

**RECORD OF SOCIETY OF ACTUARIES  
1978 VOL. 4 NO. 1**

**EDUCATION FOR AN EXPANDING ACTUARIAL  
PROFESSION—EXPANDING ROLES OF THE ACTUARY**

*Moderator: LIONEL A. POTTS, JR. Panelists: THOMAS F. EASON, KEVIN M. RYAN\*,  
CHARLES C. HEWITT, JR.\*\*, JAMES C. HICKMAN*

1. Education for an expanding actuarial profession.
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MR. JAMES C. HICKMAN: The words "profess", "professor", and "profession" have the same root. They pertain to the act of professing or proclaiming a set of ideas or beliefs. Thus one is led to ask, what set of ideas characterize the actuarial profession? Suppose we succeed in identifying the ideas that have defined the actuarial profession in the past; the theme of this meeting then forces us to ask if the existing set of common ideas is sufficient to provide a basis for "expanding actuarial horizons"?

In my part of this session I will suggest two propositions and then attempt to defend them. The two propositions are as follows:

1. The set of basic ideas that has characterized the members of the Society of Actuaries is contained in the mathematics of life contingencies. The corresponding set of ideas for members of the Casualty Actuarial Society has been the notion of a pure premium, the product of a claim's frequency and a claim's severity measure, plus a set of ideas for measuring aggregate insurance experience and adjusting premiums.
2. The set of ideas upon which actuaries in North America have built their profession must be expanded.

\*Mr. Ryan, not a member of the Society, is a Fellow of the Casualty Actuarial Society and is Consulting Actuary, Milliman and Robertson, Inc.

\*\*Mr. Hewitt, not a member of the Society, is a Fellow of the Casualty Actuarial Society and is Vice-President, Metropolitan Property and Liability Insurance Company.

It isn't necessary to spend a long time defending the first proposition. The word "characterize" means that actuaries have mastered these basic ideas and those who have mastered these ideas are actuaries. Of course, practicing actuaries use many other ideas, but these are shared with other members of management.

The second proposition will require more defense. The defense is based on three points:

1. Several functions traditionally assumed to be within actuarial practice, or at least closely related to it, have been shifted to other groups. For example, consider (a) the increased role of accountants in fixing the form of insurance company financial reports, (b) the growth of specialized data processing and system groups within some insurance companies without much relation to the actuarial function, and (c) the creation of new occupations such as health care economist and investment performance analyst to perform functions closely related to actuarial activity in employee benefits. Actuaries must acquire new ideas or face the threat that additional functions will slip to other groups.
2. Broad social, economic and demographic trends, far beyond our ability to control or even shape, have reduced the relevance of some classical actuarial models. Inflation at the rate experienced in most of the decade makes one question whether life contingency models with fixed interest rates and fixed benefits are sensible. The same force has made time series analysis of claims experience necessary to keep property and casualty insurance premiums from losing the race with inflation. The rollercoaster path followed by the U. S. fertility rate since 1945 makes one wonder if it is worthwhile to study stationary population theories. The entry of women into the labor force has changed the need for life insurance and has created problems for social insurance and employee benefits systems that have only been partially resolved. Actuaries are being forced by events to master the tools of social science.
3. The survival of any profession depends on its ability to attract creative young people. Creative people are seldom interested in professing old ideas. They are eager to incorporate new ideas in the intellectual foundation of their profession. The actuarial profession must attract its share of the innovative young and to be receptive to their new ideas, or it will atrophy.

I would like to read to you from a speech given by my friend and former colleague, Willard Boyd, President, University of Iowa:

"Frequently, in the name of professionalism, we attempt to particularize a core of knowledge which is artificial in its scope. In doing so, we limit the future employment opportunities of our students. Not even a planned society can guarantee a perfect and continuous fit between training and jobs. Work will always require individual ingenuity and flexibility. Accordingly, specialized education must always be tempered by general education. If properly combined, the line of demarcation between them cannot be found."

From the experience of my generation comes another example of the threat of narrow professional training to serve a special public interest. From 1942 to 1945 this nation selected a group of outstanding young men according to a set of fairly high physical and mental standards. They were intensively trained, at great expense to the nation, to serve as bombardiers. For a few months they performed a vital public service. The only trouble was that after VJ day no one needed bombardiers to drop iron bombs using the Norden bombsight.

If as I assert, it is necessary to expand the common core of knowledge, in what direction should the expansion take place? One group, impressed with the increasing role of government regulation, believes that professional security may be achieved by educating actuaries to serve as instruments of public policy in insurance related areas. The status of Enrolled Actuaries in the administration of ERISA is an example of such a public role.

No one would want the actuarial profession to shirk its duty in administering public policy. However, one should be realistic about the room for growth in this area. Public policy develops in a democracy in response to particular problems. It seldom follows a coherent grand design. In addition, two powerful and well organized groups, lawyers and accountants, are already assigned broad responsibilities in the regulation of business.

Whether we like it or not, the areas for growth in actuarial employment may come in non-traditional fields such as unemployment insurance, the management of self insurance systems for large corporations, risk management for HMOs, the organization and management of catastrophic pools, and the development of equitable systems for intergenerational transfers of income to supplement funded private pensions.

In order that the actuarial profession may adapt to its changing environment, I recommend an evolution in our education program. A revolutionary change would be inappropriate. The key to this adaptive response is to create a unified, rather than a specialized, education program for as long as possible. The specific changes would be as follows:

1. Incorporate more practical data analysis tools such as time series analysis and multiple regression to supplement the current topics on mathematical statistics and probability.
2. Bring capital budgeting ideas into the study of the mathematics of compound interest.
3. Add topics on constrained optimization (linear programming, quadratic programming) in numerical analysis.
4. Integrate the instruction in life contingencies more fully with the other topics. This includes the use of individual risk theory models which build on previous work in probability and statistics.
5. Increased stress should be placed on the projection of populations in the study of demography.

6. A common section on the economic role of insurance should be added.

I am advocating evolution not revolution; evolutionary expansion into those topics in statistics, demography, and operations research that will help manage modern insurance programs. Evolution is necessary in professional affairs as it is in biology. The alternative to evolving is extinction.

MR. KEVIN M. RYAN: The actuary is currently operating in areas within which demands have been intensifying. In contrast to other horizons, the actuary's view of the currently viewed "horizon" must be broadened and deepened. Much has been said about the lack of availability of insurance, the price of insurance in the casualty area, and the continuing problem of adding to -- if not maintaining -- policyholder's surplus, a growing need in order to support increasing insurance activities. In light of these existing problems, the actuary, in many cases, is becoming a necessary ingredient in the formula for continuing economic vitality. As a means of analyzing the position in which the actuary now finds himself, why he is in that position, and how he is to respond to these increasing demands within the current framework of activity, let us begin by looking at the events that have combined to generate this actuarial need.

In some areas casualty insurance technical activities have often been considered accounting in nature, although cloaked in actuarial terminology. I believe the routine handling of questions of risk and the inability of the non-professional actuary, who performed that function without necessarily pretending to be an actuary, is the major cause of the problem currently facing the casualty insurance industry. To give you some examples of what I mean, let's look at accounting as it impacts on the property and casualty annual statement. We have been taught that the loss reserves are tested and evaluated by using actuarial formulas. Until recently, I would suggest that what had been used was accounting principles. Accounting principles are not necessarily in contention with actuarial principles, but they do not provide a sufficient basis for an actuarial evaluation of reserves. The soundness of reserves depends a great deal on how much professional actuarial expertise is utilized in their development, especially in the long-term liability line. This can be seen in the statutory reserve requirement where a fixed amount is allocated under the guise that this is a sound conservative accounting approach. I suggest that times have indeed changed; the need for some analysis that goes beyond accounting principles and establishes a reserve reflecting today's inflationary and economically dynamic society is now essential. It is absolutely necessary to develop reserves by utilizing the same considerations as those used in developing rates. These very specific actuarial principles involve the analysis of trend, loss development, and frequency and severity indications. These tools are only part of the technical expertise which differentiates between actuarial and accounting principles and approaches.

Another problem in the casualty insurance industry has occurred from employing underwriting principles which have been developed with no actuarial foundation, with resulting long-range implications. We now, as actuaries, must resolve not only the question of pricing but also the more difficult one of equity versus adequacy versus affordability.

This review of past shortcomings in the property and casualty industry is not limited to accounting and underwriting deficiencies, but encompasses all aspects that we could refer to as the domain of the actuary. That

domain, in a broad sense, includes any area involving the analysis of unexpected and unforeseen events by evaluating the inherent components and developing mathematical indications which provide an estimate of the economic costs involved.

As mathematicians dealing with social relationships and economic principles, the implications and ramifications among those requiring our services are oftentimes dramatic. The absence of our services or the inappropriate use of them has caused very visible problems and crises. This is evidenced by the inability of the insurance industry and underwriting community to come to grips with the proper costing and analysis of economic and social change, which has resulted in creating an enormous burden on the insurance-buying public. This burden is acutely apparent in the medical malpractice underwriting area as well as the product liability area.

These new crises in medical and products liability were "on the horizon" when we were dealing with the original crises of the property insurance area and the automobile assigned risk plan. All of these crises are generated by the inability of the underwriting community to come to grips with the problem of pricing the more than average risk potential for various segments of our society. It is accentuated -- some would even say created -- by the inability of the regulatory agencies to properly allow free movement in the marketplace, but the real problem is definitely that of pricing and measuring changing exposures, which at times results in driving prices beyond affordability for some. An example of a current problem is in the area of medical malpractice, where some doctors view their rates as unjustifiably and unaffordably high, and this problem was also very evident in the FAIR Plan activities. The problem then, as now, was the lack of attention by the insurance industry to the underlying actuarial concepts of insurance, and the actuary himself cannot be freed from a portion of the blame. Those that were involved in the field perhaps were not using as sharp a tool or as effective an instrument as actuarial science would allow.

Even now, we currently are facing social and economic crises in various insurance areas -- product liability, medical malpractice, municipal liability, a continuation of the problems associated with no-fault automobile insurance, as well as worker's compensation and the inflationary impact visited upon that line of business.

We have seen in the past that the tools necessary to handle these very dramatic social and economic changes and the measuring of risk associated with these problems are ones which require a lot more than accounting principles or the easy solution of the underwriter, as I have already mentioned. No longer is it possible for us to merely measure what has happened in the same way as an accountant would add the debits and credits before coming to the conclusion that yes, indeed, we are solvent or no, indeed, we are not solvent. What is needed and what the actuary is being called upon for, is to serve, as he is trained to, as the professional, objective measurer of the potential for loss that is facing the public and the insurer and to offer his forthright, full and intelligent expertise to those governmental bodies which are called upon to judge the appropriateness of rates.

This is an enormous task and one that requires a movement toward broadened actuarial activity within the area where the actuary currently operates. This would mean that no longer can the profits and losses of today be a measure of tomorrow's exposure to risk. What has to be done is to measure

the inherent risk and to apply the underlying mathematical principles involved in assuming that risk. It means being able to calculate the various components of variance, and to establish margins for assumption of risk. It must result in the generation of clear, forthright, understandable positions so that the public can understand the problems it faces. It requires us to do the job that we are now faced with but with a broadened appreciation that what we see on the horizon necessitates further involvement in today's demands.

MR. THOMAS F. EASON: This discussion is intended to stimulate progressive thinking on the expanding role of the actuary in regulation of insurance. Some will think the views expressed are quite strong. Many Casualty Society and Society of Actuaries members will agree with the thrust of the discussion. The objective is to consider the future activities which may be undertaken on behalf of the actuarial profession and the public which it serves.

The agenda for the meeting includes the subject of "Education for an Expanding Actuarial Profession". This discussion concentrates on the expanding role of the regulatory actuary, not on education.

The expansion of regulation in the United States has not been accompanied by effective expansion of the regulatory actuary's role on behalf of the general public. The reason is a lack of qualified actuaries. To quote Charles Richardson, retired Chief Actuary of Tennessee, "The business has become immensely more complicated, but the various states are no better equipped with technical staff, particularly actuaries, than they were 35 years ago." This quote repeats what is all too obvious. Increasing consumer and legislative pressures on benefits, premiums and the sales processes weigh heavily on the limited abilities, resources, and understanding of regulators. The Insurance Commissioner in Minnesota, Mr. Berton Heaton, was quoted last summer as saying, "The Division has to be able to match the expertise of the insurance companies, such as computer technicians and actuaries." You and I know that, with very few exceptions, the regulators are mismatched.

The premise advanced is that capable actuarial advisors within the Insurance Departments (and other regulatory bodies) would benefit the profession and the employers of actuaries as well as the general public. The challenge is to identify imaginative ways by which individual members of our Societies or the Societies themselves may bring about a change in the current sad situation.

As a member of the Society of Actuaries Committee on Career Encouragement, and actively involved with actuarial education, I have given much thought to actuarial employment opportunities. Let us briefly discuss the state regulators, and identify specific needs which translate into an expanding role for actuaries. The following summary reflects fifteen years of contacts with regulators as a consultant for a number of States and many constructive private conversations with regulatory actuaries, past and present.

States typically have actuarial opportunities in three areas. The most familiar would be the internal staff of the Departments. Here are found technical men and women who deal with approval of casualty rate filings, review of life, health and annuity forms, and interpretation for their peers of the many technical matters which affect the insurance business.

They also are relied upon to staff key committees of the National Association of Insurance Commissioners which shape the laws and regulations.

A lesser known position, generally full-time employment with the States, is that of actuarial examiner. This work is critical to the all-important review of financial statements and solvency within the States. The mismatch in expertise referred to earlier is most apparent in this area of regulatory work. Scrutiny of reserves for casualty and health insurance business, determination of the appropriateness of dividend distributions, audit of reserve formulas and computer procedures, and other technical matters are best reviewed by capable actuarial examiners. From personal experience, I can attest to this work as an excellent opportunity to learn the business while serving the general public.

Turning to governmental pension plans, one need only read headline news reports of ill-conceived benefits and funding to recognize the opportunities for pension and welfare plan actuaries in the political subdivisions. A formal investigation would undoubtedly discover the fact that forty or more States administer millions of dollars of public pension benefits without having available the regular services of a qualified actuary.

Let me insert a disclaimer. It is not my intention to downgrade state regulation nor to seek its discontinuance. I have no grudge against individual actuaries. These remarks, when published, may reflect badly on the people in regulatory processes which now exist. This seems unavoidable.

Recognition of the problem in this professional meeting is, I hope, appropriate. My intention, of course, is to encourage capable practice of actuarial science in the regulatory area. I have great faith in the ability of skilled actuaries to help make order out of the increasing chaos.

By what means may a change for the better be accomplished? Consider first the need to document the value of actuarial services for those who will benefit by these services. It is not surprising that state legislators and bureaucrats are generally uninformed about the value of an actuary. Because so few qualified technical people are employed by the States, there are none with whom they can discuss the value and application of actuarial work.

Industry actuaries are nearly invisible in most States when it comes to influencing legislation of importance. The role of lobbyist has been left to representatives of the American Council of Life Insurance and other trade groups. Even on such clearly appropriate matters as changes to the Standard Valuation Law for life insurance, attorneys and others who are accustomed to lobbying activities predominate. And so the legislators do not know the actuaries. When actuaries do stir themselves to action, it is often too late to establish credibility and be effective.

Insurance commissioners often have an imperfect view of the actuary's value. Occasionally, when a major problem exists, local actuarial clubs or small groups of actuaries take it upon themselves to provide input as a means of helping commissioners. However, such activities are not undertaken routinely, and are quickly disbanded. Once again the value of the actuary is submerged.

The solution seems straightforward. A new kind of effort is required for the value of actuarial services to become apparent to public bodies. This effort must be organized, regular and visible. Demand and opportunity for actuaries will expand when their value is thus better known.

Demand will expand. What about supply? Is there a supply of young people who may be hired by the regulators? Are there techniques for bringing together regulators and potential actuarial employees, young and old?

Many of the positions just described do not require the services of a Fellow of one of our Societies. This is fortunate because, unless breakthroughs occur in the area of public compensation, Fellows won't be available. Shifts in higher education are, however, offering new opportunities for recruitment of young people. Significant numbers are now graduating with actuarial backgrounds, or with a strong emphasis in mathematics and an inability to enter other fields such as education. These graduates are capable of learning the tasks required of, for example, junior actuarial examiners, rate analysts, and policy review personnel. Communicating the availability of such graduates to the regulators should help.

For positions such as the State Actuary in charge of public pensions or the Chief Actuary of an Insurance Department, the first need is a push toward appropriate compensation. What can be done?

The States will not solve the problem by themselves. The public and legislative representatives cannot solve a problem which is technical and poorly understood. Actuaries and insurance companies are best able to make progress. If you accept the premise that capable regulatory actuaries benefit everyone, you and your employer should then work to establish a well-compensated senior position within your domestic Department. Practical, semi-political approaches are called for. To mention one advanced proposal, it has been suggested that a fund which makes available supplementary compensation for these high-level positions would be appropriate. Such a fund should be independent from trade associations and could work in a manner similar to that now used to supplement salary and expense allowances for professors in actuarial science.

Another technique would be the communication of information in the colleges about public actuarial positions. A job description for actuarial examiner, developed by actuaries and the Insurance Department, would advertise interesting career opportunities to the young men and women who may be attracted by public employment.

A number of innovative activities by the actuarial profession and the insurance business are the best hope for solving the problems. The process will take time to evolve. It is not necessary that everyone who enters public service be of the same mind as the intense young person who is committed to becoming a Fellow. Some who start with a lesser objective will go on, allowing the Departments to "grow their own" Fellows. The rest will provide the kind of quality para-actuarial help that is now so much lacking.

Another quotation, this one from the recent Columbia University Arden House Conference titled, "Freedom and Control in a Democratic Society" makes several telling points.

"There was discussion concerning the 'quality' of our regulators -- most notably at the state level. For the most part, it was felt that the state regulators were unable to 'get their act together' and that some of the problems were exacerbated by substantial turnover and lack of continuity in regulation.



"One of the problems with regulators was determined to be inadequate salary levels, particularly for professionals.

"The consensus of the conference attendees was that all factions ought to be interested in "quality" regulation and that we ought to be able to do more to improve the system. Several suggested that business could enhance the regulatory climate by improving the general "regard" that people have for a public service, and to do what is possible to avoid the perception that regulators are subject to the manipulation of business, however subtle that might be. The incompetent do-nothing is just as harmful as the competent zealot.

"Reference was made to the fact that our legislators seem overly anxious to pass a new law every time a problem is encountered. This tendency is made even worse by the appalling lack of craftsmanship in the structure of such laws. The problem is bad enough in Washington--but it is even worse in the state legislatures." (Underscoring added.)

Solutions require work. We need communication to sell the value of actuaries to public employers. Then demand will expand. We need closer contact with our regulators and students. We need to persuade our employers that capable actuarial talent in the regulatory area is essential to doing the job which is required of us.

Substantial numbers of quality people are needed. The challenge is clear. Actuaries can continue to stand aside and accept the frustrating consequences; or we can go to work. The actuary's role on behalf of the public can be fulfilled only if competent actuaries are found to fill the positions of importance.

MR. CHARLES C. HEWITT, JR.:

#### The Historical Role of the Casualty Actuary

The implication contained in my topic for today - Expanding the Actuary's Role in the Property and Liability Insurance Industry - is that there exists a fairly well-defined role for the casualty actuary at the present moment in time. In order to see what this role is it will be helpful to cast our eyes briefly backward in history and examine the evolution of casualty actuarial work.

The Casualty Actuarial Society was formed in 1914 largely as the result of the enactment of Workmen's Compensation legislation by many States and the need for a body of statistics with which to cope with the problems of setting rates for this new line of insurance. The original name of our Society was "The Casualty Actuarial and Statistical Society". While the first few issues of our Proceedings are filled with articles on the subject of rate-making, those days also saw considerable discussion on the topics of gathering statistics and preparation of some portions of the annual statement for casualty insurers.

There were then, initially, three broad roles for casualty actuaries:

- 1) Gathering Statistics,
- 2) Annual Statement Preparation, and
- 3) Ratemaking.

And the early membership of the CAS was liberally sprinkled with persons who might accurately have been described as statisticians and/or accountants rather than actuaries as we have come to know them at present.

A brief word is in order about the ratemaking role as it existed in those times since that is the role which most of us have inherited. The casualty insurance business, largely because of the anti-trust exemption implied in a series of court cases in the late nineteenth and early twentieth centuries and also because of a need for the joint collection of statistics on lines of insurance where there was little firm information for making rates, formed itself into rating bureaus. I say little about the property insurance business because actuaries were unknown in virtually all lines of property insurance until after World War II.

Casualty actuarial work - ratemaking, at least - was far more dynamic. Until well into the present half-century leading casualty actuaries were found in rating bureaus. Company actuaries represented their employers on bureau committees - making policy, revising coverages and setting rates - customarily on the basis of recommendations by the staff of the rating bureaus.

With the formation of a new, strong organization to deal with property and liability accounting and statistical problems - the IASA (Insurance Accounting and Statistical Association) - those actuaries who had concerned themselves largely with the gathering and distilling of numbers appeared less in evidence at CAS meetings and discussions of collecting statistics or preparing annual statements became a less frequent part of our meetings and our Proceedings.

Meanwhile, after World War II, things were happening in the property and liability insurance business which would have a profound affect upon the role of the actuary. The "watershed" for our business and our profession came in the late nineteen-forties and early fifties with the concurrence of three significant events:

- 1) the SEUA decision and the enactment of Public Law 15,
- 2) the enactment in the States of legislation permitting property and liability insurance to be written in the same company and in the same policy, and
- 3) the enactment by the States of automobile financial responsibility and safety responsibility laws, virtually making insurance of private passenger cars compulsory and changing the principal line of casualty insurance from workmen's compensation to automobile. (Today auto insurance premiums run about five times worker's compensation premiums.)

The effects of these three causes upon the insurance industry (property and liability) were many and significant. Although Public Law 15 granted an immunity to the state-regulated insurance business from anti-trust and thus provided an umbrella for continued operation of rating bureaus, the state legislation which responded to Public Law 15 also granted companies the right to make rates independently. In many lines there was no longer a compulsion to join rating bureaus or to subscribe to bureau statistical plans and to use bureau-filed rates.

The ability to "go multi-line" brought about the creation of a significant new concept - the homeowner's policy - which combined the elements of liability insurance, fire insurance and theft insurance in the same packaged policy. This innovation found company actuaries in the "new" role of product design and pricing (of new products).

Since there were literally no property insurance actuaries, the casualty actuaries sought to fill the vacuum by deeming themselves "property actuaries" in the latter part of the nineteen-forties and by absorbing into their midst a number of long-time property bureau persons who could qualify for this new actuarial role by virtue of experience within the fire insurance business.

The increased significance of individual company ratemaking - in fact, the term pricing more accurately describes this activity - began to chip away at the old, presumably solid role of the bureau actuaries and their company-committee member counterparts. Three large countrywide auto insurers - State Farm, Allstate and Nationwide (formerly Farm Bureau) - innovated with new classification plans, new geographical territories and new coverage variations. As former bureau companies sought to copy this pattern of success, they found the need was great for actuaries who could cope with new rules and rating methods. Furthermore, the state legislation which responded to Public Law 15 often required prior approval by state supervisory officials, who, taking their responsibility seriously, insisted upon an explanation and justification of new filings. Who, but the casualty actuary, was capable of this task?

I would be remiss in this narration if I did not point out that throughout all of this change affecting the lives of property and liability actuaries there were a large number of CAS members who concerned themselves with the financial integrity of their companies, or, if in a regulatory role, the companies who reported financial results to them. This role is, in a sense, a heritage from the earlier days of actuarial concern for the annual statement, but, in effect, narrowed down to the specific concern for the accuracy and adequacy of loss and loss adjustment expense reserves. Needless to say, accurate, responsible reserve determination still plays a vital role in assessment of company performance and solvency.

With the over-simplification necessary in covering a topic like this one, I can sum up by saying that, up until several years ago, the role of the casualty actuary had evolved into pricing (including securing approval from rating authorities), product design and loss reserving.

However, the casualty actuary of today is beginning to find himself in a new role - that of a technician floating on the crest of the new waves of social, economic and environmental change that are filling out the nineteen-seventies. To mention just a few of the places where we have been placed on the "cutting edge" of this change:

- 1) estimating costs of various proposed and enacted no-fault auto insurance plans,
- 2) estimating cost-effect of various schemes for providing insurance in the involuntary market, e.g. FAIR Plans, assigned risk plans and "Facilities,"

- 3) determination of what constitutes a "fair" classification for popular lines of insurance such as automobile and accident & sickness, and
- 4) measuring the worth of retroactively-increased benefits in worker's compensation.

While these would seem to be the principal areas, I'm sure this audience can suggest other areas which will continue to provide variety in our jobs as we prepare to enter the nineteen-eighties.

#### Expanding the Role of the Company Actuary

With this historical review of the actuarial role in the property and liability insurance business plus the assessment of where we stand today, I now propose to focus on the somewhat more narrow area of the company actuary and the possibilities for expanding his role in casualty insurance.

#### Corporate Planning

The activity of an actuary in the corporate planning area presumes first of all that the normal functions of casualty insurance are being performed satisfactorily in every department of the company. If we postulate that all of these functional people (including the actuaries) are adapted to the idea of thinking of continuity of performance, then corporate planning can fill a major role within the company by dealing with the future discontinuities of corporate life.

Normally, functional people will not adapt well to thinking in terms of discontinuities. The type of person, including an actuary, who can adapt to thinking in terms of discontinuities will probably make a good corporate planner. The role of the corporate planning actuary then becomes that of a surrogate for his "on-line" counterpart elsewhere in the company. He relieves this "on-line" actuary from worrying about situations which might be considered abnormal and thus frees the "on-line" person to concentrate successfully upon the "bread-and-butter" end of the business.

#### Long-Range Financial Planning

The actuary has a clearly-defined actuarial role in this aspect of corporate planning. It consists of:

- 1) building computer models,
- 2) structuring the data base,
- 3) structuring the output information,
- 4) optimizing profitability by use of mathematical methods,
- 5) providing a general fundamental understanding of the total corporate operating picture, and
- 6) incorporating external events and forecasts (with emphasis on discontinuities).

#### Product-Line Planning

Perhaps several examples from my own personal experience will illustrate the actuary's role in planning for non-traditional product lines.

The National Flood Insurance Association was created by a cooperative effort among the U. S. Department of Housing and Urban Development (HUD), the U. S. Army Corps of Engineers and the private insurance industry. Ratemaking methods were completely non-traditional involving plotting of relative frequency of occurrence of flooding and establishment of two sets of rates - the actuarial (or needed) rate and the chargeable (or affordable) rate which the consumer actually paid with the Federal Government making up the difference and also providing stop-loss insurance for the risk assumed by the private insurance sector.

One of my former companies with a direct sales force has recently entered the small-town market by using the so-called independent (Big I) agency system. The planning for this dramatic break from traditional company marketing methods had to be achieved, at least initially, at the corporate planning level.

#### Financial Accountability

The actuary's professional characteristic of objectivity is nowhere called upon so importantly as in the measurement of his employer's financial stewardship of the business whether on behalf of stockholders, policyholders, or in some instances taxpayers. And in a well-managed insurance enterprise the accountability of individual managers should be measured in an objective manner - i.e. with the help of actuarial know-how.

#### Asset and Liability Valuation

Assets - traditionally actuarial valuation in this area seldom goes beyond the amortization of bonds on the so-called formula basis. I think we must admit that accountants have access to the same tables and computer programs as actuaries and can be relied upon to apply them to this problem. But actuaries have been called upon in connection with mergers and/or acquisitions to place values upon non-listed assets such as the agency plant and inforce book of business (admittedly more so in the life insurance area than in casualty insurance.)

Liabilities - objective and precise measurement of loss and loss adjustment reserves, unearned premium reserves, reserves for retrospective rating returns and contingent commissions are all properly the subject for actuarial effort. The real question in this area is whether or not actuaries and their ability to do this job are being fully and properly utilized.

#### Rate Regulation

So far it has been relatively easy to suggest or point out either the existing role of the casualty actuary or possible areas into which the actuaries may expand their activity. Within the field of rate regulation, I have already treated with the casualty actuary's historical and present role. However, I have also hinted at the fact that actuaries now find themselves on the cutting edge of rapid change in our social, environmental and economic concerns. It seems to me that within this context the casualty actuary has little control over the expansion of his role.

#### Consumer Demands

Virtually all of the activity referred to immediately above results from

consumerism - real or fomented - within our personal lines business. Rates for certain classes - such as young, male drivers in auto insurance - and certain territories - such as central city in either fire or auto insurance - have now become so large as to exceed the insured's ability to pay or at least his willingness to pay. Consumer response has been to question the whole rating system, and who is there to answer for the rating system except the actuary.

For the first time recently I ran across the assertion (remarkably well reasoned) that the actuarial rate (presumably the arithmetic mean or expectation) was not necessarily the "fair" (or proper) rate for that classification. The substance of the allegation was that, except for homogeneous classes of risk - normally distributed with small variance - there were many risks in a class (heterogeneous) which were being charged too much or too little for their own individual (true) hazard. Society, it is alleged, may view it preferable to slightly overcharge many risks than to substantially overcharge a few risks. The argument is, at least superficially, credible and strikes at the very heart of risk classification procedures currently in use. Casualty actuaries are going to have to come up with some good answers - understandable to the legislators, press and public - or re-examine our entire classification system.

#### Capital Growth Problems

Reference has been made to the traditional ratemaking method of casualty actuaries - the rating bureau. Bureau ratemaking, for various reasons, became so highly stylized over the years that it amounted to little more than cost accounting with time cycles as a variable. Traditional ratemaking has assumed an arbitrary profit loading (as a percentage of the premium) and made no distribution between relatively risky lines and relatively stable lines. Nor did profit loadings recognize the relative availability or non-availability of capacity to write different lines of insurance. The casualty insurance business has always had an over-supply of sellers (for desirable lines or risks, but not necessarily an over-capacity for all risks). This over-supply of sellers has kept the profit margins low. Since competition has often been at the agency level rather than at the consumer level, extra profits, if any, usually flowed into higher commissions. If we top this off with long-term inflation (since World War II), we have rates that seldom seem to catch up with the current levels of losses. Suffice it to say that, for whatever reason, the premium levels have increased far more rapidly than the capital and surplus available to casualty insurers.

Now the ability to write a volume of property and liability business is generally regarded as a function of the policyholders surplus. A ratio of two to one was at one time a standard, albeit a purely arbitrary one. Capital growth has not kept pace with this need. The entry of large life insurers into personal lines casualty insurance has temporarily alleviated the capacity problem, but has not helped the capital growth problems of individual property and liability insurers.

Actuaries must assume the new role of equating the economic reality of insufficient capital with the design of rates that more accurately reflect the inherent riskiness of different lines and classes of insurance as well as the role of convincing supervisory authorities, the press and the public that adequate rates are the only realistic answer to the need for capital growth in our business.

Coverage Availability

More and more casualty actuaries are hearing the term affordability. They are being told that just because a rate is actuarially sound does not mean that it is chargeable to prospective policyholders. As the actuary yields to the pressures for affordable rates which may be lower than sound actuarial rates, there is created a restriction on the willingness of company underwriters to make coverage available to certain risks, or classes of risk, which they deem underpriced. Lack of availability of coverage may be the single most important challenge of the day for the casualty insurance business and yet it is hard to find the actuary's role in solving this problem. If there is one, and anyone in this audience sees it, I welcome the expression of thought during our period of questions and answers.

I have probably exceeded my time allotment and yet I feel that I have barely touched upon some of the expanding roles for the casualty actuary. Fortunately, our Society is enjoying its most rapid growth rate in terms of numbers and hopefully our newer members bring an awareness - social or otherwise - of the challenges that they and the rest of us will face in the very near future.

MR. E. PAUL BARNHART: The Society of Actuaries Yearbook contains a rather traditional definition of actuary. I consider this definition too narrow to encompass an expanding role of the actuarial profession. Do you feel that we should attempt to come up with a fairly specific definition of the actuarial profession both for internal edification and external accreditation purposes?

MR. HICKMAN: Yes, I am in favor of definitions. But we must be careful lest our definition is so narrow that it prevents the profession from adapting to changing conditions. Since we cannot predict where actuarial talents will be needed in the future, any definition must necessarily be broad in scope.

MS. JANET S. GRAVES: Are the same basic tools necessary for both casualty and life actuarial work? Do you favor a common life/casualty syllabus?

MR. HICKMAN: I am in favor of a common syllabus for as many exams as possible. A common syllabus would give a unity to the profession and would make vocational change easier. There are several aspects of the casualty syllabus that I greatly admire: decision theory and operations research, for example. These subjects could easily be included as part of the common core.

MR. LIONEL A. POTTS: Charlie, should actuaries be required to be recertified?

MR. HEWITT: It has always appeared a little strange to me that passing a series of exams forever made one qualified to cope with all the problems in a changing world. Recertification is required in some branches of the medical profession by certain minimum number of hours attendance for doctors in classes updating themselves in new techniques. Sometime in the future the actuarial bodies may be compelled to follow this practice.

MR. HICKMAN: Recertification requirements are probably inevitable if actuaries take a public role. Medicine and law already have such recertification programs in many states. The difficulty is how to draft regulations

which cut out country club meetings and reward serious study. All professions face the same difficulties in developing rigorous continuing education programs.

Tom, what is your view of the alternatives of an augmented N.A.I.C. central regulatory agency as an alternative to expansion of the technical staff in the States?

MR. EASON: This possibility has been discussed extensively in articles by Bob Pawelko, a Society member and formerly an actuary for the Illinois Department. It was considered at some length during the development of the Society Special Committee report on non-forfeiture. Increasing the central staff is a logical means of getting to the problems I discussed without undertaking a State by State effort. However, the state bureaucracies are reluctant to give up a portion of their independence that would be required to work effectively with the N.A.I.C. staff in Milwaukee.

The most we could hope for, in my opinion, is a system with regional emphasis using the existing N.A.I.C. zone structure. The States may find it easier to work with their neighbors with whom they are better acquainted and share many problems. The financial, political and legal obstacles are formidable. A system of interstate compacts is one alternative which has some appeal, but no serious studies of this approach are under way to my knowledge.

MR. JAMES B. GARDINER: One source of supply for actuaries is retired actuaries who would like to continue working. Young actuaries are not interested in insurance department work because of the low pay. Another possibility is to encourage state legislators to bring unregulated public employee plans under the aegis of the insurance department.

MR. EASON: Have you considered means by which improved compensation might evolve? Are there any studies of this subject?

MR. GARDINER: I do not know of any studies. Unfortunately, salary improvement is difficult because New York insurance staff people fall under civil service. If some effort were made by the Society of Actuaries, I think progress could be made. I am not familiar with other States situations.

MR. J. ROBERT FERRARI: The State Rating Bureau in Massachusetts has employed several Fellows as a result of its being established by special legislation. This legislation specified job descriptions and salaries by statute and thus avoided the civil service issue.

The Society may also wish to consider the means of educating non-actuaries, perhaps by marketing actuarial literature or examinations. Such a process may assist those outside the actuarial profession by providing information and credentials to improve their job performance. It may also serve the profession by publicizing the body of knowledge required for actuarial competence.

MR. EASON: Legislation has recently been passed in the State of Washington establishing the position of State Actuary. It included significant funding and provision for supporting staff. Encouragement of this type of new position is one possibility for local action. It seems especially appropriate in areas where public pension plans have problems. I am told that the constitutional problems in establishing Federal regulation over public



plans are insurmountable. Regulation must come from state government and state actuaries.

MR. ROBERT E. HUNSTAD: In Minnesota, only the length of the legislative session last year prevented the passage of a unisex bill. The actuarial profession came in with too little, too late. As a result, the Twin Cities Actuarial Club is proposing that a Legislative Education Committee be developed. It would work with legislators and the insurance department. This may be a possible solution at the state level.

MR. EASON: Mr. Hunstad's example is excellent. His solution is a step forward. Those who believe with me that we currently have major problems at the state level should wait a year or two until the major revisions of the standard non-forfeiture law are proposed. As matters now stand, a handful of A.C.L.I. Washington people will try to carry the burden in fifty plus jurisdictions. Legislation affecting risk selection and requirements for statistical demonstrations in support of rate differentials are increasing. More actuaries and attorneys will be busy coping with the increasing complexity. Perhaps a way can be found for the Society or the Academy to assist the trade associations and work, locally and nationally, to educate the legislators and administrators.

MR. HICKMAN: Three comments:

1. As the body of actuarial literature expands, I hope these materials will be actively sold to other professions.
2. I have no objections to specialized educational programs for non-actuaries, but I cannot believe they would have significant impact on public awareness of technical insurance problems.
3. Today the ability to handle statistics and uncertainty is a requirement of every profession and even every citizen. A glaring deficiency in legal training is the lack of exposure to the principles of probability and statistics. This lack of knowledge permeates into both judicial decisions and legislation dealing with statistical matters.

MR. HEWITT: I would encourage each of you to get out and meet the legislators and regulators. I have had many experiences which show that they are anxious to meet with actuaries on insurance matters.

