



# The Actuary

The Newsletter of the Society of Actuaries

VOLUME 9, No. 1

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## EXAMINING DEPARTMENT EXAMINATIONS

*Strengthening The Surveillance System, Final Report to the NAIC-McKinsey Co. Inc., New York.*

by George Brummer

Supervision over insurance companies—or, as it is called here, a Surveillance System—is not something that can be lightly dismissed. Insurance is very much a “people” business and, consequently, supervision over it is in the public interest. Moreover, it is in the public interest that any supervision be efficient and, above all, effective.

Insurance supervision in the United States is nothing new. It has been with us for nearly 100 years, evolving and growing with time to its present state. Throughout, a major part of the supervision process has been the regular examination of each insurance company by State examiners under the direction of a State Insurance Commissioner. These regular examinations have never become standardized, but have nonetheless been expected to furnish the various state regulatory authorities with sufficient information to enable them to determine the solvency of insurers within their jurisdiction. In recent years, the process has been expanding to include supervision over certain marketing practices, such as advertising. Sometimes this expansion came after prodding by consumerist movements, but more often the impetus came from within the State Insurance Departments.

Unfortunately, the examination system is still not satisfactory. Recognizing this, the National Association of Insurance Commissioners, in 1973, asked McKinsey & Company, a well-known firm of management consultants, to review the system and recommend changes. The results of this review and the recommen-

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## EDITORIAL BOARD CHANGES

Pressure of other duties has led Kenneth T. Clark to resign from the Editorial Board much to the regret of his colleagues. Ken has been an active Editor since November 1970 and his scholarly wit has enlivened the duties of the other Editors as well as the pages of *The Actuary*. The Society and *The Actuary* say “Thank You”.

We welcome to the Editorial Board, Colin E. Jack who will also act as our Canadian correspondent. We also welcome an addition to the Board, Jonathan L. Wooley.



## 20th INTERNATIONAL CONGRESS OF ACTUARIES

The papers submitted by the United States members for the Congress to be held in Tokyo in October 1976 are reviewed by a Committee from the United States section of the International Actuarial Association.

The members of this Committee are as follows:

- Newton L. Bowers, Jr.
- Thomas P. Bleakney
- Melvin L. Gold
- T. N. E. Greville
- Charles C. Hewitt, Jr.
- David G. Halmstad
- Paul M. Kahn
- William J. November
- Jerome A. Scheibl
- Donald B. Warren
- Robert J. Myers, Chairman

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## THE ACTUARY AS A PROFESSIONAL

By John C. Angle

“Those uncertain actuaries,” as Fortune Magazine characterized us in 1965, still aren’t certain of their identity or professional standards. The words “identity crisis” leap out from Past President Morton D. Miller’s program introduction for the 1974 Annual Meeting. And John Bragg’s paper reminds us of our forlorn search for an acceptable definition of our profession’s brand name, actuary. Mr. Bragg tries again by saying we are experts. I give him credit for a good try, but “What do you do?” will continue to rank among the most difficult questions faced by an actuary.

Our persistent failure to cast a suitable definition of “actuary” can be accounted for, I suspect, by varied roles of today’s actuaries. We are, in fact, as fragmented as the French Assembly. Our common bonds are those of a scientific discipline which seems to be breaking into several subspecialties. Our cultural ties are those which unite the graduates of a single institute: only we took our studies by correspondence and wrote examinations in centers stretching from the Philippines to South Africa. But can the unity of education produce a unity of vocation? I will suggest that it cannot. While the president of a mutual life company and a consulting actuary can unite in scientific matters, to suggest that they share identical vocational obligations is to fall into the trap of those who consider alike all insurance men or all Texans or all New Yorkers.

From the birth of the Equitable in London in 1762, a company soundly guided by the work of Dr. Richard Price, to the founding of the Society of Actuaries, “actuary” has referred to an officer of a life insurance company.

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# The Actuary

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The Society is not responsible for statements made or opinions expressed in the  
 articles, criticisms, and discussions in this publication.

## Society Examinations Seminars

### GEORGIA STATE UNIVERSITY

Seminars for Parts 1-4 and 6 of the Society Examinations and for Part 4 of the Casualty Actuarial Society Examinations will be held between April 7 and May 2, 1975.

Complete information can be obtained from:

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## AN EDITORIAL BY THE PRESIDENT

**D**URING the summer the Society voted a change in its Constitution, eliminating the last vestige of a self-imposed prohibition it once contained against public expression of professional opinion. It has been clear since 1971 that the Society as a whole, or the Board of Governors, or any committee authorized by the Board, can issue statements of professional opinion, subject to certain rather tight conditions spelled out in Article X. The 1974 action had no effect except to make the 1971 action permanent.

For the three years that Article X has been in effect, but its long-range future cloudy, neither the Society as a whole nor any Committee thereof actually issued any public statement of professional opinion. This inactivity was partly because no appropriate issue surfaced, partly because the machinery for public expression of opinion was new and untried, and perhaps partly because Article X expired automatically at the end of 1974. Now that we have reaffirmed our intentions and made Article X as permanent as the other Articles, it may be appropriate to consider whether there now are issues to which the Society should speak.

As your 1975 President, I am not inclined to provoke controversy just to be doing so. On the other hand, we owe it to the public to provide guidance in areas where an actuary has special expertise, and to speak out where we have something constructive to say. It may be that an opportunity or two for action of this nature will come up in the not-too-distant future.

As one example, the OASDI benefit formula, and particularly its operation under inflationary conditions, is being studied by the Advisory Council on Social Security. One FSA is a member of this Council, and three others act as consultants thereto. Other actuaries are consultants to the Senate Finance Committee, and are looking into similar matters. When the Council publishes its recommendations, should the Society take a public position? At present there is no Society committee assigned to the Social Insurance area. Should there be one?

The Society might also have a public position with respect to life insurance cost comparisons, as advocated by some of our membership at a concurrent session in New Orleans. Here we have an active Society committee, but it is of a special nature, and has so far been engaged in a technical study requested by the NAIC. It has not attempted to formulate a Society, or even a Committee, position. Should it consider doing so?

Surely our professional responsibilities go beyond those to our immediate employers. On public controversy involving actuarial principles we need to stand up and be counted. How can we do this best?

Comments on any of these items are invited. They should be sent to the Editor so that the individual views can have, via *The Actuary*, wide circulation among the members of the Society.

Charles Lambert Trowbridge

## LETTERS

### Impact on Inflation on Balance Sheet and Premium Calculations

Sir:

Those who attended the recent South-eastern Actuaries Club Meeting were treated to a very fine presentation by Mr. Vanderhoof on the responsibility of the actuary in investment operation. Perhaps because of its apparent mystery the analysis of investment performance, prediction of future interest yields, and study of the interrelationship between inflation, interest and expense levels, have taken a back seat to more "tangible" subjects within the actuarial realm, such as historical studies of expense and mortality.

The study of investments and effect of fluctuating interest levels is a subject we can no longer afford to ignore. Consider this simple illustration. Suppose a company has purchased a high-grade bond at par (\$100) which pays annual coupons of \$5 and that the same company has a contractual liability to pay \$5 per year as a perpetuity. Using a "realistic" valuation rate of 5% for its GAAP valuation it records in its balance sheet equivalent assets and liabilities of \$100. During the course of time, however, interest rates rise and the bond is exchanged for another bond with similar coupons and terms, but whose market value is only \$90, reflecting the high interest rates generally available. The company must now report a loss of \$10 and show only \$90 of assets to cover \$100 in liabilities, when in fact it has not only sufficient assets to cover its lia-

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bilities, but if interest rates remain high will be able at maturity to reinvest the funds at a rate sufficient to cover its liabilities and yield a profit besides.

Why is it that the balance sheet portrays a picture of insolvency when in reality the future appears quite rosy? The answer is that while assets are adjusted to market rates of interest, the discounting of liabilities is not so adjusted. To the extent that the market rate implicit in invested assets differs from the valuation rate for reserves the balance (surplus) and the yearly change in this balance (earnings) must be distorted. Nothing short of a gross premium valuation which each year uses the most current realistic interest projections consistent with those implicit in invested assets can remedy this situation. Let us not be too smug, then, in believing that simply adjusting to a GAAP basis will do the job.

What of the effect of the current peds of high interest rates on gross premium calculations? Those of us who look for a compounded return of, say, 15% on our initial investment in a policy (not inconsistent with market yield rates for much less risky ventures) are finding it difficult to derive premiums which are both profitable and competitive if we at the same time conservatively assume that invested assets will yield only 4-6%. Should we perhaps attempt to narrow the spread between these two yield rates when computing premiums so that the two are consistent with each other, or would alternate profit objectives be the more suitable solution?

Finally, with inflation as it is, should we perhaps study more closely the relationship between interest rates and the annual increase in expense rates so as to introduce an appropriate inflation rate into our expense factors when computing premiums? Is this not preferable to circumventing the problem by taking a broad brush approach such as assuming that any inflation in expenses is counterbalanced by use of a conservative interest rate, or that unit expenses will not change since increases in policy size will keep abreast of inflation?

Actuaries are considered to be experts in the realms of interest theory, probability theory, and gross premium cal-

culations. How is it, then, that we know so little about investments and the manner in which they "predict" future interest yields, devote so little attention to deriving realistic estimates as to surplus and earnings positions based on an appropriate and consistent valuation of liabilities and assets, and are relatively ignorant as to how to develop appropriate and consistent profit objectives and how to incorporate inflation into premium calculations on any "scientific" basis? Such determinations, I believe, are not unattainable goals and should be pursued with more vigor by our profession. Hopefully, this letter will stimulate others to present their thoughts on these subjects.

Lee A. Zinzow

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### Question and Answer

Sir:

John A. Stedman recently asked a question on the treatment of graded premium policies with respect to the standard valuation and nonforfeiture laws (*The Actuary*, October 1974). The valuation aspect of his question was the subject of Bulletin 74-11 of the California Insurance Department, dated Nov. 26, 1974 under the title: "Valuation of Policies With Guaranteed Premium Rates Varying By Policy Duration for Guaranteed Renewal Period." The pertinent clauses of the Bulletin are given below.

As Chairman of the N.A.I.C. Technical Subcommittee on Valuation and Nonforfeiture Value Regulation, I can assure Mr. Stedman that his questions will be considered by that body to see either if special model regulations are needed or if the present regulations should be supplemented by some form of explanatory material defining what is intended by the present standard valuation and nonforfeiture value legislation.

John O. Montgomery

### STATE OF CALIFORNIA DEPARTMENT OF INSURANCE

#### BULLETIN NO. 74-11

5. Except as noted below, for each plan of life insurance, policy reserves will be calculated by considering the benefits and the valuation net premiums (defined below) over the entire period for which renewal is guaranteed. Premium deficiency reserves will be calculated

considering the valuation net premiums (defined below) and the guaranteed gross premiums over the entire period for which the premium rate is guaranteed. However, if the premium for a renewal period commencing at a given attained age is independent of issue age for the same benefits at that given attained age of the insured, that period shall be treated separately for valuation purposes.

6. The minimum reserves and accompanying premium deficiency reserves, if any, shall be calculated as follows: The valuation net premiums for both policy reserves and deficiency reserves shall be based upon a uniform percentage of the gross premium as specified in Section 10489.3 of the California Insurance Code.

The policy terminal reserve is equal to the present value of the future benefits less the present value of future valuation net premiums over the period for which renewal is guaranteed. A premium deficiency reserve is required for policies with guaranteed premium rates whenever the uniform percentage exceeds one hundred. Such deficiency reserve shall be equal to the present value of such excess premiums derived by applying such uniform percentage in excess of one hundred to the gross premiums over the period for which premiums are guaranteed.

7. The Department may require a satisfactory demonstration that the reserves established are adequate according to reasonable assumptions with regard to interest, mortality, expense and persistency. This requirement will be mandatory on renewable term plans with renewal periods of less than five (5) years where any of the ultimate renewal gross premiums are less than the corresponding tabular valuation net premiums, and will be enforced either in connection with the analysis of valuation data for the preparation of valuation certificates or in connection with the annual analysis of company statement data for non-domestic companies.

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### Closing the GAAP's?

Sir:

Though I cannot expect to be the only, or even the most able, commentator, I am impelled to comment on the Carl

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## Letters

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Wright and Jeff Liebman letter in the December, 1974 issue of *The Actuary*.

First of all, the Preface by Robert Posnak to *Ernst & Ernst GAAP*—especially the concluding paragraphs — should be must reading for all of us.

The comment on disclosure of withdrawal assumptions is apt in the choice of term, "absurdity", but inept in its application. The absurdity is in introducing withdrawal assumptions into the policy reserves, along with a host of other refinements, and then (since standardization of assumptions was out of the question) requiring "disclosure" — in the expectation that statements would be automatically more meaningful.

I submit that a footnote stating "Linton B lapse rates were used for all permanent plans and 150% of Moorhead R lapse rates were used for term plans"—though admittedly quite specific disclosure—is not even an *assertion* that these assumptions are appropriate.

Very often the company actuary has high on his list of projects soon to be undertaken, the accumulation and analysis of data "with which to attempt a quantification of the possible effect on GAAP earnings of his company's lapse experience" — or to gain a little more assurance that his pricing is appropriate.

My recommendation — notwithstanding the eager jump of the SEC — is that you continue to rely on statutory statements and the adjustments derived from your experience. It will be a long time before GAAP statements — even with all the supporting documents that the combined armies of accountants and actuaries can provide — will serve you better.

Considering the wide range of absurdities in the market behavior of stocks in industries other than life insurance (which analysts and CPA's alike would have us believe are more consistently represented in their financial statements), I am tempted to make the hasty and admittedly uninformed judgment that the professional services of analysts — in so far as they affect their clients' decisions — are in approximately the same proportion between semblance and real service as are the professional services of accountants and actuaries; — about which I am somewhat more in-

formed. There is no malice or condemnation in this statement. Obviously, the ratio of semblance to real service reflects the public need.

Since my principle interest outside of my profession is in that field to which the term esoteric was once applied exclusively — and which I would like to see stripped of that concept — it is with genuine mixed feelings that I read the suggestion that life stocks are regarded an esoteric group.

Actuaries and analysts alike are realistic in that their goals are both the reduction of real uncertainty. Accountants, I find, are more apt to seek the reduction of uncertainty of *form* through codification of "principles of accountant-ancy". It is a moot question whether the principles now canonized in the Audit Guide reflect more the laxity of the analysts or of the actuaries. I suggest it merely reflects the overwhelming strength of numbers — and public recognition — of the accountants.

Uncertainty, however, is the very substance of the insurance business (and the vital essence of the stock market). Nothing is more certain to the experienced actuary than that his assumptions will not be fulfilled in any particular — but he holds to the hope that the net results he predicts will approximate reality. Often, *mirabile dictu*, he proves right. In fact the mature life company often produces more stable and predictable earnings (however defined) than its less esoteric neighbor.

John C. Gould

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### A Paradise for GAAP!

Sir:

Baltimore is known as the Monument City — not only for the Washington Monument in Mount Vernon Place, but also for the many statues which adorn her Boulevards, parks, and crossroads. There are monuments to medieval Scottish heroes, the Muses, winged victories, LaFayette (of course), nyads, dryads, and so on *ad proliferatum*. Baltimore is, one might say, a city of almost no statutory reserve.

David Kramer

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### Examining Exams

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dations that followed from are embodied in the Introduction, Chapters and three Appendices that comprise their *Final Report on Strengthening the Surveillance System*.

The Report begins with an evaluation of the present system. Based on the premise that the primary purposes of surveillance are (1) to protect the public against insolvencies and (2) to insure fair treatment of policyholders and claimants, the report gives the present system poor grades at achieving either of these.

The deficiencies arise from various causes: statutory requirements are far from uniform; regulatory authorities differ in their examination methods and in their analyses of financial statements and complaints; exchanges of information are slow or virtually non-existent; examinations are infrequent and not scheduled according to need; and manpower, sometimes of dubious quality, is used ineffectively. Furthermore, the present system has not been of too much help to Insurance Departments in identifying companies in difficulty or in overseeing the admission of new companies.

To overcome these deficiencies, the Report recommends a restructuring. The surveillance system would be composed of two independent yet coordinated parts — one concerned with the company's financial condition and soundness, and the other with its marketing conduct, including its sales and underwriting practices.

The first part would be accomplished through a different type of examination process. Sampling techniques would be used widely and there would be continual monitoring through comparisons of a company's results against established norms and guideposts. Examiners would be more knowledgeable, better trained, and more highly compensated. The more experienced individuals will be experts in specific areas and will enjoy a greater degree of authority and carry greater responsibility in the examination process and in the personnel structure.

Examiners' reports would no longer devote considerable space to reciting picayune details, but instead would reflect the examination's concentration and focus on the important issues. The pres-

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## Examining Exams

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ent routine of examining every company every X years would be abandoned in favor of a system whereby a State Insurance Department decides when the examination of a company under its jurisdiction is needed and then proceeds accordingly.

It is anticipated that financially troubled companies and those with high complaint rates will be examined more frequently. Those that are small in size or with a relatively new management will be special targets since the record shows them to have the highest rates of insolvency. The system will provide for a greater degree of coordination and of sharing of information among the interested states, and for a zone examiner to have more responsibilities as an integral member of an examining team rather than as an outsider expected to be a jack of all trades.

The second part concentrates on a company's marketing conduct, including sales, underwriting, rating and claim practices. A review of the treatment of the policyholders would use similar approaches such as sampling techniques and examinations by experienced examiners as needed.

The stress that the McKinsey Report places on this aspect of a surveillance system is proper and fitting. After all, one of the primary reasons for the existence of a State Insurance Department is to assure the fair treatment of policyholders. Some Departments perform this function better than others, probably because not all of them investigate complaints with the same degree of thoroughness. The same is true of companies, some of whom exhibit a proper degree of public consciousness while others almost ignore it.

And, recently, consumerism has entered the arena, although its emphasis has generally been along the road of information rather than of rectifying complaints. Still, in the final analysis, the Insurance Departments are the ones in the best position to determine whether the public is indeed being treated fairly, something the public does not always know, and even more rarely recognizes or appreciates. Nevertheless, the public deserves and Insurance Departments must be given the means, in terms of

both methods and manpower, to assure fair treatment.

Changes in structure and examination approach are not, however, the only ones needed. The present system of having the company being examined pay the cost of its examination may, for example, put it in an even worse position if it is financially troubled. The report suggests a financing system whereby a state's expenses of financial condition examinations are covered by assessing its domiciled companies on the basis of earned premiums. The cost of market conduct examinations would be spread among all companies, both domestic and foreign, doing business in the state, on the basis of premiums each shows as written in the state. The Report also amplifies further on the strengthening of examining staffs and calls for higher qualifications for employment, higher standards for promotion and higher salaries.

The Report also makes several references to CPA audits, findings and working papers, and suggests the use of such material by Insurance Department examiners wherever practical, as long as one does not blindly accept the word of the other. This reviewer, not being a state examiner, is hardly in a position to comment, but it does look as though the same job is being done twice. For that matter, the same could be said with respect to some of the services being rendered by a consulting actuary.

Finally, the Report concludes with an outline, including recommended timing, for implementing the numerous changes, and with brief descriptions of the examination procedures followed in other industries and nations.

Having covered so much ground in so few pages, there are bound to be some defects. A more prominent one is the inclination to oversimplify. For example, to concentrate emphasis on companies that are prime candidates for insolvency while paying much less attention to those that are just poorly run but in no danger, means that the public will continue to suffer. The abandonment of comprehensive examinations in favor of sampling and comparison tests may well result in many important items being overlooked.

The Report seems to envisage a future regulatory model for all states. Examiners in all states will be highly skilled and highly paid even to the extent of

competing successfully with private industry. Examinations will be efficient and identical from state to state and any one state will trust unequivocally the judgment of another. This suggests to the reviewer an ignorance of the current practical operation of State supervision.

The other glaring defect, although perhaps a more chauvinistic one, is the very sparse mention of actuaries and the complete absence of any reference to any actuarial organizations or professional designations. Yet actuaries are the only group who have considerable knowledge and familiarity in more than just one or two of the areas listed in the Report as being essential to investigate. Actuaries are the only ones who feel at home with computer records, financial statements (including assets, liabilities, profit and loss, etc.), statistical comparison tests, sampling methods, statutes and regulations, underwriting procedures, premium development and rating practices, surplus distribution, and all the other features of insurance company organization and operation. CPA's are mentioned throughout the Report—why no mention of MAAA's, FSA's, FCAS's, etc.

All in all, the Report provides food for thought for everyone involved in the examination process, for both examiners and examinees. Responsible State Insurance Department officials should work more diligently and more quickly toward the implementation of a truly coordinated nationwide regulatory system despite the elected or appointed commissioners, whose tenure is often too short to have any effect, and despite those Insurance Department staff members whose inclination is to resist any kind of change.

Similarly, companies, being in the forefront of those suffering from the inadequacies of present examination procedures, should not only support improvements in the surveillance system, many of which are long overdue, but should also anticipate them by adapting themselves to changes even before they become a reality. They certainly should not sit still.

And actuaries, some 75% whom are affected by the surveillance system through their association with insurance companies, should take a much more ac-

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## The Actuary as a Professional

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Robert J. Myers struck this note in his 1972 presidential address to the Society. "In North America," he said, "one important element in the definition of an actuary is the general characteristic of being a businessman—that is a policy maker and administrator."

Time, however, has altered the accuracy of this picture. During the 25 year life of the Society of Actuaries extraordinary changes have taken place in the work of the actuary and in the institutions he serves. Let me mention a few of these changes which today make it so difficult to precisely define the subject matter and work of an actuary.

1. The rapid rise of consulting practice. As noted in the Milliman-Eckler paper, consulting actuaries and brokers represented 24 percent of our 1973 membership. In 1950 the comparable figure was 7 percent. Between 1963 and 1973 the population of consulting actuaries grew by 11.4 percent a year while the number of insurance company actuaries grew by 4.9 percent a year and the Society's membership by 7.3 percent a year. Obviously we are becoming less homogeneous and I, for one, doubt that we can ignore the differences in company and consulting practice.
2. The changing face of the life insurance company. Forty years ago most life insurance companies issued only individual life insurance. Today life insurance companies are major underwriters of group life and health insurance, pension benefits, disability insurance, variable annuities, mutual funds, and are moving into the fire and casualty insurance field.
3. The increasing specialization of the actuary. We are becoming more specialized, often in fields, such as health insurance, where mathematics and traditional actuarial methods offer only rough guidelines to the problems at hand. Some fields of practice, including company management, are explicitly soft data fields more closely akin to the social sciences than to the more exact sciences.
4. The problems of size. In 1940 most actuaries worked for companies that would seem of moderate size by to-

day's standards in a remarkably compact geographic area bounded by Toronto, Montreal, Boston, Hartford, New York and Philadelphia. Today the companies are larger, split into many semi-autonomous divisions and actuaries are found across a large continent.

Because of these influences, the Society of Actuaries has come to resemble a map of the Balkans. The facts are that there exist pronounced differences in the interests and problems of actuaries in different employment situations, in different specialties and in different cities and countries. We have also seen the rise of the actuarial accrediting bodies, the American Academy and the Canadian Institute of Actuaries. Their rise has stimulated the officers of all actuarial bodies to a remarkable amount of political activity. One senses also a pervasive drive by our presidents for actuarial unity. This, it seems to me, sometimes obscures our need for more dissent and public disagreement.

Let us now turn to an even fuzzier abstraction, "professional." Now the term "professional," at least as used in the past denoted our ties to the discipline of actuarial science. From those scientific ties came a spirit of scholarship, a duty to the cause of learning, and a sense of duty to our employers, to the public, and to our colleagues. These are characteristic of an intellectual discipline and not merely the features of a guild or vocation that decided one day to proclaim itself a profession.

To expand upon this special sense of the term "profession" more fully, I shall argue from Professor Thomas S. Kuhn's studies of the development and flowering of science.<sup>1</sup> Professor Kuhn suggests that every science or intellectual discipline consists in its infancy of descriptions of what can be seen, felt or tasted together with a number of conflicting, often metaphysical explanations of the phenomena in question. Sooner or later a strong all-encompassing theory appears from the pen of a Newton, Galileo, Copernicus, Kepler or a Pasteur which sweeps away rival theories. At that point the amateur sport becomes a profession, one complete with specialist societies and learned journals. Thereafter the practitioners no longer concern them-

selves with the philosophy of first principles but concentrate on advanced problems within the narrow boundaries of their particular science or intellectual discipline.

For the names of the philosophers who brought about this watershed for actuarial science, I turn to William Morgan's introduction to the seventh edition of *Observations on Reversionary Payments*, published in London in 1812:

While "to Dr. Halley, Mr. DeMoivre and Mr. Thomas Simpson, and particularly the latter, we owe the first rudiments and improvements of this science, we must remember that for the more accurate knowledge of it we are indebted to Dr. Price."

While Morgan was scarcely impartial, being Price's nephew, I agree with his judgment. It is notable that Dr. Richard Price is remembered more for his writings on moral philosophy than for his role as the first man to put insurance on a sound mathematical foundation. Dr. Price was a dissenting clergyman with mathematical ability. In 1761 Price, going through the manuscripts of the deceased Rev. Thomas Bayes, F.R.S., found a problem in probability Bayes had imperfectly solved. Price's solution, a contribution to the "Doctrine of Chances," won him election to the Royal Society in 1765. A few years later Price wrote Benjamin Franklin offering "Observations on the Expectations of Lives"; the Price-Franklin letter appears in the 1769 *Transactions of the Royal Society*. It was followed in the 1770 *Transactions* by a paper on how to calculate "Reversions Depending on Survivorship," then by the book, *Reversionary Payments*, and his advisorship to The Equitable Society of London. Price supported both the American and French Revolutions and engaged in furious debate on the latter subject with Edmund Burke. The Americans so treasured his support and advice on public finance that Congress, after the American revolution, invited Price to become an American citizen. In 1782 Yale awarded honorary Doctor of Law degrees to two men: Richard Price and George Washington.

Scientific education, after the appearance of a Richard Price gains its power through intense concentration within a clearly defined, narrow field. While this

<sup>1</sup> *The Structure of Scientific Revolutions*, University of Chicago Press, 1970

## Actuary as a Professional

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technique is powerful, Professor Kuhn calls scientific education narrower and more rigid than that of any other course of instruction save that of seminarians in orthodox theology. Furthermore scientific education proceeds from textbooks (read *Study Notes*) to concentrate the student's attention on the development of highly refined, particular skills. Little time is spent giving novices any insight into the premises of the field. Textbooks and even scientific papers are prepared according to the advice attributed to Louis Pasteur: "Make it seem inevitable." This may explain why scientists, actuaries included, find it more difficult to explain their work or relate it to other fields than to apply it to a problem.

In the debate over "Professionalism," the term "professional" seems to be defined to emphasize a practitioner's relations with clients and is undoubtedly stimulated by the ethical problems of consulting actuaries. The analogue for this sort of "professional" seems not to be that of the scientist but of the public accountant. The public accountant, it seems to me, is a sort of financial referee who can give investors, lending institutions and governments an independent, unbiased opinion about the accuracy of a firm's financial statements. In this role of financial referee, he abides by rules of statement presentation established through a quasi-judicial process within the accounting profession. Conformity to these rules rather than creativity seems the byword in accountancy.

Somehow I find the rule making of professionalism the antithesis of the scientific ethic which encourages all members to untrammelled debate over the quality and objectivity of any scientific work presented by a fellow scientist. At the heart of the scientific ethic, according to Jacob Bronowski, lies an almost religious worship of the value of truth. From this ethic, according to Bronowski, flow such other values characteristic of scientists as independence, originality, dissent, tolerance, freedom, justice, honor, and respect.

Not only are professional-vocational rules of conduct likely to stifle the iconoclastic spirit needed by a good actuary but they are apt to curtail his venturesomeness. After all, our science is not explicit enough to cover all situations in

which an actuary gives advice. Often we must reason by analogy from the simple models of life contingencies to the complexities of a large insurance company. In creating new coverages or new financing provisions our experience and mathematical skills may be all that we have to bear upon the problem.

Among all company officers the actuary seems uniquely insulated against that ultimate manifestation of unpopularity, the pink slip, by the apparently limitless demand of the marketplace for more actuaries. E. J. Moorhead suggested several years ago that actuaries cultivate a readiness to sacrifice. He recalled the words of George King who said, when accepting the Gold Medal of the Institute of Actuaries:

"Four times in my life I was out of a job, without knowing where I could earn the next sixpence, just because I would not accept conditions that seemed to me to be dishonorable or perhaps worse. I wish every person to know, the younger men especially, that I was never a penny the worse, and those whom I left were those who suffered most . . . My advice would be that a man should be sure that his position is right, and then go forward boldly with no fear of what might happen to him."

I conclude that the heritage of actuaries is the maverick-like freedom of thought characteristic of Dr. Richard Price rather than in the catechisms of some orthodoxy of practice. Attempts to put actuarial practice in a mold will be as doomed to failure as are business plans which take no note of changing times and consumer wants.

Furthermore, attempts to specify modes of practice are made more difficult by the balkanization of the actuarial profession in North America. Rather than creating a need for some new generalization, such as professionalism, I believe the situation cries for enough organizational fragmentation to stimulate new scientific theories, new debate and new extensions of our science to meet the needs of the actuaries of today.

*The above is part of Mr. Angle's discussion of John M. Bragg's The Future of the Actuarial Profession as Viewed in A.D. 1974.* □

## Actuarial Meetings

- Feb. 11, Central Illinois Actuarial Club
- Feb. 13, Baltimore Actuaries Club
- March 3, Boston Actuaries' Club
- March 12, Hartford Actuaries Club, Springfield, Mass.
- March 13, Actuarial Club of Indianapolis
- March 13, Baltimore Actuaries Club
- March 14, San Francisco Actuarial Club

## Examining Exams

(Continued from page 5)

tive part in the deliberations regarding changes and in assisting regulatory authorities in the examination process itself, steps that should be possible through the formation of committees and panels of professionals by one or more of our organizations. We have the knowledge and the expertise, and we should make it available to assist in the outcome and to influence it to move in the right direction. Perhaps, through such participation, coupled with the strong support of actuaries in general, we will not find ourselves being once again in the position of onlookers that later must follow the dictates of others who played more active roles. It happened with the accounting for pension costs and the presentation of life insurance company financial results. The trend threatens to continue as economists become more heavily involved in social insurance programs and as cost accountants and various Federal government functionaries enter the pension arena. The actuarial profession must assert more leadership.

Our contribution must become more effective and our participation more influential. Whenever we can, we must speak instead of merely being spoken to. The McKinsey Report, its proposals and its recommendations provide just such an opportunity. □

## Death

Valentine Howell

**COMPETITION No. 2**

This Competition Column was inspired (as, indeed, was *The Actuary*) by Ralph Edward (sic). In his article (*The Actuary*, March, 1974) on names in the Social Security file, Mr. Edward suggested certain firm names, among them: Double & Trouble, Income Taxes. Others more appropriate to the profession are:

Killem and Countem, Mortality Tables  
Fund and Vest, Pensions  
Ux and Kx, Cash Values

Readers are invited to submit *not more than two suggestions for actuarial firms, insurance specialists, brokers, etc.* The prize is Clifton Fadiman's *Mathematical Magpie*.

\* \* \* \*

**Rules**

- All verse must be original (and printable).
- The Editor and Competition Editor are *Ex Officio* not eligible.
- Only one copy please, to be sent to  
Competition Editor  
*The Actuary*  
Mail Drop 13-2  
1740 Broadway  
New York, New York 10019
- Entries must be postmarked not later than February 28.
- Competition Editor's decision will be arbitrary, capricious, and final.

\* \* \* \*

**Results of Competition No. 1**

There was an absolute outpouring of high quality doggerel, confirming the Competition Editor's position that actuaries are a deucedly clever and witty lot. Independent, too. Some threw scansion to the winds, while others, like Matthew Rodermund, FCAS, ignored the rules and submitted verse without a mathematical line. In MR's case, "free anapestic trimeter (with anacrusis)". Let him be warned that reversed dactyls will not be tolerated in the coming clerihew contest! Puns abounded, including Walter Merriam's "Mathterpiece", Rea Hayes' "My cusp runneth over", Jerrold Scher's "2b or not 2b" and, combined with a good rhyme, Al Spooner's "No one could-Makeham". Another rhymor of note in Eugene Foge, CLU, FLMI, who rhymed "+s and -s" with, "Lucy and Linus is."

The letter *e* took a mauling in one or another of its forms, followed closely by *i*, either as an iMAGINARY (John Moyses) or an interest rate.

There were two entries with ZPG as the subject, including William Lums-

den's using biological symbols. Malcolm McKinnon wrote his poem in computer language, which produced the following output, "A Rose is a Rose is . . . a Rose." End.

Frank Zaret submitted some adventurous spelling in "My preference is rather toward *Sex*

As a change in diet, Madge Bollen has us munching on "A<sup>3</sup> steak,  $\sum P's + \sum \pi$

Demonstrating that actuarial facility with rhyme is no new phenomenon, William Burling and Walter Klem sent in the toweringly superior product of "one of the Society's ablest and brightest members", the late Charles Spoerl:

Thou art the fairest of all thy sex  
Let me be thy hero

My love's like  $\lim_{x \rightarrow 0} \frac{1}{x}$

Mr. Klem, playing Raleigh to Spoerl's Marlowe, penned the following reply from the lady:

The passion of thy mathematics  
Fills my soul with pure ecstasies  
But thou must wait to be my mate

My love is  $\frac{0}{0}$

(It rhymes, honest!)

Robert Hohertz responded as follows to the limerick on pi quoted in the announcement of the Contest:

A project more worthy to me  
Is a modest curtailment of *e*  
Three also must do  
As it's closer than two  
Since you can't drop .7183

Challenging the whole proposition is William Crosson's:

$$\pi \neq 3?$$

Foolishness, now, this must be!  
Let's not be absurd,  
Let's look at God's Word,  
I Kings 7:23.

(We looked it up: *And he made a molten sea, ten cubits from the one brim to the other; it was round all about . . . and a line of thirty cubits did compass it round about.*)

Now for the prize winner. Mr. Spoerl's wit survives him and we freely acknowledge its superiority. We have nevertheless decided, perhaps arbitrarily, to award "The Lure of the Limerick" to a living entrant:

**Prize:**

The earth is in an awful mess  
Because it's round instead of square  
The mass of horrors could be less  
If *E* would equal *cM*<sup>2</sup>.

Charles Greeley

**Honorable Mention:**

Given that *i* is 4%  
And *d* and *v* are your intent  
Then  $i \div (1 + i)$   
Is 039, rounded high,  
And  $d \div i$ , you know,  
Is 961, rounded low.

Thomas Hummel

A learned Society of men  
Made extinction impossible when  
They clouded the issue  
With notational tissue  
Like  $\ddot{a}x:\bar{m}$

Peter Tompa

A student who had to rely  
On his memory said with a sigh,  
"What is the fun  
Knowing  $a\pi$   
 $= \frac{1-v}{i}$

H. J. Brownlee

*i* never shall know, though *i* try,  
why one so humble as *i*,  
when squared, should become  
not just zero less one,  
but *e* to the *i* to the  $\pi$ .

William T. Clifford

I once told a man without thumbs  
How he might accomplish his sums —  
You have base 8 in sight,  
First your left, then your right —  
And 64's twice round your gums.

D. J. vanKeuren

To reach a state that's really dead  
A cat must nine times lose its head.  
It's therefore plain for all to see  
That  $q^9 = 1 - p$ .  
The problem that may trouble you  
Is how to find a feline MEW!

Sidney H. Cooper

There was a young lady named Bess  
In a moment of high consciousness

Who summed  $Cx+t$

To infinity  
And the answer came out as  $M_n$ .

Theodore D. Seager

C. E.