



The Newsletter of the
Society of Actuaries

VOL. 24, NO. 6
JUNE 1990

THE Actuary

International update

by Allan D. Affleck

Today an increasing number of Society of Actuaries members are either employed by companies with international links or work for clients with international business activities. Clearly what happens abroad is of growing importance to our employers and clients of international business. Even for companies without international insurance operations, the need for access to international investments is clear. The changing international scene, including the push toward a common market in Europe, the political changes in Eastern Europe, the rapid growth of strong Asian economies, and the Hong Kong 1997 situation, creates the need to understand the related business implications, both here and abroad. This applies to investment, insurance, and employee benefits.

The Society is responding to these trends by providing more international educational opportunities, and many of our current SOA activities are related to the growing involvement our members have in international business. Here is a brief review.

Annual meeting

This year's annual meeting theme will be "International Opportunity." Our keynote speaker is James Schlesinger, currently with Georgetown University's Center for Strategic and International Studies, and formerly a Cabinet member under Presidents Nixon and Carter. Sprinkled throughout the meeting, to be held in Orlando, are sessions on international insurance and employee benefits plans designed to give actuaries the

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Society, CIA maintain healthy relationship

by Peter C. Hirst

First I'd like to thank the Society for inviting me to write this article for *The Actuary*. This is a particularly auspicious time to do this, since the Canadian Institute of Actuaries (CIA) celebrates its 25th Anniversary this year. We have grown significantly as a profession over these 25 years and, while we still have a way to go, we have reason to celebrate many achievements.

We also have reason to thank many who have helped us along the way, not the least of these being the Society of Actuaries. We enjoy a close working relationship with the Society, which I believe has been mutually beneficial. We were proud to join with the Society (along with the Casualty Actuarial Society, the Conference of Actuaries and the Academy), as co-hosts of the Washington Centennial Celebration in June 1989.

Our annual meeting this year, to be held in Quebec City, will in part be a celebration of our 25th Anniversary. However, while we will reminisce and recognize the sound leadership we

have had in the past, the main theme of the meeting will be to look forward. The centerpiece for discussion will be a report on the future of the CIA prepared by a task force chaired by Dick Crawford. Earlier this year, the CIA Executive Committee approved the release and distribution of this document as a discussion piece without endorsing or rejecting any of its recommendations or proposals.

We already had some preliminary discussion of this report at our March general meeting, and in-depth discussions will commence at our annual meeting. I understand reports will be printed in future editions of *The Actuary* covering these discussions, so I will just touch on two aspects of the report that may most immediately interest Society members.

These two areas are summarized in the first two recommendations of the report. The first deals with one of the main themes in the report. It is: "that the CIA adopt a new statement of purpose which gives prece-

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Society, CIA cont'd

dence to service in the public interest over self-interest of the members." The second recommendation is that "the CIA discuss, develop and agree on a blueprint for action for initial qualification of its members, in order to implement in this decade the (CIA's) guiding principles for education and qualification...."

Dealing with the first recommendation, one of our earliest presidents, Dick Humphrys, has called to our attention that the intent of our Act of Incorporation was always to give top priority to serving the public interest. Nevertheless, a reaffirmation of this is appropriate.

In this regard, the task force report refers to the keynote address at the Washington Centennial Celebration entitled "The Challenge of Professionalism," delivered by the Honorable Willard Estey, former justice of the Supreme Court of Canada. In that address, he emphasized that the distinction between a profession and an association of technicians is that a profession must always place the public interest first. In his conclusion he stated that "the highest and always the paramount consideration in a profession is the public interest component over and above self-interest."

There is no question that, as we enter into discussions of this particular recommendation, we need to define more precisely the "public interest." But having defined it, I believe we must reaffirm our commitment to it to retain our status and standing as a truly professional body in Canada. This commitment will impact most of our discussions on the other report recommendations.

The second recommendation (indeed the second to seventh recommendations) deals with our education and qualification process. In this respect, it should be noted that the CIA is recognized in federal and provincial legislation in Canada which requires certificates to be signed by an "actuary." "Actuary" is generally defined as an FCIA. This recognition has, of course, given us great strength but also significant responsibilities.

Recognizing these responsibilities, the CIA in 1985 adopted a set of Guiding Principles for Education and Qualification. Guiding Principle No. 2 states: "Persons seeking to qualify as an FCIA shall be examined on the basic theory, concepts and standards

required for the major areas of actuarial practice." Guiding Principle No. 5 states: "Fellowship in the Institute shall permit actuaries to practice in any area in which they are competent, regardless of the content of the examinations taken prior to Fellowship." For this reason, we prefer to refer to actuaries who practice in practical areas (e.g., an actuary practicing in the casualty area) rather than "hyphenated" actuaries, e.g., casualty-actuary.

More importantly, these guidelines provide clear implications for our education and qualification process, as do others. For example, Guiding Principle No. 3 in effect states that our ultimate objective is a completely bilingual Canadian E&E system, while Guiding Principle No. 6 states: "The Institute shall encourage the financial support of the actuarial programs at Canadian universities and seek to expand their role in actuarial education and research...."

Some concern has been expressed that the report's recommendations may suggest a "break-away" or "split from," or our "becoming independent" of the Society of Actuaries. I think we all need to be careful how we use these words, and I think we need to properly understand the status quo. The CIA is an independent professional organization. Our Act of Incorporation does not recognize, and likely would not tolerate, any other state of affairs. In this respect, it's perhaps worth noting that approximately 20% of our Fellows qualified as such other than through Fellowship in the Society. (Ten to 15 years ago, I believe that figure was in the order of 30-35%.)

However, it has been in the CIA's best interests to maintain a close and cooperative working relationship with the SOA (and the Casualty Actuarial Society), and that is particularly why this relationship has worked so well. (It may surprise you — it certainly did me — that about 100 of the 400 volunteers in the Society's E&E system are Canadians.)

I see no reason why this relationship should not continue indefinitely, because it clearly is mutually beneficial. However, as the CIA continues to mature as the professional body of actuaries in Canada, and as the Society examines its role in the North American context, changing the nature of the relationship without harming it in any way may be necessary. This, of

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Society, CIA cont'd

course, also applies to our relationship with other organizations.

The relationship between our two organizations has evolved over the last 25 years, and it is certainly different now than it was when the CIA was founded. All that is required in the future is goodwill, understanding and cooperation. There has been an abundance of this between the CIA and the Society up to the present, and without it, neither organization would have the same strength that it has today. To talk of harming or destroying this relationship is nonsense; but to talk of changing the nature of the relationship is inevitable; indeed, to do otherwise would be unhealthy and foolish.

We should move forward together, and I am confident we will — but we must move forward.

Peter C. Hirst is Immediate Past President of the Canadian Institute of Actuaries and President, Actrex Partners Ltd.

International update cont'd

opportunity to learn about current international developments.

China program

Under the direction of our International Relations Committee, we have been helping Nankai University in Tianjin, China, establish an actuarial science program within the university's finance department. Courses in the program are being taught by SOA and CAS members.

After the events of last June, we initially suspended the program until September 1990. We have reinstated the program this spring, however, since all the actuarial students returned safely to the university to pursue their studies. This was necessary so that the students could complete the actuarial course within the time they had available.

International Relations Committee

This committee, established a few years ago, recommends policy to the Board and oversees implementation of that policy regarding activities of an international nature. These activities include:

- Hosting a luncheon for foreign actuaries who attend SOA meetings
- Responding to requests for assistance from foreign actuarial groups
- Giving direction to the SOA President for his international activities
- Providing support as needed to SOA members living abroad

If interest among SOA members in international issues continues to grow, we may find a need to create an International Section.

Relationships with foreign actuarial organizations

One of the SOA president's primary responsibilities is to maintain contact with actuarial organizations in other countries. At the present time our emphasis, as recommended by the International Relations Committee, is on the following:

- Attending the dinners of the Faculty of Actuaries in Scotland and the Institute of Actuaries in England every other year. I was pleased to represent the SOA at the Institute dinner last fall. While in the United Kingdom, I also met with leaders of the Faculty to discuss common interests and with educational leaders of the Institute to discuss their programs.
- Strengthening our relationship with actuaries in Mexico. It is important to build close ties to the other actuarial organization and its members here in North America.

Building on contacts established by Harold Ingraham, SOA President in 1986-87, I have been invited to visit and make a presentation to the Mexican Actuarial Association this summer. One or two Mexican actuaries will participate in our annual meeting program this fall.

- Continuing to develop relationships with actuarial organizations in the Pacific Rim. To further this goal, I accepted invitations to visit the Korean Actuarial Association and the Institute of Actuaries of Japan. Both organizations invited me to make presentations this spring, and the topics they selected indicated that actuaries worldwide are interested in similar issues. In Korea my talk was on the "Role of Actuaries in a Newly Developing Market." In Japan, I spoke on the "Role of Actuaries in a Changing Financial Environment."

General

The percentage of students taking Exam 100 who live overseas has increased from 2.3% to 4.1% over the past five years. Approximately 5% of all SOA members now reside outside Canada and the United States, and that percentage also is increasing. It would be interesting to know what percentage of actuaries in our two

countries work for insurance companies that have international operations or work for consulting firms whose clients have foreign business activities.

Our goal over the next few years is to provide the support needed by our members who practice in the international arena, just as we do for members practicing in other specialties. For a few members, international work may take a substantial part of their time. Many more members are tangentially involved in international work, but the majority of our members have no direct involvement in international projects. However, even for those who currently do not have international responsibilities, we believe it is valuable to provide education and support so we can all broaden our outlook and be better prepared for the future. In the past year or two, *The Actuary* has included many articles on international activities and will continue to be a forum for discussion about our members involved in international issues and projects.

If anyone has suggestions for additional activities we should be undertaking, please send them either to the chairperson of our International Relations Committee or to me.

Allan D. Affleck, SOA President, is Consulting Actuary with Milliman & Robertson, Inc.

Deadline nears for comments on Fundamental Principles

The Society of Actuaries Committee on Actuarial Principles distributed a Discussion Draft of Fundamental Principles in late March. The deadline for comments is July 2. Any comments received will be considered in the development of the Exposure Draft, which is expected to be ready for distribution in late 1990.

If you have any questions or would like a copy of the Discussion Draft, please call Warren Luckner, SOA Research Actuary, at 708-706-3572.

Problem workshops for Course 110 and EA-2

Intensive problem-solving workshops for Course 110 (two days) and for the EA-2 exam (three days) will be given by Actuarial Study Materials in October in New York City. For details, write to A.S.M., P.O. Box 522, Merrick, NY 11566.

Editorial

Is the actuarial profession relevant?

by Robin B. Leckie

The older we become, the more our original actuarial education (and qualification) fades from our memory. Generally, it is replaced with practical experience and current techniques, thereby enabling each of us to remain professionally competent and relevant. But is this the case? We have no formal continuing education requirements so the former may not be true. And the latter (relevance) may never have been true!

I must acknowledge the following paragraph which appeared in my editorial in the January *Actuary*:

Relevance — The most significant feeling I drew from our year-long centenary was a renewed belief in the relevance of our profession.

I accept what I said then, but within the context as seen by an actuary, and the desire that we ensure the statement be as true as implied.

A profession is characterized by (1) a body of specialized knowledge, (2) a service to the public, and (3) maintenance of standards and conduct. Our profession certainly qualifies, although we are somewhat different from other professions because:

- We are small (and not well understood);
- Our body of knowledge and techniques tend to be mysterious (although highly regarded);
- A significant proportion of our members are salaried rather than fee-for-service;
- Our education is almost entirely administered by the profession.

There may be nothing wrong, but a nagging subconscious throws out a red flag of concern, essentially asking me, "Are you and your fellow professionals as relevant as you are competent?"

I do not presume to judge either myself or others. But I do have a few suggestions which could help us to be more "relevant."

1. We should become more international in outlook. Let us occasionally back away from the practices and procedures of our jurisdiction and

consider how appropriate and significant they may be, or whether there may be a better way. Unfortunately we have been so inundated with new laws and regulations, valuation and taxation requirements, current competitive practices, and sophisticated software tools, that it is difficult to keep up with practice matters, without considering why or how they may relate to the principles that underlie our profession.

Our perspective can improve when we see how approaches differ in other environments, where the principles are the same but the situation is different, and where as a result the practice differs.

One of the strengths of the Society and of its educational system is that it remains international.

This issue of *The Actuary* contains a number of articles with an international flavor.

2. As a profession we should never compromise on technical accuracy but we should be sure the techniques are appropriately placed.

Most problems we deal with require the application of our actuarial tools in rather elusive or subjective circumstances. Do our solutions recognize the social factors that may surround the problem, or the human influences and frailties, or the input of other agencies (and professions), and the capacity of decision makers to decide unwisely? If not, then our technically correct position may be of little use and may even be dangerous. We should remember that while others view our input as mathematically precise, the trust is that too often we can only provide a range or an answer cloaked within a set of precise (but collectively improbable) assumptions.

3. The Society should encourage its members to examine some of our current social and environmental issues, free from the bias of our employment. A few questions to consider are:

- What are the dynamics of the interaction of population growth, economic growth, and a sustainable environment? Can we contribute to a better understanding of the issues and options?

- Is the current move away from defined-benefit pension plans in the best interests of employers, employees, and society in general?
- Is healthcare a right, and if so, can it be delivered exclusively through the private sector?
- Are the promises made in our current insurance policies, and the implied equity to all policyholders, deliverable in volatile economic times?

The Society is correct in not making public pronouncements. But that does not mean actuaries should not be active in thinking and speaking out on issues they consider important. Let us be involved!

4. We should reconsider the appropriateness of an educational system almost exclusively administered by the profession. Greater involvement by universities will help reduce our inbred tendencies, may help improve our communication skills, and will allow a more interactive approach to problem solving.

A major step forward this year is the introduction of the Fellowship Admission Course and the requirement that all new Fellows attend the course. This will be the only part of the Society's education and qualification system that requires interactive and oral participation of students. Hopefully, it will lead to a fresh look at the value of this discipline in our early training and development.

I am sure all of us take great pride in being members of the actuarial profession. However, there must be a difference between pride and complacency. Our 'relevancy' will not be defined by the profession, but will be the result of our efforts and the judgment of those we serve.

As editor of this issue of *The Actuary*, and on behalf of all members of the Society, I would like to say Happy 25th Birthday to the Canadian Institute of Actuaries and the American Academy of Actuaries. The Institute celebrates its anniversary in Quebec City this month. The outgoing President, Peter Hirst, has kindly accepted our invitation for an article in this issue.

An SOA consultant in Australia

by Charles C. McLeod

Just less than three years ago, I was happily consulting to life companies in Canada (and a few in the United States). Unexpectedly, I was offered the chance to exchange the Toronto winters for the Sydney beaches. After debating the usual questions (e.g., what about the children's education?), I accepted. My family (wife and two teenage boys) and I arrived in Australia in early 1988, and we are glad we came.

In some respects, consulting to life companies in Australia is not very different from what I was doing in Canada. Much like their Canadian counterparts, Australian life companies want to increase market share, reduce expense ratios, improve management information systems, reward top salesmen and head office personnel, etc. However, there are some important differences, and these extend beyond a different vocabulary and generally a more relaxed way of doing business.

First, AIDS is not a major industry problem, despite the existence of relatively high blood testing limits (about U.S. \$200,000). This is partly because the spread of AIDS in the general population is less than in North America. In addition, life companies use an AIDS questionnaire, which includes questions so explicit and direct that jaws drop (literally) whenever I show it to a North American underwriter.

"Mismatching" has a very different meaning here. In the United States it would mean buying six-year bonds instead of eight-year bonds; in Australia it means the sale of SPDAs with more than half the assets invested in equities! Since many Australian life companies have surplus ratios in excess of 25%, this strategy is not as questionable as it might first appear (over time, equities may be expected to perform better than fixed-interest securities). The rapid growth of this type of business, however, has caused surplus ratios to drop, thus creating some interesting consulting assignments to quantify the cost of the guarantees being provided to policyholders.

Until very recently the immediate annuity market was almost nonexistent. This was mainly due to a tax

environment in which lump sum payments upon retirement were almost tax free but immediate annuities were taxable. Recent tax changes are making immediate annuities more attractive, and we find a lot of interest in how companies design, price and manage immediate annuities in other parts of the world.

Perhaps the most interesting feature of the Australian scene is what can happen when widespread deregulation of financial services occurs. The four major Australian banks own life companies (as well as mutual fund companies), and some of the secondary banks are setting up life companies as well. At the same time, the two major life companies have formed joint ventures to enter the banking business (AMP with Chase Manhattan, National Mutual with the Royal Bank of Canada). So far, banks have done better than life companies. The life companies' entries to the banking business have had only limited sales success — and significant losses. On the other hand, two banks have seen their life company subsidiaries grow to place in the top 10 for sales. Although the four main banks have used different approaches, a key to success has been persuading the bank branch manager to refer prospects to a team of life salesmen (usually compensated more by salary than by commission). Conversely those life companies that have gone into banking do not seem to have developed much banking business from their existing life salesforces.

Although most Australian life products have relatively high expense loadings (by North American standards), a fairly high sales level is required to cover overhead expenses. In a country where two life companies have about 50% of the market, and the banks and the state insurance offices (all state governments are in the insurance business too!) are becoming major players, selling enough to cover fixed costs can be difficult. Many overseas life offices sold their Australian operations in the last two years, and other similar sales are expected to occur in the future. Despite this, the number of operating life companies slowly increases.

The final distinguishing feature between consulting in Australia and Canada is the scarcity of actuaries here. Australia, with a population of 15 million, has only about 500 actuaries. Canada has 1,500 actuaries in a population of about 25 million. Obtaining consulting assignments is easier than in Canada; recruiting staff to work on the assignments is harder. (Tired of shovelling snow? My phone number is in the *Yearbook!*)

Soon it will be time for me to think about returning to Canada. Although I will need to rebuild links with clients and learn about recent developments, my broadened knowledge will compensate. I have been fortunate to have had two international transfers in my career — this one, and one with my former life company employer. Both were successful and enjoyable. Should you ever have the opportunity to work overseas for a few years, at least give it serious consideration!

Charles C. McLeod is with Tillinghast.

Study materials for SOA exams

Study manuals and textbooks for the November 1990 SOA exams are available from Actuarial Study Materials. For a complete list, write to A.S.M., P.O. Box 522, Merrick, NY 11566.

Mail alert

Second ballots for the Society's 1990 elections will be mailed to all Fellows on July 24. Ballots must be returned to the Society office by August 24.

* * *

The *Transactions* Index to Volumes XXXVI-XL was mailed to members the week of May 7. If you have not received your Index, please call Donna D'Agostino at the Society office, 708-706-3526.

In memoriam

J. Finlay Allen FSA 1933
Francis X. Cody FSA 1957
Maurice F. Feay FSA 1947
Vishwa N. Kapur ASA 1969
Ellsworth E. Strock FSA 1941
John Turnbull FSA 1926

Update on Sections

by Robin B. Leckie

It is approximately 10 years since the Society's Board studied and then authorized the formation of Sections. The purpose then was to shift some decision making from the Board to the membership and specifically to permit the membership to form and manage any special interest 'Section' consistent with the Society's aims. By forming Sections, it was hoped that the development of these subjects would be enhanced and a forum would be provided for member involvement and input.

Sections have taken hold, but their role may still be unclear to many actuaries. To shed further light on Sections, *The Actuary* has interviewed representatives from the various Sections. A condensation of the responses follows. Also included is a list of the current Sections (See Table 1).

- **Involvement** – Eight Sections currently exist with a total membership of 16,729. Clearly this indicates a significant interest and involvement in Sections. Interestingly, however, most of the Section representatives felt there was no need for additional Sections. Do our readers agree? (Anyone interested in forming a Section should consult the *Yearbook*, page 44.)
- **Meetings** – All Sections have sponsored sessions (often in conjunction with a breakfast or luncheon) at the Society's regional and annual meetings. In addition, some Sections have sponsored specialty meetings or held stand-alone meetings, and others have sponsored seminars.
- **Newsletters** – All Sections publish newsletters at least quarterly. These newsletters are a convenient way of soliciting and communicating relevant research, as well as reporting on topics of current interest. None of the Sections felt their newsletters overlapped *The Actuary*. (The editors of *The Actuary* concur).
- **Research** – The state of actuarial research at the beginning of the 1980s was abysmal. Many factors have contributed to a significant turnaround, not the least of which has been the role of Sections.
- **Achievements** – Most Sections modestly cited their most significant

Section	Chair	Number of Members	Date Formed
Futurism	Charles Barry H. Watson	1,286	April 1982
Health	David V. Axene	2,381	October 1981
Product Development	Donna R. Claire	2,804	October 1982
Investment	Peter J. Bondy	2,223	May 1987
Financial Reporting	Glen M. Gammill	2,448	October 1982
Non-Traditional Marketing	Rex D. Hemme	980	October 1984
Pension	Vincent Amoroso	3,320	October 1983
Reinsurance	LeRoy H. Christenson	1,287	April 1982

(Membership as of 4/12/90)

achievement was the ability to bring their members up-to-date on current developments through the exchange of ideas and education provided by seminars and meetings. The Reinsurance Section was somewhat more specific with its guidelines for reporting self-administered reinsurance and reinsurance-assumed administration. It also sponsored the publication of the Cowell-Hoskins paper on AIDS.

- **Current developments** – A summary of proposed activity includes the following:

Individual Life and Annuity Product Development will sponsor a seminar on annuity product development prior to the San Francisco June meeting. It also is sponsoring a series of articles on product development trends outside North America. In addition, Product Development intends to provide financial support for a study on interest-sensitive cash flows.

Reinsurance hopes to develop a compendium of reinsurance legislation. It would also like to work with another section in conducting a capital formation seminar. Reinsurance would like to improve participation of "ceding" actuaries. Also, Reinsurance would like to complete the standardized automated data format for self-administered reinsurance which was sent out in draft form in 1989.

The Investment Section intends to publish a "reading list" bibliography of available

investment literature. It also hopes to develop examination materials for what may be a future SOA investment track.

Pension was not specific about its plans, but in addition to on-going activities, it will be seeking from members more seminar topics and additional qualified instructors.

The Futurism Section has an immediate goal to refine the Delphi study to reveal a spread of results using various future scenarios, rather than just the anticipated mean. Another goal is to identify issues within, and on the fringes of, the actuarial profession's sphere of interest that are susceptible to futuristic analysis.

A main goal for the Health Section is to increase health actuaries' awareness of public policy. Also, it would like to help the actuarial profession gain respect in the public policy arena and increase the Health Section's responsiveness towards research.

The Financial Reporting Section would like to become more active in sponsoring seminars and also continue to publish a strong Section newsletter.

- **Coordination** – All Sections appreciate their ability to operate independently of the Society, while at the same time coordinating their activities with the Society's meetings and structure. Administrative needs are met through the Society's staff.

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Actuaries as volunteers in underdeveloped countries

by Charles L. Trowbridge

Technical know-how is a scarce and expensive commodity in much of the underdeveloped world. As nations progress socially and economically, the need for technical expertise becomes more apparent. In fact, much foreign aid that is bestowed by richer nations takes the form of technical assistance. The theory is to help the underdeveloped world to help itself.

Actuarial science is one form of technical knowledge to which the foregoing paragraph at times applies. The need for actuarial know-how in underdeveloped lands is not particularly strong, but it seems to be growing. Actuarial consulting firms active in the international arena can and do meet some of these modest needs, but too often third world clients cannot afford the cost.

Some 25 years ago the International Executive Service Corps (IESC) was created in the United States; a similar organization, the Canadian Executive Service Organization (CESO), exists in Canada. These organizations attempt to match technical needs of client companies in the third world with "experts" (usually retired) in North America willing to contribute their knowledge and experience. Financing the volunteer's two- to three-month stay on the client's home grounds comes partly from the benefited client, partly from foreign aid funds, private grants, and the volunteer's willingness to work only for expense reimbursement.

Actuaries have been a relatively small part of the total effort, largely because few third world clients need actuarial assistance. Nonetheless, over the years actuaries have undertaken a dozen or so of the more than 10,000 IESC projects. As it happens, I recently worked on three IESC projects.

In late 1985 I was asked to undertake a project in Morocco. An organization known as the Caisse Interprofessionnelle Marocaine des Retraites (CIMR) is the administrative agency for a large multi-employer retirement plan for salaried employees. The plan is based on the "repartition" principle, not well-known in North America but

common enough both in France and those parts of the world where French influence is strong. In this Moroccan adaptation, several local insurance companies were involved with a defined contribution portion of the total plan. CIMR asked for actuarial help with negotiations with the consortium of insurers and with the Moroccan government.

Two years later I took a second assignment in Kingston, Jamaica, helping a life insurance company recently formed from the Caribbean operations of two different North American companies, one U.S., the other Canadian. The assignment included training and encouraging three recently hired actuarial students, as well as advising on product development and investment accounting.

My 1989 IESC assignment was in Botswana, a sparsely settled and largely desert country in southern Africa. An insurance company active in life, pensions, and casualty, owned jointly by the Botswana government and insurance brokerage interests in London, was restructuring due to changing legislation and desired help with developing a long-range plan.

Prior to these assignments, but after my retirement from the insurance industry in 1979, I was able to apply actuarial knowledge in another less-than-fully-developed country. A two-month sojourn in Malaysia, semi-attached to the Department of Mathematics, Statistics, and Actuarial Science of Institut Teknologi Mara, gave me a good look at a multi-cultural nation of the Far East, close to but politically separate from the thriving commercial city of Singapore.

In all these assignments my wife was able to accompany me, and we had the time and the inclination to see something of these very interesting parts of the world. As third world countries go, these are relatively well developed, and all have escaped from colonialism since World War II. Malaysia and Morocco are Islamic, though both are about as far from the center of Islamic affairs as Moslem nations get. Jamaica has both a Spanish and an English colonial history and was settled by the Spanish long before Europeans came

to North America. Botswana is one of the newest nations, never a part of the Republic of South Africa, but necessarily influenced by the situation there.

Now we have an intensified interest in world and foreign affairs, coming in part from these actuarially related visits to far off and lesser known places. Opportunities along these lines, limited though they may be, seem to crop up if one keeps looking.

Charles L. Trowbridge, a Past President of the Society, is author of the book *Fundamental Concepts of Actuarial Science*.

Sections cont'd

and general coordination is achieved through a Council of Section Chairpersons. A few of the Sections would like to improve the exchange of ideas between Sections.

- **Input** – All Sections would like to be responsive to the needs of their members. Specifically they have asked for ideas on how to improve services. Volunteers to serve on Section committees would also be appreciated.
- **Divisions** – At the time Sections were formed, the concept of Divisions also was considered, but rejected. This would have been a higher level structural change in the Society for key functional needs of members. For example, Life and Pension and perhaps Health Divisions could have been formed, (and a Casualty Division if the Casualty Actuarial Society had wished to integrate its activities with the Society). Obviously, such a structure would have had immense significance for the governance of our profession.

The Section representatives were not asked for their views on Divisions, but it is interesting to note that the emergence of Sections has not detracted from the overall governance of the Society, while permitting the pursuit of the specific functional requirements of members.

For more information on Sections, see pages 44-46 of the SOA *Yearbook* and pages 51-58 of the 1989 Committee and Section Reports.

Robin B. Leckie is Consultant, R. B. Leckie & Associates. He is a Past President of the Society.

Actuarial services for government

by Christopher D. Daykin

Governments need actuarial advice in formulating pension policy, in financially managing national social security schemes and public sector pension plans, and in supervising life, health and property-casualty insurance. They also need actuarial advice in considering the impact of future population changes, in assessing compensation terms for loss of earnings or pension rights, and in numerous other areas.

Some governments choose to take actuarial advice from private sector consultants for particular problems. This may work well for certain situations, but on different occasions may lack coherence and continuity. For example, a consultant may not be familiar with how governments and government departments operate and conflicts of interest also may occur between this work and work done by the consultant for other clients.

Another alternative in selecting actuarial advice is for each government department to recruit its own actuaries according to its needs. This may work up to a point, but in a tight actuarial recruiting market securing the right level of staffing may not be easy. Providing an adequate career structure for actuaries in the public sector also is sometimes difficult.

In the United Kingdom we devised our own system for securing actuarial assistance by creating a separate actuarial consultancy firm within government, known as the Government Actuary's Department (GAD).

The process leading to the formation of GAD began in 1912, when Alfred Watson, a consulting actuary and partner in the firm R. Watson and Sons, was appointed Chief Actuary to the National Health Insurance Joint Committee. Watson was the head of a small subdepartment that advised the committee on actuarial and financial matters in connection with the National Insurance Act 1911.

The role of Chief Actuary grew during World War I, and in 1917 the Treasury conferred the title of Government Actuary on Watson, who later became Sir Alfred Watson. He remained Government Actuary until 1936, heading up the Government Actuary's Department from June 1919, when GAD was separately established

to provide a centralized actuarial work required for public service.

GAD currently employs 27 qualified actuaries, 12 students and a support staff of 66. The department provides consultancy services to any government minister, government department or other public sector body that requires actuarial advice. Fees are charged on normal consultancy terms based on hours spent on the work, with a loading to cover office overheads. Government departments and public sector clients are not obliged to use GAD, but government departments in particular should only seek actuarial advice elsewhere if it is cost effective to do so.

The Government Actuary has certain statutory functions regarding U.K. social security. The Social Security Act 1986 requires a report by the Government Actuary whenever the Secretary of State lays an order before Parliament concerning the annual uprating of benefits. A report is similarly required of the annual review of contribution rates and the earnings bands to which they are applied, but this report is now generally combined with the benefits uprating report. Every five years the Government Actuary must perform a review of the operation of the Social Security Acts, examining the long-term and focusing on the future benefits costs and the rates of contribution likely to be required over the years.

Another major activity of the Government Actuary's Department is the supervision of both life and nonlife insurance companies. Formal responsibility for supervising the insurance industry rests with the Department of Trade and Industry, but GAD is the industry's official actuarial adviser. In practice much of the daily work of supervising life insurance companies is delegated to the Insurance Directorate at GAD. GAD also provides advice on financial questions related to the supervision of nonlife insurance, including medical expenses insurance and reinsurance.

GAD also is involved in the formulation of pension policy, by advising the Department of Social Security, the Treasury and the Inland Revenue on the different policy aspects of private pension plans,

including taxation, funding standards, protection of members, or opting out of a part of the State social security arrangements and providing equivalent benefits through private plans. GAD also advises many public sector pension schemes, including those for civil servants, armed forces, police, fire, teachers and national health service employees, and many funded schemes in the wider public sector.

GAD also produces the official national population projections of the United Kingdom and its constituent countries. This is done in consultation with the Office of Population Censuses and Surveys (for England and Wales) and the Registrars General for Scotland and Northern Ireland, which have responsibility for maintaining population statistics for their respective countries. However, GAD provides an independent overview, without territorial bias, and the official projections (including projections on variant assumptions) produced by the Government Actuary are required to be used for all public expenditure planning purposes.

The wide range of actuarial activity, the close involvement in the political process and the opportunity to influence national policy development in many areas makes GAD an exciting and challenging place for actuaries to work. GAD offers a distinctive ethos and a strong emphasis on professionalism and serving the public interest.

Competing with salary levels in the private sector has been a problem for GAD, but more flexible, performance-related pay arrangements were introduced in 1989 and these now make it easier to recruit and retain staff.

Many advantages exist for a government that has its own in-house actuarial consultancy firm. It also benefits the actuarial profession because it improves the chances that actuarial aspects of legislation will be properly considered. An in-house firm also leads to an awareness within government of possible legislative solutions which rely on the professionalism of actuaries.

Christopher D. Daykin is a U.K. Government Actuary.

Reports presented at IACA Conference

by Frank Livsey

More than 140 actuaries representing 14 countries, together with more than 120 additional participants, attended the 12th Conference of the International Association of Consulting Actuaries (IACA) held in Auckland, New Zealand, last February.

IACA was established in the 1960s and has held biennial conferences commencing in 1968. Membership is limited to actuaries who are substantially full-time consulting actuaries and who do not personally engage in business as an insurance broker or agent to any significant extent. The actuary also must have held for at least three years a professional actuarial qualification recognized by the committee. Currently, more than 600 actuaries representing 32 countries are members of IACA.

The goals of IACA are to facilitate the exchange of views and information internationally between members on matters affecting their professional responsibilities as consulting actuaries, and to arrange international meetings of members to achieve these goals.

Professional meetings on different topics were organized in New Zealand under the theme of "Where are we going as a Profession," based on papers received for presentation. In addition, sessions were held to discuss the national reports on current issues from each part of the world.

Topics for discussion included retirement benefit changes in New Zealand, where are we heading as a profession, national reports, pension plan design, investments, actuarial consulting in insurance, management of consulting firms, professional topics, and accounting rules and practical experience.

A guest speaker, the Honorable Roger O. Douglas, introduced the topic of retirement benefit changes in New Zealand. Douglas was the Minister of Finance in New Zealand responsible for introducing a series of new tax measures which drastically overhauled and broadened the tax base. Significant changes have been made in the

basis of taxation for superannuation schemes. These changes are:

1. Employee contributions will not be eligible for income tax deductions.
2. Company contributions will be subject to a withholding tax at source.
3. The investment income of superannuation trust funds will be liable to tax.
4. All benefits paid out of superannuation schemes will be tax exempt in the future.

North American actuaries will be interested to observe how these changes affect the development of private pensions in New Zealand. The changes contrast dramatically with the practice in most other countries of encouraging savings for retirement through tax deferral.

Each professional meeting began with an opener who introduced the topic for discussion, referring to the papers that were presented, and provided a framework for further discussion. Then the meeting was opened to discussion from the floor. A closer made final remarks and summarized the discussion that had taken place.

National reports were received from 21 countries, and 30 papers were presented on the actuarial topics included in the program. North America was well represented at the conference, with national reports presented from the United States and Canada. Fourteen papers were prepared, and 10 actuaries participated as official chairpersons, openers or closers at the professional meetings. The national reports and papers are published in the official *Transactions* of the conference. There were more than 100 contributions to the discussion of topics.

The consulting actuaries attending the conference discovered they faced many similar issues. For example, actuaries from North America learned that the problems associated with surplus ownership, inflation protection of pensions, and

the increased interest in defined-contribution plans are widespread.

The following actuaries contributed papers to the conference:

- F. Roger Atkins and Charles (Barry) Watson, "FAS 87 Assumptions for Non-U.S. Defined Benefit Plans"
- Thomas P. Bleakney, "Defined Contribution Retirement Plans for U.S. Public Employees"
- John M. Bragg, "A Practical System of the Economics/Investments World"
- John M. Christie, "Development and Monitoring of Professional Standards in Canada"
- Laurence E. Coward, "Inflation Protection For Pensions in Canada"
- Robert J. Dymowski, "The Development of Long-Term-Care Insurance in the United States"
- Edward H. Friend, "OASDI Modernization and Long-Term Care as Intertwined Issues: A Nation in Pursuit of Solutions"
- David L. Hewitt, "Actuarial Aspects of Continuing Care Retirement Communities"
- David F. Howe, "Defined Benefits Redefined"
- C. K. Khury, "Contemporary Trends in General Insurance - U.S.A."
- Frank Livsey, "Developing a Statement of Investment Policies and Goals for Pension Plans"
- Anna M. Rappaport, "Living with New Accounting Rules for Post-employment Medical Benefits"
- Mary S. Riebold, "A Strategy For Actuarial Acquisition Consulting"
- Frederick J. Thompson, "Development of Executive Pension Plans in Canada"

The next IACA conference will be held on May 24-29, 1992, in Vancouver, British Columbia. The following conference in 1994 is tentatively planned for Hong Kong.

Consulting actuaries who might be interested in joining IACA should refer to the Society of Actuaries *Yearbook* or the Canadian Institute of Actuaries for details on how to apply for membership.

Frank Livsey is partner, Hewitt Associates.

The complete actuary

Business and management periodicals for actuaries

by Charles R. Haskins

Actuaries function within an international and national business environment. The complete actuary makes a substantial time commitment to study and understand the environment related to a particular field of expertise. Actuaries with supervisory or management responsibilities will, out of necessity, commit additional time to master essential managerial and supervisory skills. The periodicals listed in this article are presented to reinforce the seasoned actuary's reading program and to guide actuarial students making the transition from exam syllabus to long-term professional development.

The periodicals are divided into five categories. At least one publication from each of the first two categories (business newspapers and general business periodicals) is recommended as a cornerstone to an individual study program covering international and national business environments. Actuaries with supervisory or managerial responsibilities should consider adding at least one business school publication, plus periodicals listed under the management and supervision sections.

This list of periodicals was compiled with the assistance of Donna Richardson, SOA Research Librarian. Our first step was to select more than 50 periodicals from the hundreds listed in the bibliographies of business, economics, and management periodicals. Richardson requested sample copies of periodicals selected as candidates for this initial list. Many journals devoted to research papers of business school professors and doctoral candidates were excluded from this list. The business school publications selected were among the least quantitative of the academic journals reviewed.

Many other publications covering management and supervision could and should be added to this list. Please send issues of recommended publications to Richardson at the Society office. The Committee on Management and Personal Develop-

ment will expand and update this recommended list in future years.

Business newspapers

Wall Street Journal, 200 Liberty Street, New York, NY 10281, 800-841-8000, six months — \$65, one year — \$129, two years — \$217.

Globe and Mail, 444 Front Street West, Toronto, Ontario M5V 2S9, 416-585-5222, published six days a week (Monday-Saturday), (in Canada) three months — \$53.30, six months — \$106.60, one year — \$213.20.

Financial Post, 777 Bay Street, 6/F, Toronto, Ontario, M5G 2C8, 416-596-5147, weekly, (in Canada) 13 weeks — \$32.50, six months — \$65, one year — \$130.

General business

Business Week, P.O. Box 506, Hightstown, NJ 08520-9970, 800-635-1200, one year — \$39.95.

Fortune, P.O. Box 60001, Tampa, FL 33660-0001, 800-621-8000, biweekly, one year (in U.S.) — \$64.53, one year (in Canada) — \$47.97.

Canadian Business, 70 The Esplanade, 2nd Floor, Toronto, Ontario, M5E 9Z9, 800-268-9696, monthly, one year — \$40 and three years — \$100 (in U.S.), one year — \$24 and three years — \$60 (in Canada).

Best of Business Quarterly, c/o Lisa Wells, Whittle Communications L.P., 505 Market Street, Knoxville, TN 37902, 615-595-5000. Free if requested on company letterhead with description of business and individual title. Generally, directors and officers qualify; other titles are reviewed individually.

A pour AFFAIRES économiques, 59, rue de Rocher, 75008 Paris, Telephone: (1)43.87.37.88, 10 issues and annual supplement, Fr 300. (French-language publication).

Business Month, Subscription Service Department, P.O. Box 51947, Boulder, CO 80321-1947, 800-825-2850, free with request accompanied by business card.

Forbes, 60 Fifth Avenue, New York, NY 10114-0388, 212-620-1855, biweekly, one year — \$48, two years — \$72, three years — \$96.

Canadian Business Review, Pamela Fletcher, Publications Informa-

tion Centre, The Conference Board of Canada, 255 Smyth Road, Ottawa, Ontario K1H 8M7, 613-526-3280, quarterly, one year — \$36 and two years — \$60 (in U.S.), one year — \$18 and two years — \$30 (in Canada).

Across the Board, 845 Third Avenue, New York, NY 10022, 212-759-0900, 10 issues per year, one year — \$15, single copy — \$2.

Financial Times, 1231 Yonge Street, Suite 300, Toronto, Ontario, M4T 2Z1, 416-922-1133, weekly, (in Canada) one year — \$35, two years — \$56.

The Economist, P.O. Box 58524, Boulder, CO 80322-8524, 800-456-6086, weekly, one year — \$98, two years — \$175.

Business school publications

Harvard Business Review, Subscriber Service, P.O. Box 52623, Boulder, CO 80322-2623, 303-447-9330, bimonthly, \$55.

Sloan Management Review, Massachusetts Institute of Technology, 77 Massachusetts Avenue, Cambridge, MA 02139-9910, 617-253-7170, quarterly, one year — \$35, two years — \$64, three years — \$90.

Management

Resource, Life Office Management Association, 5770 Powers Ferry Road, Atlanta, GA 30327, 404-951-1770, bimonthly, free to LOMA members if requested on company letterhead, nonmember — \$24.

Canadian Manager, Canadian Institute of Management, Institut Canadien de Gestion, 2175 Sheppard Avenue East, Suite 110, Willowdale, Ontario M2J 1W8, 416-493-0155, quarterly, one year — \$14 (in U.S.), one year — \$10 (in Canada), single copy — \$2.75.

Business Quarterly, 1057 McNicoll Avenue, Toronto, Ontario M1W 9Z9, 416-496-8413, one year — \$27, two years — \$37, three years — \$53.

The Journal of Business Strategy, Warren, Gorham & Lamont Inc., 210 South Street, Boston, MA 02111, 800-950-1216, bimonthly, one year — \$84.

Planning Review, Planning Forum, P.O. Box 70, Oxford, OH 45056,

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Complete actuary cont'd

513-523-4185, bimonthly, one year — \$55.

Gestion: Revue internationale de gestion, 674, Place Publique, Ste-Dorothee, Laval, Quebec, Canada H7X 1G1, 514-689-2982, quarterly, (in Canada), one year — \$30, two years — \$70, three years — \$100 (French-language publication).

Business Forum, California State University, Los Angeles, 5151 State University Drive, Los Angeles, CA 90032, 213-343-2806, quarterly, one year — \$17.

Management Review, American Management Association, 135 West 50th Street, New York, NY 10020, 518-891-1500, ext. 240, monthly, one year — \$40.

Management World, Administrative Management Society, 4622 Street Road, Trevoise, PA 19047, 215-953-1040, bimonthly, included in AMS dues, nonmember one year — \$22.

Supervision

Supervisory Management, Fulfillment Department, American Management Association, Trudeau Road, Saranac Lake, New York, NY 12983, 518-891-1500, ext. 240, monthly, one year — \$27, two years — \$48.60, three years — \$79.90.

Training, 50 South Ninth Street, Minneapolis, MN 55402, 800-328-4329, monthly, one year — \$42, two years — \$62, three years — \$78, Canada: one year — \$46.

Supervision, Subscription Department, 424 N. Third Street, Burlington, IA 52601-5224, 319-752-5415, monthly, one year — \$30.50.

The Pryor Report, Customer Service Manager, P.O. Box 1766, Clemson, SC 29633, 800-237-7967, monthly, one year — \$59.

Charles R. Haskins is Executive Vice President — Product Development, Family Guardian Life Insurance Company. He is a member of the SOA Committee on Management and Personal Development.

Correction

In the May 1990 *Actuary*, the telephone number for Basic Books listed with the book review "Myth of Heterosexual AIDS" was incorrect. The correct telephone number is (toll free) 800-638-3030.

Dear Editor:**Lost exams handled poorly**

We wish to register our protest at the unprofessional and inconsiderate manner in which the Society handled the release of the actuarial examination results to the candidates who wrote in London at the November sitting of the actuarial examinations. Further, we also wish to suggest some amendments to the Society's heretofore undisclosed policies on lost examinations.

Per introduction, we will detail the actual events.

The answer sheets for all examinations written in London on November 9, 1989, were lost by the courier. The Society decided to assess all candidates based on their entries in their examination booklets. Students who did not mark their booklets, or who made minimal marks in their booklets, particularly in the case of multiple-choice Fellowship examinations, were not given a failing grade.

The hotline was activated January 9 following the release of the Associateship examination results. Students who wrote Associateship examinations in London and contacted the hotline were informed that their results would not be released over the telephone and that special letters would be forwarded to them. No other information was divulged.

We recognize that the loss of examination solutions is an unfortunate possibility with which, as examination candidates, we are prepared to reconcile ourselves. Our concerns can be expressed in the following two categories.

- Notification of candidates
We feel that the release of information about the loss of examination booklets could have been handled in the following more courteous, humane, and professional manner.

Affected students could have been individually contacted subsequent to the release of the Associateship examination results and prior to the activation of the hotline. (A precedent for this is the action taken by the Casualty Actuarial Society in November 1986 when all the examination solutions for the Toronto candidates were lost.) At this time, these students would have been informed of the loss of their examination solutions and told that, as a

consequence, their examination booklets had been assessed. Their actual results could have been made available at the normal time.

This approach would have prevented the debacle that occurred when students who were totally unaffected were unable to obtain their results from the hotline. The resultant anxiety and speculation would have thus been avoided.

- Procedures/policies in the event of lost examination solutions

It is our opinion that the Society acted in a fair and equitable manner when it decided to assess students on the basis of their entries in their examination booklets. We feel, however, that this decision should be enshrined as a policy.

The 1990 Associateship Catalog states, on page 12, section II.16.... "In the remote contingency of loss or destruction by any means of completed examination answer sheets, the examination fee will be refunded." Section IV.7 of this catalog further states.... "Documenting your answers in the examination book is not given any credit, except in the case of a defective question, as described in Section III, Item 4..."

Further, the 1990 Fellowship Catalog states, on page 10, section V.6 ... "Documenting your answers in the examination book is not given any credit, except in the case of a defective question, as described in Section III, Item 14."

It is imperative, therefore, for the Society to amend these statements in the catalogs, as well as the Instructions to Candidates, which are read at every Society examination, in the light of its decision to assess the examination books.

We trust that you will consider our suggestions and reassess your policies for dealing with these matters accordingly.

France Boucher
John Clayton
Darryl Empey
Gary England
Elizabeth Fitzmaurice
Rosie Flanagan
Richard Hampton
Kim Harris
W. Scott Lennox
Teresa Leung
Mary Millard

Eric Poirier
Brian Phelps
Jean-Francois Poulin
Ramona Robinson
Nancy Rumpfer
Yves St-Laurent
Saloon Tham
Elizabeth Young
Jo-Ann Valz
Jerry Zanatta

Reply from the E&E Committee

Thank you for your letter. I am replying to you as a member of the

Continued on page 12 column 1

Dear Editor cont'd

Fellowship Admission Course Steering Committee.

First of all, I am pleased that you feel the Society acted in a fair and equitable manner in dealing with the problems of the lost examination papers. The communication of that action, however, was less than perfect.

I would like to share with you some of the things that happened as we were readying the grades for release and then actions that we plan to take should this happen in the future.

We had hoped to complete the review of the examination books early enough that we could get a letter to each affected candidate before the grades were released and before the hotline was activated. Unfortunately, we were unable to do this and we did not have the letter prepared until Friday, January 5. We considered three possible alternatives:

1. We could have Federal Expressed the letters to each affected candidate at a cost of \$500. I decided this was too expensive. In hindsight, I was probably wrong.
2. I could have attempted to call each affected candidate personally and explain what we have done, but I decided that the time commitment was too much. I estimated that phone calls would take about 10 minutes and would not always go through the first time. Twenty-seven students were involved, and it would have taken all of Monday to complete this task. I did not feel I would commit the whole day.
3. We elected to Federal Express the letters to each candidate to Manufacturers Life in one package. They had agreed to mail them immediately. This way, we could get them in the mail in London on Monday, January 8, and we hoped that the students would have received them before the hotline was opened and before they received their grades in the mail from the Society. We were obviously not successful.

We intended the hotline to block out only the grades of affected students. Unfortunately, when this was initially implemented, all London students were blocked out leading to the debacle that you have described.

We already had decided before we received your letter to include in the instructions to students the following statements, "Clearly indicated answers in the test book can be

an aid in grading an examination in the unlikely event of a lost answer sheet." Future catalogs will include an explanation of how we handle the problem of lost answer sheets.

We sincerely hope that we never lose another answer sheet. However, if we do, we will be sure to attempt to contact the individuals concerned before the grades are released.

Once again, I would like to apologize for the communication problems we had and I thank you for your thoughtful letter.

Godfrey Perrott

Amusing proof

I got a kick out of Thomas Tredway's proof that $2=1$ in the March *Actuary*. It was original in the sense that it did not involve dividing by zero. After some thought, it occurred to me that something in my advanced calculus class discussed rearranging terms in infinite series. Looking into this, I found a theorem that said that you can rearrange terms of an absolutely convergent series and the final sum will not be affected. But it also said that the same was not true for a conditionally convergent series. Since the series that represents $\ln(2)$ is conditionally convergent, we have the basis for the fallacy.

David J. Rosenberg

* * *

Thomas Tredway "stated" in the March *Actuary* that

$$2 \ln 2 = 2x \sum_{n=1}^{\infty} (-1)^{n-1} x \frac{1}{n}$$

or that

$$\ln 4 = 2x \sum_{n=1}^{\infty} (-1)^{n-1} x \frac{1}{n}$$

or that

$$\ln 2x = 2x \sum_{n=1}^{\infty} (-1)^{n-1} x \frac{xn}{n}$$

where

$$\sum_{n=1}^{\infty} (-1)^{n-1} x \frac{xn}{n}$$

is an infinite series representation for

$$\ln(1+x), \quad x \in R, \quad -1 < x \leq 1.$$

Since $\ln ZZ = 2 \ln(HZ)$ is valid only for $Z_1, Z_2 \in C$ where $Z_1 = (i,0)$, $Z_2 = (-i,0)$ and is not valid for any $Z \in R$, the "demonstrations" founders.

Mark S. Fowler

Constitutional amendment

I urge your readers to lend their support to adopt the Thurian Code (originally adopted in the 5th century B.C.) in the form of a constitutional amendment.

The Thurian Code was drawn up by Charondas who, to check any capricious innovations in his laws, ordained that whoever should propose any alterations in them, should remain in public with a rope about his neck, until the people had formally decided upon their adoption or rejection. In the latter case, the rope was to be tightened and the reformed strangled. There are only three instances recorded of alterations being proposed.

The Thurian Code was a very primitive one and the criminal punishments were chiefly of the Lex talionis (eye for an eye, tooth for a tooth) type.

Charondas, having inadvertently broken one of his own laws by appearing armed in a public assembly, plunged his sword into his breast, saying that he would seal his laws with his own blood.

Robert H. Selles

Insulted by puzzle clue

As a subscriber to *The Actuary*, I feel compelled to protest clue "t" in the March 1990 actucrostic puzzle.

That clue was "What you do to a man if you're wrong, but to a woman if you're right." The "correct" answer called for by the puzzle's author was "apologize." I consider this very demeaning to women as it perpetuates the myth that women are emotional and irrational and can be easily placated. I also protest the author's tacit assumption that those who do the puzzle (and probably those who subscribe to the publication) are all men.

Incidentally, the word "woman" used in the clue was misspelled as "women." Possibly a typo, possibly indicative of something more?

As a woman and ardent puzzle solver, I feel I have been "wronged."

Lilyan Cralle

Educational investment

In his article entitled "The tuition actuary" in the March *Actuary*, Tom Zavist proposes an arrangement to pay for education from grade school on up by "encumbering" a portion of a student's earnings. It appears that students would become investments in which parents or others can participate. In return for paying for the education, investors will receive a percentage of each year's future earnings. The intention is to eliminate education taxes, and schools will have

Continued on page 13 column 1

Dear Editor cont'd

an incentive to maximize the employability of students — great idea!

My initial impression is that students will need to compete for investors and may have to prepare prospectuses evaluating them as investments. ("Jimmy is a six year old planning to enter grade school. He has no known defects, but his parents and doctor do not expect him to grow tall enough to become a star basketball player, and his mother considers him totally inept, since he continually knocks over things. On the other hand, his grandparents believe he could become a valued middle-level manager at the town's savings bank, with a present value of \$800,000 in earnings and therefore be able to repay an education loan with some profit to spare.")

Fortunately, a simpler approach is available involving no additional paperwork or collections: public education. Note that the adjective "free" is missing, since most people who graduate wind up making more money, therefore paying higher taxes, and will probably repay their education in full and then some. For example, note that Tom's example C with a college education has a present value of \$1,290,000 and a present value of future taxes of \$516,000 at a 40% total tax rate. Example B, a high school grad, has a \$705,000 present value of pay and a \$212,000 present value of taxes at a 30% tax rate. The additional tax present value for C is \$304,000, which will easily cover C's education costs over 16 years.

In addition, the country is that much stronger. This was the marvelous result of the GI Bill that enabled millions of World War II veterans to attend college for free. The GI Bill was intended as a generous "thank you" from the American people. However, it could also be considered a kind of loan, because most of those GIs have probably paid sufficient additional taxes on their higher earnings resulting from that education to amply repay the gift they received.

David Langer

* * *

In the March issue of *The Actuary*, Thomas M. Zavist presented an intriguing idea for funding public

The claim is repeatedly made that the proposal will "eliminate taxes as a means of financing public education," but no recognition is given to the fact that the "encumbrance" on future earnings is itself a tax (i.e., rather than eliminating taxes, the proposal merely defers them and shifts the responsibility for their payment). Further, by using a flat percent of pay, the proposal creates a regressive tax. Unfortunately, use of a nonregressive tax may make the proposal less attractive to investors.

In defining "pay," the use of half of the combined amount for two individuals filing jointly seems to make "marriageability" as important a factor as "employability" in raising revenues, thus dampening the incentive for improving teaching effectiveness. This problem might be overcome by a different definition of "pay." However, "employability" is itself (at least as far as a singular goal) a questionable measure of teaching effectiveness. "Enculturation" is just as important, but would receive little priority if free-market financial pressures become the driving force behind education.

The significant time lag before realizing any return, and the high volatility of that return once it is realized, make it unlikely that significant enough investment levels could be achieved to fully fund our public educational systems. Perhaps the concept could be fashioned as a supplement to current funding methods.

Finally, in viewing the public educational systems as an investment opportunity, the business strategy of investing in profitable ventures and divesting from unprofitable ones may not be appropriate. Given that the same number of students needs to be taught regardless of the effectiveness of their teachers, it may be necessary to increase the financial commitment to those schools that are struggling, in order to foster improvement. It is in this role as a beneficent overseer that government control may be superior to private enterprise.

Ben Marshall

* * *

I felt I must respond to Thomas M. Zavist's proposal in "The tuition actuary." I certainly agree that our public schools are in a desperate need of

main purpose of education is the benefit (and particularly the economic benefit) of the student. Beginning with our earliest colonial days and continuing into this century, Americans have established schools and colleges not to enrich their students but to provide properly trained servants for society. The founders understood that, particularly in a democracy, it is dangerous to have a sizable class of people who are illiterate or ignorant of the basic principles of history. The fact that better-educated people tend to have higher incomes has always been viewed as a secondary benefit.

As an educator, I am appalled at the suggestion that I should urge students to make career choices primarily with the objective of maximizing their future income. For one thing, such a course would probably mean we would have virtually no teachers in a generation or two. (College teachers, after 20 or more years of schooling, find starting salaries more like \$30,000 than your lawyer's supposed \$60,000, and will be lucky to keep up with inflation.)

It would be exciting to see the actuarial profession's considerable talent for innovative financial arrangements turned to the problems of education. For the sake of any future attempts, though, let's be clear on the cost. My school district spends, on the average, \$3,999 per pupil (elementary and high school) — an amount that allows no music or art in the elementary schools, no calculus in the high school, and a number of other serious deficiencies. This figure is somewhat below the average in Illinois, and considerably below the national average. Yes, there is waste and inefficiency, as in any operation; but drastic cuts in spending levels (which Zavist's proposed upper limit of .5% per year implies) would be as disastrous for education as California's mandatory roll back in premiums was for automobile insurance.

Esther Portnoy

George A. Huggins deserves historical credit

In the historical background presented in the 1990 *Yearbook* of the Society [written by E.J. Moorhead, author of

Dear Editor cont'd

involvement in pensions came from George B. Buck in 1913 and (b) gradually after that a few actuaries — some not members of professional actuarial bodies — formed consulting firms to provide services to private and governmental pension systems. I am writing because, as a long-time employee of Hay/Huggins Company, Inc., aware of its history, I believe that George A. Huggins deserves a significant part of the credit for the original actuarial involvement in pensions. I base this opinion on the following facts:

- (1) Huggins started our firm of consulting actuaries in 1911.
- (2) Before that (while working in the actuarial department of the Fidelity Mutual Life Insurance Company in Philadelphia), he became involved on a personal basis as the guiding force assisting what is now the Board of Pensions of the Presbyterian Church (U.S.A.) in developing its pension program for ministers of that denomination throughout the country.

It was as a result of his perceptions of the need for pension and life insurance consulting that he established his consulting firm in 1911. Due to his involvement with the Presbyterian pension program, he was recognized as the foremost pension actuary in the country in the religious denominational field and was generally used as the consulting actuary by other denominations as they developed their pension plans in the subsequent years. Religious denominations were in the forefront of the development of benefit plans in the United States because of their concern for making appropriate provision for their ministers and lay employees. Their defined-benefit plans are often more actuarially complex than typical corporate plans because they normally automatically pay surviving spouse benefits without actuarial reduction and frequently provide ancillary benefits such as child pensions and educational benefits.

Accordingly, it would seem to me that significant credit for the "original" actuarial involvement in pensions should be given to George A. Huggins. Huggins was one of the actuaries who in those early years did not join a

Jack Moorhead replies:

Yes, but where can we find documentation for the accomplishments that Michael Mudry recites?

I agree that religious denominations were first in North America to develop pension plans for their practitioners; this point was well made in an article in *The Actuary*, May 1969, in which James H. Cassidy said that much early actuarial work was done by clergymen looking to establish the equivalent on this continent of Britain's Friendly Societies. The Presbyterian Ministers Fund was launched in 1759, a century and a half before Huggins worked in the Fidelity Mutual.

No objection can be raised on grounds that Huggins didn't qualify through membership in either the Actuarial Society or American Institute of Actuaries; George Buck wasn't a member either until after he had done the pioneering work cited in our historical note. But support for Buck's claim to fame can be found in two authoritative works described in *Our Yesterdays*, pages 84 and 85. It is to be hoped that Mudry will furnish documentation on Huggins's behalf unless it already exists.

1989 ARCH available

The 1989.2 *Actuarial Research Clearing House (ARCH)* is now available from the Society of Actuaries. To order a copy of either the 1989.1 or 1989.2 *ARCH*, please send \$12.50 to the Society of Actuaries, P.O. Box 95668, Chicago, IL 60694. To obtain copies of both issues or to subscribe for 1990, please send \$25 to the same address. The 1989.1 *ARCH* contains the proceedings from the 23rd Annual Actuarial Research Conference. In addition, papers in the 1989.1 *ARCH* include "Observations on the Human Immunodeficiency Virus Epidemic and Managing Uncertainty in Insurance" by David M. Holland, and "Stochastic Differential Equations for Compound Risk Reserves" by Jose Garrido. The 1989.2 *ARCH* includes two of the papers submitted for the 1989 Actuarial Education and Research Fund Practitioners Award and other research papers. Papers printed in the 1989.2 edition include "A Multivariate Approach to Duration Analysis" by

Fax numbers to appear in 1991 Yearbook

Membership Verification Cards mailed to all members during the first part of June will contain a space for fax numbers. If you provide the Society with your fax number, it will be stored in the Society's data base. The fax number also will appear in the 1991 *Yearbook* unless you indicate on the card that you do not wish to have it printed.

Other information requested on the Membership Verification Card will be used in the preparation of the 1991 *Yearbook*. If there are any changes in your address, employment category, etc., please return the card with the appropriate changes.

1990 AERF Practitioners' Award

The Actuarial Education and Research Fund is planning its third annual Practitioners' Award for research done in 1989. This award is to recognize the considerable research done by actuaries working in a nonacademic setting and to encourage the publication of research performed in the working environment. Submissions must be made to AERF by August 1. Announcement of winners is scheduled for October 1990. For rules and requirements on the Practitioners' Award, call Mark G. Doherty, Executive Director of AERF, at 708-706-3571. The top prize is \$1,000 and honorable mention prizes of \$500 are possible. The AERF anticipates publishing submitted papers in the *Actuarial Research Clearinghouse (ARCH)*.

Summary of actuarial history available

Copies of E. J. Moorhead's summary of the history of the actuarial profession in North America are now available. The summary, entitled "The Actuarial Profession in North America: A Review on the Occasion of the Profession's 1989 Centennial," is a layman's version of the profession's history.

Society members are encouraged to obtain a copy of the summary and make it available to other key non-

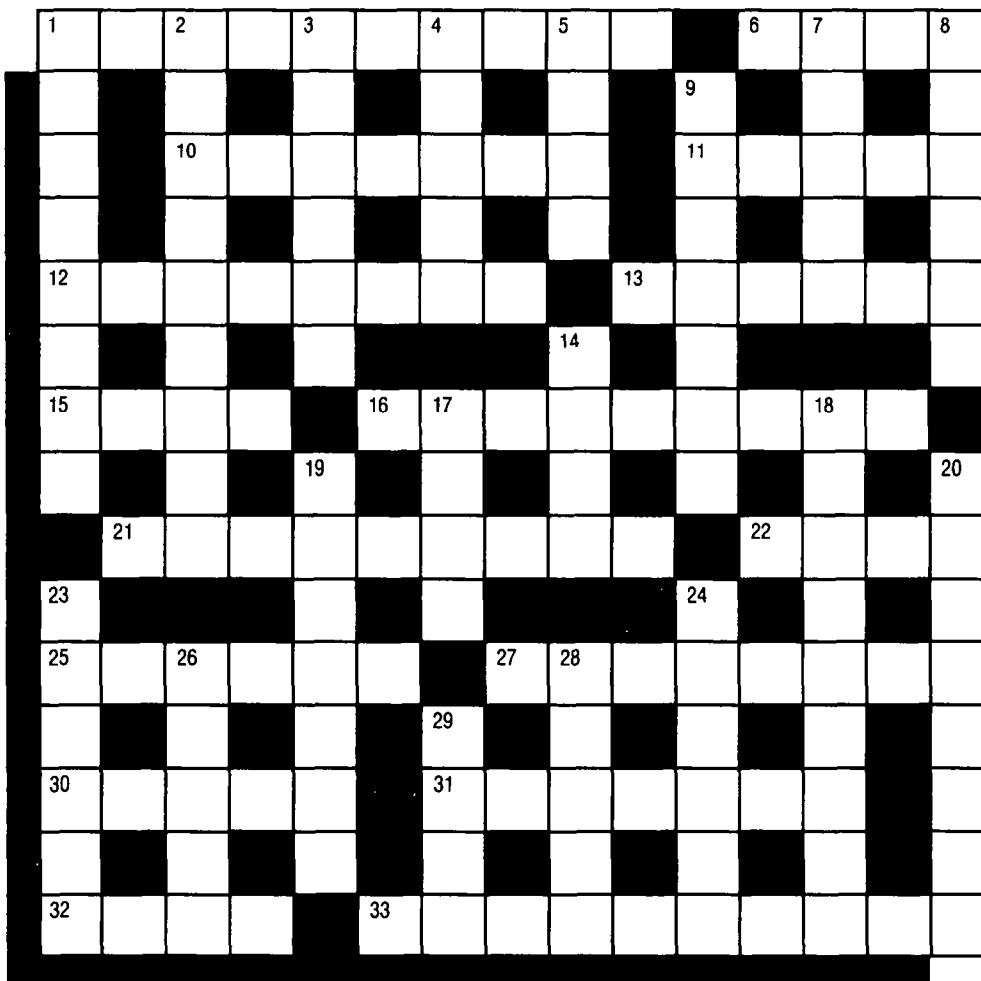
ACTUCROSSWORD

Across

1. Takes ones' breath away - by distorted use of facts? (10)
6. Possibly a date in hand (4)
10. Spoils of war among the reds (7)
11. Power, possibly (5)
12. Perplex and get more angry (8)
13. Arrangement with pro and not quickly (6)
15. Reverse flow of volcano is pay up (4)
16. Age it back and quit in any case (9)
21. Philosopher of toil and tears (9)
22. Piece of geography in tennis lesson (4)
25. Frigid part of circle and twitch (6)
27. Direction of a steward (8)
30. His code was of communication, not conduct (5)
31. Composer of sin or is famed for his barber (7)
32. Destiny of withdrawn mood (4)
33. Distraction, of course, not finding the hole (3,7)

Down

1. Cotton blossom as an example of stagecraft (4,4)
2. Liquid ammunition of spirit (9)
3. His year was 1984 (6)
4. Tally age about about (5)
5. 27 without drawback (4)
7. Chemical form of groan (5)
8. Do them another way (6)
9. Loving our revised version in Old Testament book (7)
14. Laid back face up (4)
17. Corner without permission (4)
18. Conductor doubles in back after the opera (9)
19. Hoped for a change from despair (7)
20. Precipitate - with cephalic index under 80? (8)
23. French love damaged in Maryland (6)
24. Precise abbreviation of two states behind a street (6)
26. Goods found about Jason's ship (5)
28. Leguminous return about so produced legends (5)
29. Noble part of Wells Fargo - a bit back (4)



May's Solution

UNKNOWN QUANTITY
 T I L U N E L A
 ALLED MUSICAL R
 H L E E E E E D
 SIGNOR ENSTIGNS
 D C A N S A T
 I N K S P I L L D I A L I
 M R S F T C
 E A P E X P L A Y B A C K
 N I F S A P S
 S E G M E N T M O D E R N
 J R R A T O T O
 O B I I D M A N G R O O M
 N R E R G M R F
 S T A N D I N G O V A T I O N

100% SOLVERS — **March:** L Abel, J & L Abraham, R Alexander, W Allison, A Amodeo, D Baillie, D Baldwin, F Bernardi & R Wilton, T Boehmer, J Braue, G Cherlin, F Clarke, S Colpitts, L Comeau, C Conradi, L Cralle, S Cuba, J Darnton, F & M David, S Dulley, M Eckman, Mrs C Edwards, K Elder, N Fischer, C & D Friedrich, C Galloway, E Goldstick, P Gollance, J Grantier, M Grover, C Hachmeister, P Hepokoski, R Hohertz, HTI Hogs, C Jacoby, A P Johnson, W Jones & J Larkin, O

Karsten, A Keys, R & J Koch, D Leapman, C Lindman, M Lykins, M MacKinnon, R Maguire, R Makin, P Marks, R C Martin, G & D Mazaitis, H Migotti, R A Miller, C Morbutz, C Montpetit, B Mowrey, B Packer, J Paddon, J Raich, J Schwartz, N Shapiro, G Sherritt, M Steinhart, S Tarrant, B & J Uzzell, C Walls, C Wasserman, D Weill, A White & M Vandesteeg, A Whiton, B Williams & C Tower, D S Williams, and H & F Zaret.



ACTUCROSTIC

- A. Cause for regular stop on some Interstates. 40 174 144 127 61 92 230 76 6
- B. Not Word C. 84 11 211 36 175 51 111 149 234
- C. Descriptive of some curves and colleges. 13 130 221 83 47 148
- D. Movable property; personal goods. 209 134 122 54 14 108 223
- E. Oliver. 89 10 138 219 180
- F. How to make excellence in others our own property. (2 wds) 216 206 32 106 67 233 171 55 190 7
81 117 152 131
- G. Momentous; stirring. 232 17 186 150 102 28 140 49
- H. Mentally; privately. 16 167 183 193 87 121 39 135
- I. Frequently, this is the smart thing to say. 5 133 109 46 79 210 176
- J. Attached; appended. 107 70 158 162 26
- K. A fundamental healthy attitude is proof of sanity. (2 wds) 3 237 45 94 164 128
77 201 24 147 63 189
- L. Widow's mite; Peter's pence. 181 22 156 118
- M. Cycle for small children. (hyph) 9 103 124 60 196 145 220 96 166 73
155 35
- N. Grilling; interrrogation. (2 wds) 64 212 58 80 48
202 159 101 178 120 19
- O. All over the map. 4 170 18 228 97 41 154 114 195 68
- P. 18 holes; a drink for the foursome at the 19th. 21 57 99 141 215
- Q. A fault in putting and in salary policy. 2 197 136 218 85 65 165 113 229 161
37 20 151 50 235 100
- R. Absurd; ridiculous. 91 27 123 53 213 200 208
- S. July and August. 125 184 25 179 95 225
- T. Uncontrolled weeds, eg. 42 231 110 199 90 160 74 226 29 56
- U. Results of destruction or disaster. 115 62 169 204 33
- V. Speak one's mind; call a spade a spade. (5 wds) 119 15 173 205 143 188 72 217 224 44
104 153 82 191
- W. Cognizance; perception. 71 1 86 163 146 182 30 105 132
- X. Valid; bona fide; legit. 168 137 192 75 38 214
- Y. To him, men seem gigantic. 129 43 185 227 112 66 198
- Z. Basic characteristic of a plane surface. (2 wds) 52 207 98 8 126 236 177 69
194 88 157 31 139
- AA. "b" and "2" in (a,b) and (5,2). (hyph) 23 59 12 203 93 172 222 187
34 142 78 116

1	W	2	Q	3	K	4	O	5	I	6	A	7	F	8	Z	9	M	10	E	11	B	12	AA	13	C	14	D	15	V	16	H	17	G	18	O	19	N	20	O		
21	P	22	L	23	AA	24	K	25	S	26	J	27	R	28	G	29	T	30	W	31	Z	32	F	33	U	34	AA	35	M	36	B	37	O	38	X	39	H				
40	A	41	O	42	T	43	Y	44	V	45	K	46	I	47	C	48	N	49	G	50	Q	51	B	52	Z	53	R	54	D	55	F	56	T	57	P	58	N	59	AA		
60	M	61	A	62	U	63	K	64	N	65	Q	66	Y	67	F	68	O	69	Z	70	J	71	W	72	V	73	M	74	T	75	X	76	A	77	K						
78	AA	79	I	80	N	81	F	82	V	83	C	84	B	85	Q	86	W	87	H	88	Z	89	E	90	T	91	R	92	A	93	AA	94	K	95	S	96	M				
97	O	98	Z	99	P	100	D	101	N	102	G	103	M	104	V	105	W	106	F	107	J	108	D	109	I	110	T	111	B	112	Y	113	Q	114	O	115	U	116	AA	117	F
118	L	119	V	120	N	121	H	122	D	123	R	124	M	125	S	126	Z	127	A	128	K	129	Y	130	C	131	F	132	W	133	I	134	D	135	H	136	O	137	X		
138	E	139	Z	140	G	141	P	142	AA	143	V	144	A	145	M	146	W	147	K	148	C	149	B	150	G	151	O	152	F	153	V	154	O	155	M	156	L				
157	Z	158	J	159	N	160	T	161	Q	162	J	163	W	164	K	165	O	166	M	167	H	168	X	169	U	170	O	171	F	172	AA	173	V	174	A	175	B	176	I		
177	Z	178	N	179	S	180	E	181	L	182	W	183	H	184	S	185	Y	186	G	187	AA	188	V	189	K	190	F	191	V	192	X	193	H	194	Z	195	O				
196	M	197	O	198	Y	199	T	200	R	201	K	202	N	203	AA	204	U	205	V	206	F	207	Z	208	R	209	D	210	I	211	B	212	N	213	R	214	X	215	P	216	F
217	V	218	O	219	E	220	M	221	C	222	AA	223	D	224	V	225	S	226	T	227	Y	228	O	229	O	230	A	231	T	232	G	233	F	234	B	235	Q	236	Z	237	K

LAST MONTH'S SOLUTION: (Two-time Pro Bowl tackle) Tunch Ilkin, (He's Lost and Won.) Winning Is Better. (It was tough for Ilkin to face Steelers' fans after season-opening losses to Cleveland (51-0) and Cincinnati (41-10).) "When I went banking or to McDonald's I went to the drive-through windows. When my wife and I went out to eat, I asked for a table in the back." Ilkin even asked his wife not to call him by his first name in public. "Call me Honey or Sweetie, just don't call me Tunch. I don't want to have to explain." MILWAUKEE JOURNAL, December 31, 1989.