stunning. One-stop shopping is far from a reality, but multiple-line giants like Connecticut General, Travelers, Aetna, Allstate, and State Farm will make their presence felt. The battle for the allegiance of the independent insurance agent grows fiercer every day.
5. The trend toward benefits reflecting cost of living or higher living standards. Variable annuities, talk about variable life insurance, the erosion of the savings element in insurance policies by mutual funds and other investment media all talk to the same point.
6. The explosion of new life insurance companies in the past ten years—its impact on regulatory authorities and on competition for the consumer's dollar.

Let us look now at some of the external changes:

1. Social security and Medicare, as well as other government programs.
2. Inflation, tight money, and imbalance of payments problems.
3. Increasing population mobility and increasing sophistication on the part of the buying public.
4. Entry of noninsurance interests into our field—mutual funds, commercial and industrial organizations (G.E., IT&T, Swift, Montgomery Ward); these corporate giants feel that they have the merchandising know-how and the customer loyalty which will permit them to develop their own markets for insurance products. One must wonder what the future holds with respect to large-group customers—partial self-insurance, organization of their own insurance companies?

5. Increasing overseas activity on the part of United States companies and their desire to obtain insurance coverage for their employees wherever they may be—a whole new area of challenge for the insurance industry and the actuary, trying to fit benefits into the panoply of programs already offered or required by many foreign countries.

You may well ask why I devoted almost five minutes of my allotted fifteen to a discussion of things which are very broad in concept and seemingly deal only casually with aspects of an actuarial job. I have done it because I think that we have a very fundamental question to ask as we discuss the future of our profession: Are we to become an organization of specialists with blinders on our eyes with respect to things that occur outside our specialized interests, or are we to strive to turn out broad-gauge men who can go on to develop a specialty after the initial training is behind them? This brings us into the question of just what an actuary is and why we take the exams. I submit to you that the actuarial profession provides the greatest training course for anyone in the industry, and we should jealously guard this program against any encroachment which would narrow our capabilities to perform in all areas of the life business. We hold a wide variety of key positions in many companies in this country, and in Canada, in substantial measure because of the comprehensive training that we receive. In many companies, the actuary must be viewed as a generalist, because he is forced to deal with a multitude of problems, many of them having little direct relationship with his actuarial expertise. For this type of man, a specialized problem may require a specialist to solve it—a management consultant or an actuarial consultant, for that matter.

I fault no one who wants to become highly specialized in a given field of endeavor, but I urge you to give serious consideration to having that specialization occur only after the man has become thoroughly grounded in the fundamentals of actuarial work, thoroughly grounded in the operations of the life insurance business, thoroughly grounded in economic and statistical concepts.

I would like to quote from Mr. McConney's address to the first meeting of this Society after the two organizations were combined; he said:

Never let it be said of us as Massingham said of the exhaustion of the impulse of the Renaissance: "The eager curiosity of the natural sciences was split up into the fragments of specialization. Man no longer wondered; he tabulated and classified; losing the end in the means."

Our business becomes more complex every day, and there are ever greater demands on us to increase our knowledge. To that I say, "Fine, let's have continuing education." We have no monopoly on this, as witnessed

by the advance training being acquired by men in other industries. On subjects of special interest, perhaps the Society could sponsor seminars or see to it that research work is performed at some of our great universities. Perhaps we need better co-ordination with other groups in our business, such as the American College of Life Underwriters, the Life Office Management Association, and the American Life Convention, in order to develop broadly based training programs. On the subject of specialized interest, the Society should probably do this itself—advanced risk and game theory, small sampling techniques, and operations research.

But let us not fragment the syllabus before we have trained the man thoroughly; from comments I have received, we still have a long way to go before we can develop a well-trained man in the first eight examinations. Let us not fragment the syllabus to such an extent that we sentence a man to a lifetime in group pension work or a lifetime in data processing, or a lifetime in the ordinary business because he has not the opportunity or the knowledge to transfer his talents to other areas.

Examinations are one part of a man's training. What should be an equally valuable part are the comments and discussions that go on at these meetings. I hope that this panel discussion will generate considerable comment from the floor; we are not up here to talk among ourselves. What about these meetings? We have talked and talked about the need of having a number of workshops simultaneously, small enough in size so that anyone and everyone would feel comfortable participating. The oft-repeated argument is that it would take a lot of work and that we would have difficulty obtaining the facilities. All well and true, but let us get on with the task and try a couple of these meetings with many workshops, locating the meetings at places where we can have access to small meeting rooms. Let us also give some of the younger people the opportunity to say something, without having to wonder on that long walk to the podium what their first words will be or even whether any sound will come out. We need greater participation in these meetings from the younger men, without having them intimidated by either a sea of faces, the presence of their bosses somewhere in the room, or the fear that their every word is being recorded for posterity.

I would like to return to some of the things that I think we collectively and individually have to consider with respect to the future of our profession:

1. More knowledge of economics and investments. The business demands this of us, and present training is deficient. Our deep involvement in pensions and the importance of intelligent analysis of proposed government social programs require that we become more knowledgeable. In addition, it seems inevitable

that more and more companies will be involved with overseas economies, whether it be in the Common Market or southeast Asia. To date, life companies in the United States and Canada have only scratched the surface, mostly in Great Britain. It is imperative that we have more knowledge if we are to maintain our position of importance within our own companies.

2. More grounding in statistical techniques. The advent of computers has made it possible to apply sampling techniques which were well-nigh impossible until recently. The subject of risk theory, game theory, and small sampling is one which must be probed much more deeply by us.

3. More knowledge of the fire and casualty business. A recent article in the *New York Times*, by Sal Nuccio, suggests that we may be on the threshold of group and salary-allotment coverage for nonlife products; others feel that combined experience rating of life and nonlife business on a group basis is also close at hand. Should this take place, it will have great impact on the merchandising systems of not just the fire and casualty business but the life business as well and will shift emphasis even more to the middle- and upper-income segments of our population.

The middle-income and upper-income buyer wants personalized, highly competent service for his premium dollar, service which cannot be rendered on a mass-merchandising basis. Such a shift will affect our whole business—the caliber of men that we recruit, the way we compensate them, the shape of the products, the nature of the support service from the home office, and the product flexibility.

4. How much longer will the buying public put up with a situation which involves the proliferation of a bewildering array of policy forms, riders, and so forth, which vary from time to time, depending on time at which the individual bought them? What is needed is a master individual contract to which coverage could be added and subtracted as needs change and premium-paying ability changes. In order to accomplish this, we will have to work very closely with the National Association of Insurance Commissioners to develop an intelligent set of legal instruments. This cannot really be accomplished by any one company; the task is too broad and should be assumed perhaps by a group such as ours.

There are many who feel that, before much longer, we will be batching all a man's policies together, as well as those of his family, and preparing one monthly billing for all his coverages. Think of how many items or services you now require for which you pay on a monthly basis. Work on this needs to be begun right now.

5. Market research and analysis. What do we know about the profile of our customers, how often they buy policies, what kinds they buy, and why? What is the statistical chance that a man in a given age-and-income category will buy another policy, and of what type? Can we direct our field force into more profitable areas, based on statistical information? If you have concluded that a great many of my comments are based on marketing relationship, you

are correct. That is, after all, the name of our business—selling insurance—and we devote a major portion of our efforts to doing this more effectively and efficiently.

6. What is to be our role in society? Are we to be a profession which requires its members to speak out as individuals, or are we merely a sophisticated trade association?

In summary, I view this as a thrilling business of which I am proud to be a part. We face many serious decisions in the near future—the true functions of our profession, the nature of the training that we demand of newcomers, and the role that we see for ourselves on the road ahead. Specialization is coming, of that there is no doubt; let us not compartmentalize our training until we have succeeded in developing an actuary with broad education, capable of handling virtually any job in the life insurance business.

RICHARD A. WINKENWERDER:

In 1949 at the opening meeting of the Society of Actuaries, President McConney made some pertinent remarks about the actuarial profession. He stated that there is no fixed responsibility of an actuary. The actuarial field is ever expanding, ever becoming more complicated and involved with new areas. He felt that actuaries must be prepared at all times to take their talents into these other areas of responsibility and do a job that must be done. Because the actuarial profession encompasses areas of responsibility that are so subject to future change, there is no way of defining in strict terms the function of an actuary. The statements that President McConney made are equally applicable today.

I am going to concentrate my remarks on four areas: (1) how to increase the number of students entering our profession; (2) new areas in which the talents of actuaries can be utilized; (3) the need for actuarial opinion; and (4) new problems for the pension actuary.

Because the demand for actuaries is increasing, there are some steps that we should take in order to assure that this demand can be fulfilled. As you know, one of the responsibilities of our Public Relations Committee is to promote interest in the actuarial profession among students. If we are going to get our share of good actuarial material out of colleges, there may be some new approaches that the committee can take. The Public Relations Committee could work with the local actuarial clubs throughout the country. Its function would be to organize and co-ordinate the activities of the various clubs.

Some of the ways in which I think that we could encourage students to enter the actuarial profession through such an arrangement would be the following:

1. Encourage the periodic publication in insurance, accounting, business, and mathematical publications of articles pertaining to the actuarial profession.
2. Have actuaries get in touch with local campus clubs that are associated with these four departments and attempt to gain participation in their programs.
3. Contact these department heads to see if they might have any suggestions as to what can be done to better inform the students of their future in the actuarial profession.
4. Arrange for interviews with graduating seniors.
5. At one of the meetings of local actuarial clubs have the program geared to the actuarial profession and invite certain groups of students to attend.
6. Increase the publications of the Public Relations Committee, which can be supplied free of charge, and encourage local actuarial clubs to obtain copies of these and distribute them through the local schools.
7. Encourage students to call for individual appointments to discuss the actuarial profession.
8. Award scholarships, sponsored by local actuarial clubs and/or the Society.
9. Prepare an annual special program at local actuarial clubs at which awards can be presented to the local winners in the national High School Mathematics Contest, which is jointly sponsored by the Mathematical Association of America and the Society of Actuaries.
10. Speak at teachers' groups regarding the actuarial profession.

Perhaps some of these approaches have already been tried. The Public Relations Committee should be informed of the results and the problems encountered.

There is perhaps an additional approach that is being overlooked. We tend to concentrate on the younger mathematics students as the potential actuarial crop. At most schools, the mathematics of interest, finite differences, and life contingencies is not available. Because of this, we may be making a big mistake in looking for most of our actuarial students in the mathematics department. Today, in many cases, students graduating from high school have already completed the equivalent of college calculus. Many of these students do not go into mathematics.

I feel that we should change our direction somewhat and increase our efforts in obtaining new students in some related fields, such as accounting, insurance, and even general business administration. In many cases the curriculum may have prepared the student even better for the actuarial profession. The lucrative financial future of an actuary should be appealing to graduates of these schools.

My second topic indicated that actuaries' talents are being required in new areas. The number of actuaries, working for corporations and organizations other than life insurance companies, has increased signifi-

cantly over the last fifteen years. This is an indication that the role of the actuary is significantly and rapidly changing.

We might examine those areas in which an actuary's talents may be desired in the future. We have seen within the last few years that individual actuaries or actuarial firms have become affiliated with nation-wide accounting firms.

Some of the top management-consulting firms in the country are interested in securing the services of actuaries. Since some of their assignments are concerned with employee benefits of their client companies, these organizations are interested in having men on their staffs who are competent in this area. With the tremendous expansion of pension funds and the significance of the investment results of these funds, there is the possibility that investment-counseling firms, mutual funds, and investment brokers may desire actuaries on their staffs to aid them in selling their services to these pension funds.

We have seen the development recently of several consulting actuarial firms whose prime function is in the computer area. I believe that we will see a continued expansion of these organizations and their increasing use of actuaries due to the almost unlimited future of computers. And what about the casualty field? Recent trends might lead us to believe that there may be continued mergers of life and casualty companies. If this is the case, there will be an increased need for the actuary who is knowledgeable in both the life and casualty fields.

Because of the tremendous expansion in the fields of actuarial endeavor, we automatically come to the third phase of my discussion, which deals with the need for the expression of formal opinions. The Academy of Actuaries has, of course, been formed primarily for the purpose of obtaining accreditation of actuaries. However, I believe that this is only the first step.

The growth of the assets of private pension plans has been phenomenal. In the last four years alone, from 1961 through 1965, the total book value of the assets of private insured and noninsured pension funds in this country increased from \$58 billion to \$85 billion. This was an increase of nearly 50 per cent for this four-year period. Considering the size of these funds and the tremendous increase in the assets that is likely to continue, it is understandable why the federal government is contemplating stricter controls in this area. The question is, how much control?

The Report of the President's Committee on Corporate Pension Funds has led to a surge of proposals regarding possible legislation relating to such actuarial items as actuarial assumptions, funding methods, minimum funding requirements, portability of pensions, mandatory vesting,

federal reinsurance of private plans, and restrictions on investments. I believe that the government needs, and in fact wants, learned opinions and suggestions in this area.

There is need for an organization or mechanism through which the actuarial profession can express opinions and take positions on vital actuarial matters affecting not only the future of private pension plans but also the future of the actuarial profession. This organization or mechanism could be an extremely influential body in molding legislation affecting the future actuarial aspects of private pension plans in this country. We find that many experts upon whom the government is relying are not actuaries and may not be cognizant of all the problems, actuarial and otherwise, inherent in the operation of pension funds.

As you probably know, we currently have a special committee to study pension plan problems. Specifically, this committee has met with representatives of the federal government regarding the recent Report of the President's Committee on Corporate Pension Funds and more recently has considered Announcement 66-58 issued by the Internal Revenue Service regarding the proposed social security integration rules for pension plans. Unfortunately, our committee can make recommendations and suggestions only as individual actuaries and cannot express the opinions of the actuarial profession.

My final point pertains to the pension actuary who has and will continue to be faced with increased responsibilities and new challenges in his specialty. Some of these are (1) increasing reliance upon the actuary for investment advice; (2) performing an independent actuarial audit of a pension fund; (3) the problems relating to the affiliation of American companies with foreign companies; (4) specialization within a particular industry; and (5) the problems involved with the merger of companies.

I want to discuss two of these in more detail. One is the area of investments. We may not choose to find ourselves with the responsibility of furnishing any kind of investment advice, but we will be asked to do this and, therefore, must have the required knowledge in order to give advice where warranted. Our advice should not relate to specific investments, but the actuary could be requested to give his opinion relative to such investment matters as (1) the measurement of investment performance and its many resultant effects upon the entire operation of the plan; (2) whether or not to use pooled funds; (3) the relative superiority of insured versus noninsured funds; (4) the relative proportions of the fund to be invested in equities and fixed-income investments; (5) what a reasonable expected yield might be; (6) the significance of the yield upon the cost of the plan; (7) how the yield of a specific fund compares with the yields

of other funds; (8) what company might be expected to do the best job of investing the funds; (9) the use of an investment counselor; and (10) the significance of the variable annuity and what effect it may be expected to have on a plan.

The second area is that of performing an independent actuarial audit of large negotiated and corporate pension plans. I believe that such actuarial audits will become more common. The continued growth of the funds through merger and longevity will result in the assets of some funds becoming extremely large. The size of the funds and the increased government regulation will make an actuarial audit almost a necessity in some cases. This audit would involve a complete review of the plan—the records, administrative procedures, mathematical formulas for determination of the liabilities, actuarial assumptions, calculation of liabilities, determination of costs, and preparation and format of the report. Such a review can be exceedingly important in pointing out deficiencies in any of the above areas or, what would be hoped for, a verification that such items were being performed in an acceptable manner.

In closing, I want to leave you with a thought. As I see it, the actuarial profession is faced with at least two challenges: to improve our methods of obtaining actuarial students; and to develop an organization that can express opinions on matters affecting legislation and regulations. If this is true, I feel that it is up to the members of the Society of Actuaries and the other actuarial organizations to meet these challenges head on. Shall we accept them?

At the conclusion of the presentations by the panel members, the moderator opened the meeting for questions and informal discussion from the floor. A report of this portion of the program follows, in digest form.

MR. LÉON J. MONDOUX: The panel referred to our profession and our industry as though the two were one and the same, but I do not believe that we should think of our profession as being limited to just one industry. I hope that we can gradually widen our scope. There is a need to make known our full skills and potential to business.

MR. JOHN B. CUMMING: We younger actuaries, with most of our careers still ahead of us, face the prospect that there will be an increasing interaction between government and private industry in the future. Those of us concerned with pensions have been made particularly aware of this in recent years, as we have seen a significant increase in govern-

ment interest in, and concern with, the private pension movement. Consequently, we need to develop more effective means for influencing sound government action and for creating co-operation between government and industry.

Toward this end the experience of the Brookings Institute is valuable. This organization has for many years had a program whereby people in industry in their middle years spend an internship in the federal government to become more knowledgeable about the problems of the government and about the attitudes of federal employees toward these problems. The consensus is that this has been a fruitful exchange for both government and industry.

I believe that younger actuaries could likewise benefit from such an exchange. Government actuaries would benefit from the exposure to the problems and philosophy of business, and industry actuaries would be similarly broadened. Selected young actuaries might be released for a three-to-six-month internship. These internships would be on an exchange basis, with government actuaries serving in industry simultaneously. If conducted on a broad enough basis, such a program would create informal channels of communication between the two sectors, with a mutual awareness of problems and more rational solutions.

MR. JOHN K. DYER, JR.: From the panel discussion on the examination of life insurance companies, it occurs to me that it would be helpful if it became a regular procedure to have actuarial audits by separate, independent actuaries besides those who do the regular work. I understand that there is some interest on the part of the government authorities in having this done with pension funds. This might give the younger actuary who is in regular actuarial work a chance to move into this field.

MR. DORRANCE C. BRONSON: I would like to make two observations and ask two or three short questions. The panel has very interestingly given their thoughts about the ability of actuaries to get into other fields and the advisability of doing so. Also, one or more of them have proposed increased public appearances, more general discussions, more symposia, more classroom attendance, and so on. It puzzles me how, with only twenty-four hours in the day, that will be accomplished; how can we get out in these wider circles and still carry out the increasingly more complex actuarial work that we have before us, barring the appearance of a much greater number of actuaries?

I have another question. One gentleman proposes that we should delve deeply into investment studies. It is my understanding that the British

actuaries in trust-fund work do actually propose how to invest funds, manage them, and so on. But in this country, where we have more of the corporate-type trust funds, I wonder how pleased bankers and other investors would be if the actuary began instructing them on how to invest the money given over to their stewardship. I do not see how that sort of actuarial activity would function.

My last question has to do with the suggestion that there be actuarial audits. Does this proposal mean that there would be audits of the regular actuary's work by actuaries from outside coming in to review the operations, assumptions, actuarial reports, and so on, of the original actuary?

I am interested in the suggestion that the Board of Governors should include three younger actuaries. The membership of the Society of Actuaries is getting a larger and larger proportion of younger actuaries, and this should be the time for these members to get the executive problems and training from work on the Board needed for the future of the Society and their own individual futures. At the same time, this would provide an opportunity for the older members of the Board to hear the views of the younger members.

MR. ALBERT E. EASTON: I think that there are some projects that the Society should undertake which are beyond the scope of any one individual or company. One such project has to do with the government's mass of income tax and public health data. Another project for which the Society could assume the responsibility is the valuation of assets. Information concerning this problem is not readily available. A third project concerns the development of an actuarial language for programming computers. The Society could serve as a library for computer subroutines that could be made available to its membership.

MR. SAMUEL E. SHAW II: The actuarial profession has been, and can continue to be, of considerable help in determining the proper money value of damage awards. Members of the Society can help by making themselves available to testify and to help develop better rules for the courts to follow. In this manner actuaries can become better known to the public and to the legal profession.

MR. STEPHEN F. KRAYSLER: I am interested in the type of market research that is done by actuaries, that is, such things as agency-location studies or the effect on a company's premium income of hiring a new agent. In order to perform this kind of study, the actuary needs reliable data with regard to the premium income and number of agents per state

(or other demographic area) for all companies. Other insurance organizations do not have this information available. Even state insurance departments do not know the number of agents actually selling in their states. The Society, then, should initiate a program to secure this type of data.

I wonder why I have seen nothing in the *Transactions* about market-research-oriented model building. Is this because of the above problem or are there ethical considerations? What does the actuary involved in market research owe to his company, and what does he owe to the profession?

MR. WILLIAM M. BUCHANAN: I will advance the theory that greater promotion of the actuarial profession can be done by the younger actuaries through the individual actuary's own work. Initiative on the part of the younger actuaries is something that is needed. Being unafraid to take a stand on a subject is one thing which will help to make the profession better known.

MR. QUINTIN J. MALTBY: One point I would like to make is that Fellowship in the Society is the foundation upon which the actuary's continuing education can be built. Another comment is that legal matters should probably be more a function of a national body than the Society, which is an international body.

MRS. ANNA M. RAPPAPORT: I think that the syllabus should be followed by a program of continued education after Fellowship, because we will be confronted with newer and bigger problems in the future. Second, I am in favor of workshops. I feel that they are excellent and that they should be organized by the local actuarial clubs.

MR. EDWIN B. LANCASTER: I think that there should be some reporting to the membership as a whole on the Education and Examination Committee activities as well as the activities of other committees. I believe that it should be done, it would be a constructive move, and it would be helpful to all members.

MR. PAUL D. YEARY: At the time that I heard about modern management techniques, I went to the library to see what books there were to get one started on a study of this topic. The first chapter discussed how rapidly this field was progressing and that the book was out of date by press time. Since the book was written nine years prior to my reading it, I gave up right there. It would be helpful if the actuaries who are con-

versant with this subject would provide a reasonable reading list for the actuary to use relative to these new fields of thought.

MR. WALTER W. STEFFEN: There is an award of the year for outstanding management books. The hundred or so management books that come out each year are sifted down to about four or five outstanding works. You can check through this list to find the four or five outstanding books, which make a very good basis from which to start your reading.

MR. AFFLECK: In Canada, a younger actuaries' club was organized a few years ago in an effort to achieve more informality and to allow a freer expression of individual ideas. In particular, it was hoped that meetings of the younger actuaries could deal with controversial and technical areas that cannot be included in the agenda of the Society or Canadian Institute. The meetings take one of three formats but usually involve a presentation of a paper followed by one formal, prepared discussion. After this initial discussion, the topic is thrown open to the whole meeting and a general discussion takes place. On other occasions, there have been debates or panel discussions. Attendance averages between 35 and 40, and we feel that this size meeting and the lack of formal minutes lead to an informality that is impossible to achieve at either the Society or C.I.A. meetings:

The club originally considered forming a separate organization but decided to remain as a committee within the Canadian Institute of Actuaries. Meetings are held only in Toronto, although we are now considering the possibility of rotating meetings throughout the country.