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ADDRESS OF THE PRESIDENT, DENNIS N. WARTERS

THE FELLOW OF THE SOCIETY OF ACTUARIES

AS PRESIDENT of the Society of Actuaries, I have the privilege of addressing you at this time. As I thought about subjects which might be of interest to you, I was impressed with the increase in the knowledge and training needed by the actuary as we move forward in our complex social structure. While most of us in this room are well aware of the changes that have taken place, it would seem timely and of some value, both to those who may seek our services and to those interested in becoming Fellows of our Society, to bring together a composite picture of the "actuary" as he is represented by our members of today.

It is unfortunate that the most usual dictionary definition of the word "actuary" as "one whose business or profession is to calculate insurance risks and premiums" does not in any way adequately indicate the breadth of the field in which he is asked to serve. The popular concept is inclined to overemphasize the mathematical side of the profession—to overbuild the actuary as an individual primarily engaged in applying the theories of algebra, calculus, and probability to the solution of problems involved in the calculation of premiums for life insurance and annuity contracts. It is true that some proficiency in these mathematical subjects is needed in obtaining a background in actuarial theory. However, in actual practice few actuaries engage themselves in activities involving complicated mathematical exercises. They do resemble the mathematician in that they are frequently called upon to apply logical and critical analyses and syntheses to a problem, using care to discover, evaluate properly, and place all of the related factors. Thus, those with a talent for mathematics often become successful actuaries.

In his address as President of the Society of Actuaries in 1957, Mr. Malvin Davis well said, "While a mathematical foundation is obviously necessary for actuarial science, there is room for a difference of opinion as to just how much mathematics is required. A broad liberal education in the humanities is also important in many actuarial assignments."

An inspection of our list of members shows that most of the Fellows

of our Society come to our profession from the colleges. Most possess a college degree. These degrees vary from B.A. and B.S. to Ph.D. While figures are not available, it is my strong impression that the majority have done substantial college work in mathematics, although this is not always the case. We do know that only a minority have actually taken courses in actuarial science while in college. The fact that some have attained Fellowship without a college degree or college courses in mathematics shows that neither is a necessity, given a student with the needed talent and the willingness to apply himself.

In determining the breadth of the service offered by an individual, one of the important measures is the field of study in which he has displayed competence. In some professions, such as medicine and law, the college degree and proper government licenses are measures well known to the public and individual inquiry is needed only in determining the field of specialty. For others, such as university teachers and scientists, where many specialties are involved and qualifications are not easily identifiable, all conclusions must be based on individual inquiry. In this latter group, we must include the actuary.

Before a candidate may be enrolled as a Fellow of the Society of Actuaries, he must satisfactorily pass examinations prescribed by the Society. In his address as President of the Society of Actuaries in 1956, Mr. W. M. Anderson called attention to the broad scope of these examinations in the following words: "In reviewing our Examination Syllabus and using examination hours as a rough indication of the degree of importance of each subject, we may estimate that only about one-quarter of the syllabus relates to subjects which are of major interest to actuaries alone. The remaining three-quarters of the syllabus intersects with the fields of at least a dozen other recognized professional disciplines and, indeed, may be said to transgress upon fields which are primarily theirs. As a result, the actuary has come to be a person who may be described as a man of business with broad and widespread knowledge and with the special aptitude of being able to make use of mathematical techniques for the purpose of carrying out business processes and engaging in business management decisions. On the other hand, the confines of the syllabus have largely restricted our activities to the life insurance business and to other private and public insurance and pension systems." It is interesting to note the great increase in recent years in the number of actuaries offering consulting service. Here, we have a reflection not only of the increasing numbers of life insurance companies, pension plans, etc., served by the highly trained specialist but of the additional areas in which the actuary may serve in our growing complex economy.

While some rearrangement to ease the task of the student is now under consideration, at present the Society examinations are eight in number totaling 36 hours of examinations. The Society is working toward two examination periods in each calendar year.

The first two examinations cover the material usually included in standard undergraduate mathematical courses through differential and integral calculus, plus undergraduate courses in probability and statistics. This background is needed in preparing for subsequent examinations insofar as they use the theories of mathematics, probability, and statistics.

In the following six examinations, the candidate approaches the practical phases of the actuary's work, and in the larger companies and consulting firms it is from the areas covered that the actuary will pick the special field in which to engage himself. It is easy to see the ways in which the fields covered intersect other professional disciplines.

The six examinations cover:

a) The development and use of formulas based upon combining the theories of compound interest and discount with the timing and probability that the event insured against will occur. As the contingencies for which insurance is issued are many, covering most of the hazards to the person, and a single insurance contract may be issued covering a combination of these hazards, a single formula must sometimes provide for insurance payable when a variety of events follow one another in a specified order spread over long periods of time and may involve not only one life but several lives.

b) The construction and graduation of mortality, disability, and morbidity tables of all kinds. Here, the student must also become familiar with the sources and characteristics of the principal existing tables. These are tools used by the actuary and he also may wish to construct new tables as additional experience becomes available.

c) The selection of risks. Here, the student learns to measure and evaluate the characteristics of the risk to be insured. No two individuals are alike and it is important that the actuary know what insurance and other experience teaches us about the impact of such factors as family history, overweight, occupation, alcohol, pulse, blood pressure, etc., on the length of life and the possibility of disability, accident, sickness, hospitalization, etc. He must know not only the impact of each type of impairment to which the human body is heir but the impact of a combination of impairments and the ways in which the total can be evaluated in determining the premium to be charged for the risk.

d) The calculation of gross premiums for insurance risks of all kinds. Not

only must these premiums take into account probable interest earnings and provide for all of the various benefits included, but they must contain sums necessary to pay the expense of administering the contract. Here, the actuary must be familiar with the varied benefit and settlement provisions included in modern policies and fully aware of the nature and incidence of the various expenses for which provision must be made and the margins needed for contingencies and future changes. In addition, premiums and cash values will be influenced by legislative enactments and by government regulations, both at the federal level and in each of our sovereign states—again, a mass of information to be obtained by the actuary.

e) Life insurance accounting, the valuation of liabilities, and the determination, analysis, and allocation of earnings. Most life insurance contracts are long-term contracts involving the accumulation of money over the early years to meet increasing possibilities of loss in the latter years of life. It is not possible to close the books each year and determine the profit and losses in the way it can be done in most other corporations. At the end of the year, there are existing contracts which will involve future gains or losses for which estimates must be made in the current balance sheet. Eventual gain or loss cannot be determined until the maturity of each contract. Thus, the preparation of a financial statement and the determination, analysis, and allocation of any divisible surplus earnings are a complex task. It is complex not only because the final story is not told in regard to existing contracts, but complex because of the many different kinds of insurance contracts and the impact of the various provisions included on the possible earnings under each of these contracts.

Recognizing the problems involved, the federal government does not apply the usual corporate income tax structure to the life insurance company but has passed special income tax legislation for insurance companies. Again, we have a complex bill and special tax forms, with all of which the actuary must be familiar.

f) Life insurance law. It is not necessary that the actuary be a lawyer, but he must have a sound knowledge of the laws in the various states affecting the insurance business and also the more important common law decisions affecting policy provisions, policy administration, dividend distribution, and insurance practices. He will work with the lawyers in keeping within proper legal bounds in all of the broad areas of his responsibility and in answering litigation. Because of his knowledge of benefits to be provided, it is often the custom to have the actuary prepare the first draft of policy provisions, endorse-

ments, and riders. This draft is then submitted to the lawyers for their approval.

g) Sales and agency problems. The actuary is called upon to work with the sales department in connection with the technical phases of agency problems, particularly those relating to costs and methods of compensation. Salesmen's contracts based on varying commissions and allowances tied to the many kinds of service to be rendered are complex, as are the contracts of branch managers providing proper incentive for building sales agencies and controlling overhead costs. In some states, special laws and regulations impose limitations on amounts that may be paid and the way in which they may be paid.

h) Investment of insurance funds and valuation of assets. Possible interest earnings and capital gains and losses over future years have an important bearing on the level of premium rates and are a major factor in building divisible surplus. Thus, the actuary is expected to be familiar with the general principles of investment and the characteristics of each of the principal types of investments made by life insurance companies. The actuary also needs to understand the fundamentals of the financial systems of the United States and Canada and methods of evaluating specific investments for statement purposes. These parts of his work will give him many contacts with the investment people.

i) Individual accident and sickness insurance. As many life insurance companies write individual accident and sickness insurance, actuaries are called upon to perform the same functions in the accident and sickness field that they have traditionally performed in the life insurance field. This requires a familiarity with the many kinds of accident, sickness, hospitalization, and medical expense policies, their preparation and administration.

j) Employee benefit plans. Here, we have a broad subject as these plans include most of the various kinds of group insurance, retirement plans, and welfare plans. These plans may be insured with an insurance company, self-insured on a pay-as-you-go basis, or self-insured under some form of trusteed arrangement. Employee benefit plans provide many kinds of insurance—life insurance, disability insurance, insurance covering the costs of hospital, medical, and surgical expenses, and the loss of time due to illness. They also provide pensions and profit sharing arrangements. The actuary needs to know, both from the viewpoint of the employer and from the viewpoint of the employee, the reasons for and against the various kinds of benefits that may be provided, underwriting risks involved and how to control them,

how to write the contracts, how to compute the costs, how to value the liabilities, and how to obtain the most favorable tax treatment for both the employer and the employee. Thus, he becomes involved not only in what might be called strictly actuarial computations but in the determination of important elements in the personnel and management policies of the employer.

k) Social insurance and allied programs. With the development of social insurance and other governmentally sponsored or administered welfare programs in our country, the actuary has been called upon in connection with problems involved in the formulation of the plans, their administration, and the financing of them. He must also understand the interrelationship of such programs with private insurance and welfare programs and other pertinent aspects of the nation's economic, political, and social life. This is a broad field covering not only programs relating to old age and survivorship benefits but those involving unemployment benefits, workmen's compensation benefits, cash sickness benefits, medical care programs, and children's benefits.

After they have passed the required examinations and become Fellows of our Society, we find our members engaging themselves in many ways. On January 1, 1961, there were 1,140 Fellows of our Society. While no exact data are available, our *Year Book* indicates that nearly 900 of these Fellows are connected with life insurance companies; 140 are in consulting firms in large part serving on a fee basis; 25 are connected with universities and government; and 75 are employed in other ways, this number also including those in retirement. A decade ago, there were 708 Fellows of the Society of Actuaries—600 in life insurance companies, 45 consultants, 15 in government, and 48 in other activities or retirement. Thus, in the last decade we have had a 61% gain in the number of Fellows of the Society and increasing numbers occupying themselves in every field of interest but particularly in the consulting field where the number has more than trebled. This is perhaps a reflection of the increasing number of areas in which actuaries serve.

Many actuaries offer services in chosen specialized fields. Thus, we have actuaries who specialize in the selection of risks and spend their time in the actual analysis and measurement of the individual risk. Some concern themselves with the preparation and administration of policies issued to individuals. Others work on the preparation and administration of employee benefit plans covered by master policies which are individually tailored to the needs of the employer and under which certificates will be issued to the individuals insured. We have actuaries engaging

themselves in sales problems, both in connection with individual policies and with employee benefit plans. In connection with employee benefit plans, the actuary may spend a large part of his time actually working in the field aiding in the presentation of technical material to the customer. Here, he will be most effective if he, himself, understands sales techniques and is capable both of presenting the product in an intelligent and persuasive way and of changing it as needs develop.

Some actuaries confine themselves to the more mathematical side of the business, computing premium rates, policy values, liabilities, etc. Some are largely engaged in accounting problems and, today, with the increased use of electronic equipment must become expert in programming work for this equipment and have a full understanding of how it can be used. Some specialize in the analysis of the experience developed in connection with the various kinds of risks insured—others in the analysis and allocation of surplus.

The breadth of the educational program through which the Fellow of the Society passes forms an excellent foundation for a diversified career. In his address as President of the Society of Actuaries in 1950, Mr. E. M. McConney well said, "The rigorous training for success in our examinations develops mental discipline. For those who attain this and combine it with a broad viewpoint on human relations there are frequent opportunities to demonstrate the exceptional value of this combination in the field of administration. A combination of a capacity to weigh mathematically various courses of actions, with a broad knowledge of the study and management of financial affairs and the practical effect of economic influences, is so valuable that those possessed of these qualities are recognized in commerce and industry to an increasing extent."

The actuary's daily activity gives him many opportunities to become proficient in other phases of business administration. This he can do both by outside reading and by observation and actual experience. Thus, he may become well versed in personnel practice, in sales, in management, in organization and administration, and in other fields. With broadening experience and interest, we find many actuaries moving from a field of specialization into broad areas of business administration. In our 1961 *Year Book*, looking only at those who are employed by life insurance companies and who have been Fellows for more than ten years, we find 6% hold the position of President or Chairman of the Board; 41% bear the title of Vice-President or Second Vice-President, in many cases bearing the title Actuary in addition; 15% have the title of Actuary alone; 14%, Associate Actuary; 6%, Assistant Actuary; 15%, some other title; and 3% show no official position in the *Year Book* listing. It is interesting

to notice that those with general executive titles, such as President or Vice-President, increased from 38% of the number in 1951 to 47% in 1961.

As a further evidence of the breadth of the foundation and the opportunities available to a Fellow of our Society, it is interesting to compare the background from which came the Presidents of our life insurance companies. As we might expect, there are many roads to the top as technical training is only one of many factors in the final choice. Looking at the 40 largest companies in the United States and Canada measured by assets, we find that, of those holding the title of President, 13 are Fellows of our Society; 6 have a legal background; 7, a sales background; 6 are investment officers; and 8 traveled other roads. Here is proof that the possession of a Fellowship in our Society does offer opportunities to develop characteristics needed in top administrative positions.

Of those who engage themselves in the consulting field, many offer services in connection with employee benefit plans. The consulting actuary is very much needed in developing and tailoring the pension plan on the trusteed basis. He is needed every year in the valuation of the benefits promised and in the amendments required to meet the changes that come with time. Some become consultants for life insurance companies, often undertaking to furnish the complete actuarial service for a smaller company or, generally to the larger company, offering services in various specialized areas.

Some of our members are employed by government in supervisory capacities in administering the insurance laws of the various states. Others work with the growing and enormously important social insurance and welfare programs operated by government. Still others who have a flair for teaching become professors in our universities.

Our numbers are far short of those needed to properly care for all of the calls for our services. The areas in which the actuary works offer relatively stable employment because of the long-term nature of the contracts involved and the ever present need for protection against the hazards of life. Thus, there is need for the actuary in good and in bad times. The actuarial profession offers opportunity to people of keen perception who have the ability to analyze critically and synthesize complicated problems involving long-term contracts promising benefits based on various contingencies and involving collection, accumulation, and payment of money under the varying conditions of the future.