



The Actuary

The Newsletter of the Society of Actuaries

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THE SOCIETY SYLLABUS

by Robert W. Batten

Ed. Note: These are excerpts from the author's presidential address to the Southeastern Actuaries Club in November 1982. The full text is available from Prof. Batten at his Yearbook address.

The thrust of these remarks will center about the question of actuarial education—where it is heading, and the appropriateness of its present direction. I speak as a concerned Fellow who feels that all other Society members should be aware of recent developments in the formal educational processes which all prospective actuaries must follow. . . .

How Curriculum Changes Evolved

The Education Policy Committee recommended in 1981 that three task forces be chosen in order to present and reflect a broader range of opinion than that of those who had developed the proposals then under consideration. Of a total of 33 task force members, 15 were selected from the academic ranks, generally a very small population whose academic training and interests are largely centered in the broad area of mathematical statistics. The 2,631 Society members who were consulting actuaries were totally without representation; perhaps some consultants were asked to serve and declined. . . .

In August 1982, the Education Policy Committee approved every proposal which the Task Forces and the General Officers submitted, with indications of preliminary approval of more to come in 1983. Each of these proposals involved either introduction of additional materials in statistical theory or replacement of current materials by those incorporating heavy statistical content. Justification was simply stated—we, as a profession are being threatened by inability to ward off invasions by CPA's, MBA's, demographers, applied mathematicians

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FAILING?

“Resolved: The Society of Actuaries is Failing to Equip its Members to Fill the Role that their Clients and Employers Should Expect of Them”.

Sounds provocative, doesn't it? Just such a debate is planned at our opening General Sessions in Chicago and Vancouver this spring. Richard Daskais and Daniel J. McCarthy will square off in Chicago—Thomas P. Bowles and Robin B. Leckie in Vancouver.

Each debate will be followed by commentary of an observer from outside our profession: in Chicago, Robert L. Posnak, famed Audit Guide authority; in Vancouver, the Hon. William Hamilton, life company chairman and a Cabinet member in Canada's Diefenbaker government.

This event was conceived by our Committee on Planning which is studying issues related to its topic, such as the actuary's role, the Society's role, and accreditation, the aim being to stimulate wider discussion of these matters. Our Board of Governors must make important decisions on these issues in the years ahead; such discussion will surely help them to reflect our members' informed opinions.

D.K.B., III

LIVING LIFE INSURANCE POLICY

by Douglas S. Magnusson

Ed. Note: This is excerpted from the author's address to the Winnipeg Actuaries Club in September 1982.

In May 1982, my company introduced a version of Universal Life quite different from such products offered previously in the United States and latterly in Canada. My remarks today are first about Universal Life in general, and then about

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RIISING HEALTH CARE COSTS— A CHALLENGE TO ACTUARIES

by Daniel W. Pettengill

Health care costs that continue to rise at a faster pace than most other market basket items raise havoc with premiums and with claim reserves for health insurance, and challenge the actuarial profession to study the numerous causes and to devise practical means for modifying their effects.

Because hospital bills constitute nearly half the total health care expenditures, they are a logical first target for study. The high cost of good research and the limited funds available suggest a multi-step approach.

Step One, if not already accomplished in a given state, would be for actuaries to prod and assist the health insurance business and others to secure state legislation requiring hospitals to adopt standard cost accounting practices, uniform financial and statistical reports, and the use of state prospectively approved budgets and charges.

Step Two, for states with such legislation, would be a non-partisan review of annual reports to find out which hospitals deviate sufficiently from model costs to warrant closer study.

Step Three would be for actuaries to work with physicians and hospital administrators to develop a short list of diagnoses and conditions which, in combination, are reasonably representative of the case load of most hospitals in the state, and for which the incidence can be roughly measured. If there's a strong and cooperative State Hospital Association, it may be feasible to conduct *Step Three* independently of and concurrently with *Steps One and Two*. A good list will be one that permits the careful observer to identify a hospital that validly has a markedly skewed case mix, and to tolerate cost variations rationally related to

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Society Syllabus

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and statisticians because of lack of development of our statistical skills. Though there may be truth to these fears, the question remains—Will the penetration of advanced statistical theory throughout the Associateship syllabus make us better able to serve our various publics? Or will it tend to attract theoreticians into our system with little appreciation of the actuary's traditional role in a real-life business environment? . . .

To illustrate one major aspect of these changes, let me tell you about a new text approved for the 1983 syllabus, *Survival Models and Data Analysis*. . . (It was represented by the Society Office as a "state of the art" textbook in demography. It is nothing of the sort. Clear evidence is found in one sentence of its introductory chapter, "We do not study . . . the general province of demography". . . A few minutes with the text makes it clear that its mathematical level exceeds that of any text which has ever appeared on the syllabus. . . .

Actuaries' Views

As one who has registered lack of approval with recent developments, I have outlined my concerns, a primary one being that practicing actuaries as a group, rightly or wrongly, are not evolving in an increasingly mathematical direction. My request of the Society was a simple one—Don't accept my opinions, but try to find out, from a questionnaire to a random sample or even all of the membership, whether or not the direction of actuarial education is following the desirable course. I feel reasonably sure that this was not seriously considered.

After the proposals were approved, I belatedly sent my own questionnaire, about 100 forms randomly distributed to Associates and Fellows who had studied at Georgia State or had participated in one or more of our seminars. These recipients were spread over 25 states; about 60% had never taken a course for credit at Georgia State. . . . Not only were there 86 responses but many contained handwritten comments. Many expressed frustration with what they perceived as lack of realism by the Society.

The E & E Committee's justification for the sharp change in direction has been that the syllabus has become seriously deficient, as has the actuary's ability to

handle practical problems without the benefit of the latest statistical techniques. Asked to comment, five respondents agreed, a dozen failed to answer definitively, the rest disagreed with the statement wholly, some couching their disagreement in explicit terms.

Respondents were asked to comment on the extent to which the Associateship syllabus of 1982 and earlier had prepared them for the mathematical demands of their careers. Two indicated reservations because of insufficient statistical content; two answered negatively without elaboration; all others expressed complete satisfaction, twenty volunteering that they felt over-prepared.

Another question asked about respondents' most recent opportunity to use a non-trivial statistical technique in their work. Over 60% simply answered "never"; ten said it was so many years ago that they had forgotten; fifteen had done statistical work in the past year, but the topics included calculating a correlation coefficient, fitting a least squares curve, and determination of a 99% confidence interval. Only eight reported ever having undertaken a truly statistical application. . . .

Asked which Associateship subjects had been most useful in their careers, 72 mentioned life contingencies while 60 mentioned compound interest theory. Probability, numerical analysis, and graduation were next, but far down the list with a dozen responses each; statistics was mentioned three times. As least useful subjects, demography led with 38 votes. Statistics and risk theory finished second and third with 31 and 23 mentions.

What, if anything can be concluded from these responses? Are they significant? Indeed, is it proper to base syllabus development on opinions and experiences of a sample of practitioners? The General Officers have in effect responded negatively. I agree that many of us are not as aware as we should be of new tools that may be of great value in specific cases, but I submit that the E & E Committee's response is too severe and leaves little continuity between the present and recent past.

Syllabus Revision Principles

Evolutionary revision of the syllabus is appropriate once it has been demonstrated that practitioners are making widespread use of statistical techniques,

but the current extension to such heavy statistical content flies in the face of perceived needs. . . . Creation of an optional specialty exam covering advanced statistical techniques for types so inclined, would be a major step in the right direction. But frontiers of knowledge in all facets of our profession have developed too rapidly for all actuaries to become highly specialized mathematicians at the expense of much more practical topics. Foundation knowledge, after all, is the essence of education. Several of my respondents volunteered the comment that, as statistical or other specialized knowledge becomes necessary in their work, it is obtainable through their own initiative.

. . . .
85% of my respondents felt strongly that the actuary is primarily a businessman, not a mathematician working in a business environment. Written justifications of the Society's position pay lip service to this philosophy, but its actions are not consistent with that line of thought. □

RESPONSE OF THE EDUCATION AND EXAMINATION COMMITTEE

by Michael J. Cowell
1981-82 General Chairman

Professor Batten challenges the wisdom of current trends in the Society's educational program, particularly introduction of advanced statistical methods in the Associateship syllabus. He criticizes the Education Policy Committee for relying too heavily on academicians; as a result, he contends, the syllabus changes don't properly reflect the needs of practicing actuaries.

Why These Syllabus Changes?

We consider the changes in the syllabus' mathematical content to be evolutionary rather than revolutionary. For the most part, those in Parts 3, 4 and 5 are more in approach than content; they introduce analytical and computational tools that enable the actuary to evaluate contingencies from a risk-theoretic approach as well as in the traditional deterministic fashion. Experience has shown that students adapt readily to this; we see no evidence that it attracts theoreticians with little appreciation of the actuary's traditional role. Quite to the contrary, an understanding of modern analytical techniques will equip tomorrow's actuaries even better than their prede-

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AN ACTUARIAL NOTATION BASED ON SYMBOLIC LOGIC

by Frank G. Reynolds

(This is Article No. 7 in a series)

To many mathematicians, the expression in Symbolic Logic

$$A((x, \sim x) \cap \cup \cap (\sim z) \cap \sim y) > (x \cap \cup \cap \cup z \cap \sim y) > (x \cap \cup \cap \cup z \cap y))$$

is readily understandable, and certainly easier to work with than the corresponding actuarial symbol.

In April 1974, G. C. Taylor F.I.A. of Macquarie University, Australia, undertook to explore the potential of symbolic logic as a means of communication by actuaries. Symbolic logic uses three basic symbols.

Symbol	Meaning	Example
\cap	and	$p \cap q$
\cup	inclusive of	$p \cup q$
\sim	not	$\sim p$

From these basic symbols Taylor developed expressions for many actuarial functions. For example, the expression $(x, \sim x)$ means that a status at the time when x changes to not x and the expression $p > q$ means that p holds and q held before the attainment of p . Some modifications were found to be needed to take properly into account lives that were both present but had identical characteristics (e.g. same age) and to distinguish terms certain from ages. The notation had some advantages. First, it was highly compatible with the computer once different symbols were adopted for the three relationships. Secondly, some complex actuarial concepts can be clearly formulated in symbolic logic so that perception of the inner workings of the concept are clearer. Finally, simulation is often much easier.

In general, however, the method is unwieldy and $A \overset{3}{xyz} \overset{1,2}{uv}$ is clearer to most actuaries than the elegant expression that began this article. Taylor's greatest long run achievement will probably be the negative one of showing the difficulties with symbolic logic as a means of communications among actuaries. \square

VARIABLE UNIVERSAL LIFE INSURANCE

by Leonard E. Odell, Jr.

Ed. Note: Mr. Odell contributed this at the invitation of our Continuing Education Committee.

The growing popularity of universal life and variable life products has generated industry interest in a product that combines features of both. This product, Variable Universal Life, is a flexible premium life insurance product whose cash values vary, in whole or in part, in relation to the investment performance of an underlying separate account. As with most true innovations, regulatory changes, both state and federal, are needed before this one may be sold.

About half the states have regulations governing sale of variable life insurance products, most of them closely patterned after the Model Variable Life Insurance

Regulation that was drafted at a time when the objective was to avoid dual state-federal regulation of such products.

In 1973, the Securities and Exchange Commission adopted Rule 3c-4 under the Investment Company Act of 1940, exempting only those separate accounts funding a narrowly defined range of variable life insurance policies. Accordingly, the NAIC, in drafting its regulation, limited its scope to accommodating policies described in Rule 3c-4. But in 1975, the SEC rescinded that Rule and reasserted jurisdiction over all forms of variable life insurance. Consequently, the industry has been in the unenviable position of being subject to very restrictive state regulation and full federal regulation.

The New NAIC Model

The first major step to remedy this state of affairs was taken in December 1982 when the NAIC adopted a revised

Model Variable Life Insurance Regulation, differing in two major respects from its predecessor. First, the unnecessarily restrictive product design criteria of the old Model were eliminated. Second, the regulation has been streamlined by eliminating provisions that parallel or duplicate provisions of the federal securities laws.

Under the old Model, a variable life insurance policy was defined as any individual policy which provides for life insurance that varies according to the investment experience of the separate account. This definition could be construed as requiring that the amount of death benefit vary to reflect that investment experience. Such a construction would ban a design in which perhaps only the duration of coverage would vary with investment experience. The new Model provides for amount or duration varying with investment performance.

Also, the old Model required that these policies provide level premium coverage for the insured's lifetime. Further, the ratio of the initial death benefit to the level premium could not be less than a specified "minimum multiple" which varied by issue age and was comparable to the value of this ratio for a conventional participating whole life policy. These prevented companies from offering term or endowment forms, and forms with unlevel scheduled premiums.

The new Model, by eliminating these straight jackets, will give companies freedom to design a wide array of variable life forms, but the insurer is required to demonstrate that "the reflection of the investment experience . . . is actuarially sound".

Changes in the new Model also bear upon the insurer's investment flexibility and separate account management. Rather than listing permitted and prohibited investments as the old Model did, the new one simply requires that "the separate account shall have sufficient net investment income and readily marketable assets to meet anticipated withdrawals". It also permits variable life, variable annuities, and qualified and non-qualified products to be funded in the same separate account. Formal approval of changes in investment policy by the Commissioner is no longer required, and limitation on the type and amount of charges that may be levied against the separate account has been removed.

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Universal Life

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Among other changes that will simplify life for the companies: the requirement of written state approval of variable life contracts has been eased to the usual state requirements applicable to non-variable forms; thus, companies will be able to use deemer provisions in states that have them, i.e., allowing companies to deem their forms approved if the Commissioner has not responded within a prescribed time—requirements for filing sales literature and for commission disclosure have gone—the “standards of suitability” provision has been lightened by removing the filing requirement, formal Board of Directors action, and lapsation measurement.

Yet To Be Done

The primary need now is to get the new Model adopted in individual states. And at the federal level, relief must be sought from the 1940 Act as has been granted for traditional variable life policies. The focus of this is to get the exemptions of SEC's Rule 6e-2—particularly the part that permits companies to pay commissions of the life insurance pattern—made applicable to the new variable products. It's expected that the industry and the SEC will agree during 1983 on a new exemptive rule.

In general, the outlook is that by early 1984 companies will have authority to offer these new products through their regular distribution channels in about half the states. The prospect for sales shown by the growing market shares of both universal life and variable life individually, by the TEFRA 101(f) amendment that specified rules under which benefits of flexible premium life insurance qualify as “life insurance proceeds”, and by the growing aversion to disintermediation risk inherent in non-variable forms, suggests that those who regard any kind of variable life insurance as permanently in the doldrums are likely to prove mistaken. □

NOTE TO “FRUSTRATED”

Your message is relevant and poignant, but, alas, we don't print unsigned contributions. Please tell us who you are.

The Editor

THE THREAT OF TOO LITTLE KNOWLEDGE—A VIEW FROM LONDON

by Patrick S. Carroll, F.I.A.

Ed. Note: As was clear from William W. Truckle's J.I.A. paper reviewed in our April 1982 issue, North American actuaries aren't the only ones puzzling over the curriculum questions aired elsewhere in this issue. We are grateful for Mr. Carroll's permission to print excerpts from his discussion of Mr. Truckle's paper, and parts of his reply to an enquiry that we sent him.

From J.I.A. 109, Part II, 178:

“(Mr. Truckle) has brought to our attention a great danger facing our profession. Insurers are appointing statisticians or even accountants to posts that actuaries should fill when the task is statistical analysis of insurance data using computers. Actuaries completing the examinations in the last few years have had no chance to specialize in statistics, although statistical methods capable of application to insurance have been developed. The use of linear models has gained much impetus through the availability of interactive computer packages. Likewise, methods for analysis of contingency tables are now more powerful. . . .

“Regression analysis is more widely used than ever. Whole new subjects have grown up in the last 10 years very close to the traditional expertise of the actuary. Investigation of lapses and withdrawals in life insurance may be possible using the techniques of survival analysis.

“There is an opportunity to remedy these deficiencies. More post-qualification courses of a statistical nature could be introduced. Links with universities and with the Royal Statistical Society could be strengthened. If this opportunity is not taken, the Institute will become a society of insurance practitioners. Would it not be better for actuaries to build on the reputation they have inherited from their distinguished predecessors, of being experts in applied probability and statistics?”

From Mr. Carroll's Letter To “The Actuary”:

I regard the updating of the statistics content in actuarial training as the central issue determining the future of the profession. It would be very sad if the Institute puts up a sign saying, “Statisticians Not Wanted”.

Statistical expertise now is given little scope in the Institute's examinations. For example, the Institute has a tradition of not employing matrices in its mathematical and statistical papers.

There is a growing awareness among actuaries that (our educational) system, which absorbs so much of our precious manpower, is leaving us out-of-date and ill-equipped to analyze the data insurers have on their computers today. (But) there is no popular demand among actuaries for more advanced statistics.

As a lecturer in Statistics I don't hope for popularity among actuaries but I do hope for understanding that statistics can be taught and examined satisfactorily, whereas the practice of insurance is frustrating when made the subject of examinations. Tutors and examiners differ as to what is the right answer to a question; students struggle for years, not knowing what is required of them. When it is difficult to advise a good student of probability and statistics to embark on actuarial training, the profession's standing is being eroded.

Yet I don't advocate introducing advanced statistical theory en bloc throughout the syllabus. Rather I think the major statistical topics should each be considered for inclusion on their merits.

(Mr. Carroll goes on to discuss separately the merits of including Multivariate Methods—“Actuaries ignorant of these are at a disadvantage in analyzing market research data”—; Regression Analysis—“One would like actuaries to know more about this”—; Econometrics—“I don't advocate including this”—; Survival Analysis—“Actuaries are remarkably uninterested in this subject which is very close to their traditional expertise with life tables, but I don't think they can ignore it much longer”—; Risk Theory—“Now a feature of the Institute's syllabus”—; Mathematical Demography—“Should be a basic skill for actuaries”—and Time Series—“The Institute has fostered their use in connection with maturity guarantees for unit-linked policies”.)

I favor introducing much that is new. But I don't advocate dropping much of what is traditionally taught. Rather I find after two years of teaching Survival Analysis that the two subjects complement each other rather well. □

— REMINDER —

SOCIETY'S ANNUAL \$500 PRIZE

Members' attention is drawn to the particulars on page 66 of the 1983 Yearbook, of the Society's prize for the best paper released to members between July 1, 1982 and June 30, 1983, to be repeated annually provided a paper meets the judges' requirements.

One reason for mentioning this here is to prevent it from being confused with the L. Ronald Hill Memorial prize announced elsewhere in this issue.

Response*(Continued from page 3)*

cessors to apply their crafts in the service of their publics.

The need for such changes was recognized by our profession's leaders as far back as the late 1960's; the rapid application of computers to actuarial practice in the 1970's heightened many practitioners' concern that their own backgrounds in statistical techniques were inadequate for applying actuarial theory to its full potential. Prof. Batten contends that frontiers of knowledge have expanded too rapidly for actuaries to become highly specialized in applying new techniques; he believes that as practicing actuaries need such knowledge, they will obtain it on their own initiative. We agree, but believe that actuaries will be better equipped to recognize the potentials if their education has familiarized them with a broad range of techniques.

The effectiveness of statistical tools in solving practical business problems has become widely recognized. Accountants, demographers and economists are working in what has been our profession's domain—not because they are more skilled in mathematics but because their education is alerting them to the available techniques and in when to use them.

To maintain its leadership, our profession must educate beyond the immediate requirements of today's problems. Our syllabus must reflect at least the same facility with basic statistics as that in a typical MBA program. To the extent that such techniques aren't being widely used by today's actuaries, the message may be that students haven't learned how to use these tools, rather than that such methods aren't useful.

It's true that the text, *Survival Models and Data Analysis*, approaches its subject in a different way than did previous readings on demography. But surely this new text offers broader perspective of demographic techniques than prior references did, and its mathematical requirements are well within what we expect of our students in the earlier Associateship examinations.

How Representative Is The E & E Committee Viewpoint?

Participation of Society members on the E&E committees is indeed extensive. Almost 350 of today's Fellows—nearly

one in fourteen—serve on one or more of them, and several hundred more have such service behind them. They form a broad cross-section of representation from large companies and small, stock and mutual, pension consultants and insurance consultants, the public sector, academia, Canada and the U.S.A. The Education Policy Committee itself includes both pension and insurance consultants, and for the past two years was chaired by a pension consultant. Consultants occupy leadership positions on the Education Committee, the Examination Part Committees, and fill three of the twelve General Officer positions on the E&E Committee. A pension consultant chairs the Task Force on Contingency Theory. And the entire Society membership has been invited to share in Task Force work, and is kept informed of the Task Force recommendations, e.g., through articles in this newsletter.

It's true that actuaries from the academic community have had a more than proportionate representation on groups examining the mathematical content of the Associateship syllabus. This has been necessary because they are so well informed on the subject matter and, by their knowledge of trends in college mathematics curricula, are best able to advise on students' ability to tackle the Associateship syllabus. Several of our academic representatives are themselves practicing actuaries through their own consulting practices.

Educating Actuaries For Tomorrow

In his 1981 address to the Society on "Models in Insurance", Prof. William S. Jewell emphasized the need for evolution in our educational process, and urged us to be receptive to new approaches in terms of their potential utility to actuaries. In describing the Society's strategy for actuarial education, the E&E Committee defined the actuary's role as that of measuring, managing and communicating the impact of contingent events on the future of financial security programs. We believe that the syllabus changes now being implemented are appropriate to the challenges that will face tomorrow's actuaries. □

Deaths

Charles R. Arthur, A.S.A. 1934
Louis O. Shudde, F.S.A. 1927

Letters*(Continued from page 2)***Changing Education**

Sir:

Robert W. Batten's contention that our Education Committee has sometimes gone too far, too fast, warrants careful consideration. There have, though, been some worthy as well as some ill-considered changes.

(1) The recent new Part 10 study note, Actuarial Review of Reserves, in which stratified sampling and lessening the variance in spot checks are described, seems a sound case of putting Associateship mathematics to use on a Fellowship topic.

(2) The problems of coping with ever-changing hardware and software have caused the Committee to shun Computers, thus allowing numerical analysis in our syllabus to drift further and further out of date. But acceptance in October 1982 of the Burton, Faeris and Reynolds text, which deals extensively with computer concepts but avoids wandering into procedural matters, seems a major advance.

(3) Whenever a new text is commissioned, it usually runs behind schedule, sometimes by a year or two. Under the resulting time pressure it is easy to make two mistakes. First, replacing an old book with one that is conceptually better but suffers from defects in several minor areas. Second, replacing with one that is well written for the expert reader but that serves students poorly.

I hope that Robert Batten's criticisms will make us all more aware of what is going on.

William H. Aitken

* * * *

Actuarial Success

Sir:

Further to Stephen C. Frechtling's comment (Dec. issue) about the 33% of those receiving credit for Part 1 in 1970 who had become FSA's or ASA's by Spring 1981: some of that class of 1970 became FCAS's or ACAS's, myself included.

CAS members would therefore seem to count as failures, in a Bernoulli trial sense, of course!

Jerome E. Tuttle, FCAS

Ed. Note: The mistake was ours, not Mr. Frechtling's. Having learned our lesson we are working with the Casualty Society on our next study of student achievement. □

Living Life Policy

(Continued from page 1)

innovations we introduced.

Picture the flow of funds through any life insurance policy: As a premium is received, a premium tax is paid to the government, and the balance finds its way into a cash value account. From time to time, expense charges and the prices of coverages are removed. But in a traditional life contract, the premium is fixed; the customer doesn't know about the premium tax and doesn't see the internal accounting; all he sees is the table of guaranteed cash values. A spreading criticism has been that this traditional contract is incomprehensible and not adaptable to changing economic conditions.

The major conceptual difference with Universal Life is that in it the customer sees the internal accounting, and because he does, each element can be more flexible. The customer can change his premium when he wishes, the interest credit to the cash value account can be changed as conditions warrant, the amount of insurance, and thus the amount charged for insurance, can be changed, and expense charges can be designed and altered to reflect the company's cost.

The products developed in the United States have fallen short of full flexibility, partly because they are subject to non-forfeiture laws designed for rigid products, and partly because they must qualify for the tax shelter of a whole life policy. Premium flexibility is down-played, as is flexibility in insurance coverage. But the major fault, I think, is the levying of expense charges as percentages of the premium; this is a deterrent to pre-funding future insurance costs unless there is a worthwhile offsetting tax advantage. In designing our product, we took a careful look at some life insurance traditions and found them to be cumbersome and unnecessary.

Innovations

Our product's basic flow chart doesn't differ much from that already described, but the keys to it are a daily interest credit competitive with banks, and the customer's option to lock funds into a guaranteed rate for up to ten years. There is full flexibility of both premium payments and insurance amounts, subject to minimums and to underwriting.

Our product's expense charge structure is designed to allow us to cover our costs no matter what mix of coverage and cash

value the customer chooses. The only charge expressed as a percentage of premiums is the premium tax.

The Living Life Policy is designed to be efficient—not just to make it easy to handle but also to make it adaptable to future conditions. We plan to avoid the problem of keeping records for fifty years on a product that has become obsolete. One feature is that all our processing revolves around the first day of the calendar month; another is a built-in optional inflation adjuster that automatically increases coverage proportionately to the consumer price index increase, until coverage has tripled or the insured reaches age 65. Also, in assessing charges for insurance coverages we have abandoned the policy anniversary concept and simply use the insured's age last birthday on the date that the charge is made.

Additional coverages available are the accidental death benefit, a guaranteed purchase option, and a disability waiver benefit that waives the risk charges and administration fees rather than the front-end premium payment.

The Administration System

We have found that we can streamline our systems by requiring cash with the application—made palatable by offering a refund with full interest if the coverage isn't taken. We also have taken a more businesslike approach to requests for special handling, after finding that a rather small proportion of our customers is responsible for a major part of our expense in dealing with such matters as late premium payments and bouncing cheques. We have introduced a charge for returned cheques, and have placed responsibility on the agent and customer to make sure that the cash value is sufficient to carry the coverage for the coming year. If it isn't, the customer will be reminded and be allowed 30 days to make up the deficit, a charge being levied to cover this special service.

In Summary

We think we have a straightforward policy that allows the client to minimize his costs if he minimizes ours, and provides a return competitive with a bank or trust company, protects against inflation, offers enough flexibility to have a long shelf life, and puts the agent's interests in harmony with the company's and the customer's. The Living Life Insurance Policy grows and changes with the client's needs as they evolve over a lifetime. □

Rising Health Care Costs

(Continued from page 1)

variations in the proportions of high and low cost diagnoses and conditions.

Step Four — the *raison d'être* of the other three—would be to sit down with the Administrator, the Medical Director and the Board Chairman of a deviant hospital in a strong effort to persuade them to study why their hospital's costs are so much higher than those of others that are comparable with them in size and case mix, and then to take effective cost reduction action. Problems likely to warrant exploration include:

- High drug costs caused by stocking many brands of a single generic drug;
- Unnecessary repetition of diagnostic tests to in-patients within one or two hours of their having been made in the emergency room or out-patient department;
- Staff physicians who make excessive use of diagnostic tests;
- Failure to join with nearby hospitals and health care institutions to establish and use a consortium which will determine periodically for each commonly used commodity those reputable firms that will agree to sell it to the consortium members at a below-market price;
- Excess bed capacity for the area being served;
- High-cost equipment or services in the absence of a truly justifying demand; and
- Excessive lengths of hospital stay. □

IDEAS ON CONTINUING EDUCATION INVITED

Our new "Services to Members" Policy Committee is exploring, for a report to the Board, the continuing education that the Society should undertake to provide. The Committee membership is as shown on page 9 of the Yearbook with two additions (Thomas C. Sutton and Charles B. H. Watson).

Among the issues seen by this Committee are:

- The purpose of continuing education.
- The methods of providing it.
- Whether and how to make continuing education a requirement for practicing actuaries.
- The scope of the continuing education syllabus.
- The relationship between continuing and basic education.

Members are cordially invited to give ideas on these matters to any Committee member or to send them to the chairman.

Robert D. Shapiro
Chairman

MATH EXAM PRIZEWINNERS

(This is the first of two articles.)

In 1946, this Society's two predecessor bodies announced that they would

"jointly award one \$200 and eight \$100 prizes to the nine undergraduates . . . ranking highest in combined score on the (then) Language Aptitude Examination (Part 1) and the General Mathematics Examination (Part 2). . ."

In 1963 the Casualty Actuarial Society became a joint sponsor with the Society of Actuaries. After 1948, the Language Aptitude Test of those days no longer figured in the award. When spring and fall exams were started in 1962, the prize became as they remain today, one of \$200 and four of \$100 for each exam.

The usefulness of this award has, naturally, been debated from time to time. One such occasion was in 1957 (*TSA IX*, 96 & 99) when two of our Fellows, Carl E. Fischer and Frederick E. Rathgeber, expressed contrasting views. Prof. Fischer believed these prizes didn't encourage a greater influx of genuine actuarial students but just attracted brilliant math students with no interest in actuarial work who were "simply risking \$6 to win \$100 or \$200". Mr Rathgeber held that even if there is just a handful of students who first become interested in this way, the plan serves to create interest among those who do not win the prizes.

This study, built from a reply by James L. Cowen to an enquiry from John W. Grantier, has been made into a pair of articles by *Actuarial Review* Editor Matthew Rodermund and this newsletter's editor, and thus reflects the combined experience of the sponsoring organizations.

The following table shows the consecutive lengths of time up to 1970 required to acquire 14 future Fellows from among the prizewinners:

Calendar Year When Prize Awarded

	1947-50	1951-57	1958-70
No. of Years	4	7	13
No. of Winners	36	64	133
No. of Fellows	14	14	14
Fellows/Winners	39%	22%	11%

The numbers of prizewinners of these periods who reached Associateship, but haven't (so far at least), gone on to Fellowship, are: 1947-50, none; 1951-57, 2; 1958-70, 4.

The experience in the prize-winning years beyond 1970 isn't yet mature, but shows promise of improvement over the 1958-70 period which had to survive an extraordinarily lean era—from 1959 to 1964—when we managed to attract only two future Fellows from among 61 prizewinners.

The four charter prizewinner members, from 1947 awards, are James F. A. Biggs, George Y. Cherlin, Frank H. David and Thomas M. Galt. The first prizewinner to become a Fellow of the Casualty Actuarial Society was Stuart N. Lerwick from the class of 1968.

Our next article will enlarge upon the above, and will analyze the contrasting experiences among the colleges that produced most of the winners.

E.J.M.

L. RONALD HILL

He was a 39-year-old Fellow. Tragedy on an icy Oklahoma highway on Christmas Eve 1981 cost his life and those of three of his six children. His wife and other children survived the accident.

His employer, William M. Mercer, Inc., is granting a yearly award, the *L. Ronald Hill Memorial Prize*, for the best paper on employee benefit plans in the *Transactions*. See the Yearbook, page 68.

NOTICE TO GENERAL MATH EXAM PRIZEWINNERS

The study of prizewinners in this issue was made by comparing names in the original lists with names in later Society and Casualty Society year books. If, because of a name change, you or anybody you know of would have been missed by this method, please notify the Editor at his masthead address.

E.J.M.

WOULD-BE AUTHOR SEEKS AID

I'd appreciate hearing from any actuary who has filled the role of expert (witness or adviser) in sex discrimination legislation. Object: Congress paper.

Ardian C. Gill

EIGHT SOCIETY MEMBERS DENY DISRUPTION FROM UNI-SEX PRICING

Eight of our members have filed an amicus brief with the U.S. Supreme Court in *Arizona vs. Norris*, asserting that eliminating sex-distinction in annuity pricing wouldn't revolutionize the insurance and pension industries. In this they take issue with briefs of the Academy, the ACLI and the NAIC.

Among this octet's arguments are these:

"Employees deciding between an annuity or an alternative form of benefit do not generally make actuarial appraisals of their own life expectancy. . . . Employees make choices between lump sum payments and annuities primarily on the basis of tax considerations and the investment return they can earn on the lump sum. . . ."

"Insurers have in the past protected themselves against adverse experience by including substantial safety margins in annuity premium rates. These margins are required more because of uncertainty as to future investment returns than because of uncertainty as to the mortality of the annuitants; they will be more than sufficient to insulate insurers against lower average mortality rates."

These eight actuaries are:

Arthur W. Anderson Lawrence Mitchell
Richard W. Daskais J. Reuben Rigel
Donald S. Grubbs, Jr. Conrad M. Siegel
Paul H. Jackson Howard Young

E.J.M.

SOUTH FLORIDA ACTUARIAL CLUB

We welcome the South Florida Actuarial Club, recently reactivated via an Interest Questionnaire that elicited more than a 60% response. If you are interested but haven't said so, notify Robert L. Silverman, PSCC, 4601 Ponce De Leon Blvd., Miami, FL 33146.

"PRELIMINARY ACTUARIAL EXAMS"

There's a new (Oct. '82) edition of this booklet, sent to those who enquire about entering our profession. Request copies from the Society office.

L.N.C.