The Newsletter of the Society of Actuaries
VOL. 26, NO. 2
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THE Actuary

COVARA to study valuation principles

by Peter Duran

The risks facing insurers have become painfully obvious in the past few years. It also has become clear that the current U.S. statutory accounting framework has not worked very well. In addition to the more obvious failures, it has allowed companies to take on levels of risk that would have been unthinkable 10 years ago.

Much of this is changing. Recent changes to the model standard valuation law requiring "Asset Adequacy Analyses," Actuarial Standard of Practice 14 (When to Do Cash Flow Testing), the coming Asset Valuation Reserve/Interest Maintenance Reserve and risk-based capital requirements are steps in the right direction.

These changes, however, do not address or only partially address many areas of concern:

- The ability of companies to take on large interest rate risk without balance sheet recognition
- The ability of companies to take on significant "off balance sheet" risk in the form of various financial guarantees
- The ability to create surplus through reinsurance or other transactions with little or no economic substance
- The ability to spend, on an ongoing basis, far in excess of those expenses provided for in pricing, without the balance sheet reflecting any impact of future excess expenses
- The ability to record certain equity investments on an historical cost basis when there is little relationship between this value and any measure of "economic worth" of the asset

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Leaders respond to solvency issues


John F. Harding


Walter S. Rugland

The actuarial profession's public interface organization, the American Academy of Actuaries (AAA) in Washington, D.C., formed a high-level task force to develop a public stand for the profession on solvency issues. AAA President-Elect John H. Harding chairs the task force. SOA President-Elect Walter S. Rugland, who was chairperson of the Joint Committee on the Valuation Actuary, serves on the task force and will coordinate its activities with the SOA. Editor Robin Leckie's interview with Harding and Rugland follows:

***Question:** What is the Academy doing in response to the current solvency crisis in the United States?*

Harding: While a "crisis" in public confidence may exist, the solvency issues facing the life insurance industry are far less severe now than for other financial institutions.

It is imperative, however, that the actuarial profession take a lead in responding to those issues. While we are not qualified to resolve all of them, we are in a strong position to provide the necessary tools to help manage

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Editorial

Solvency and personal responsibility

by Robin B. Leckie

My former boss (an actuary and CEO of the company) liked to preach that it was more important that "we do the right thing than the thing right." If we all followed that dictum, perhaps the financial services industry would not be threatened with a solvency crisis.

What are the issues? Are we relying on others (regulators) to tell us what not to do? Are we relying too heavily on obscure interpretations of the rules? Are our corporate structures and responsibilities so divided that we can excuse ourselves and our role from blame?

Several of the articles in this issue are devoted to the subject of solvency, and the role being played by the actuarial profession in North America to control the crisis and to lessen the likelihood of future crises. Actuaries are uniquely qualified to address the problem. We also may be uniquely qualified to aggravate the problem unless we are prepared "to do the right thing."

For those of you who do not know me, I am a part-time life consultant, a part-time university teacher, and a retired chief actuary. Thus, my perspective may be clouded by the unreality of one who currently is not making the key decisions and whose experience may be grounded in the recent past. Or I may see the issues with the clarity of the informed observer. Take your pick as you read my random musings that follow.

Customers

Who is our customer? Is it our boss, or his boss, or the shareholders? Is it the regulator or the auditor? Is it the policyholder or the public? Is it all of these, and if it is, is it possible for us to do our job when we are pulled in so many directions? Does it make a difference if we are the pricing actuary or the valuation actuary?

Competition

Many attribute the current crisis to excessive competition. They argue that too many companies with too many products are chasing too little business. This leads to lower prices that may then be compensated for with riskier operating practices; the former squeezes profits, the latter may open the way to insolvency. The pricing actuary and the valuation actuary need all the tools the profession can provide. They need the wisdom of Solomon to do their jobs and "to do the right thing" in this current scenario.

Manipulators or trustees

As a generalization, actuaries have a well-deserved reputation for being imaginative and innovative. This is expected of us, whether for product design, in pricing the product (particularly when the company's operating performance is less than optimum), in valuation, or in contributing to taxation policy. The problem is in knowing when we cross the line from innovative to manipulative.

One of my duties in my former company was to set tax policy. I needed a standard to help me know if I was crossing the line. I used to ask myself, "Could I defend myself and my recommendation in a court of law? Is what we are proposing to do reasonable and will not reflect adversely on the company or on me as an actuary?" For some financial reinsurance proposals, it was difficult to respond in the affirmative, and these were turned down.

Actuaries increasingly are being recognized as trustees. In Canada, the appointed actuary's responsibility is recognized by law. Paradoxically, this makes the role of the actuary easier and more difficult. It certainly increases the number of questions we must ask ourselves.

Regulations

A written prescription of what we can and cannot do is undoubtedly desirable and generally necessary. But does the complexity of the law obscure guidance in "doing the right thing?" Do we look for loopholes and unintended interpretations? Do we stand on the letter of the law? And are laws and regulations that were set in another time, under circumstances different from today, appropriate today?

In thinking back on some complicated corporate purchase proposals, I now sometimes wonder which produced the better result: the U.S. approach with a huge legal/underwriting document setting out the detailed terms of the proposal or what sealed an agreement a few years ago in Scotland – a simple handshake between two CEOs.

Regulators

Our industry functions best when the regulator is a friend of the industry – but not in its pocket. Our industry functions worst when we try to put something over on the regulator or when we rely on the regulator as the court of last resort – the one to save us from our mistakes.

Our profession

A perusal of this issue of *The Actuary* will indicate the profession is active in equipping actuaries with the tools and skills to contribute to providing an industry virtually without insolvency and to ensure that the role of the actuary is recognized by the industry and regulators as the key to survival.

As individuals

We come full circle. The real assurance for survival is that each of us take personal responsibility for "doing the right thing" and to be less concerned with "doing the thing right." We must try to create the same environment for the industry and the profession. With the right laws and regulations, reasonable operating freedom and practices, the tools to prepare scenario forecasts and to track performance, and the willingness to accept personal responsibility for our actions, the life insurance industry should be on its way to resolving permanently the current crisis.

How Canada deals with insolvent life insurers

by Alan E. Morson

Since January 1990, a Consumer Protection Plan for the life insurance industry has been in place in Canada. It is administered by CompCorp (Canadian Life and Health Insurance Compensation Corporation). This plan provides coverage up to:

- $200,000 face amount for life insurance
- $60,000 for accumulation annuities or cash value on permanent life insurance
- $60,000 for registered retirement savings plans
- $60,000 for health insurance benefits
- $2,000 per month for life or disability annuities

Background

Although no policyholder had failed to receive an amount promised at the time of death or maturity of a life insurance contract in more than 100 years, the life insurance industry was the only pillar of financial services that did not have a consumer protection plan. Federal and provincial governments took the position that either the life insurance industry develop an acceptable plan, or there would be a public plan developed.

Discussions with regulators over the years were lengthy and frustrating. Since the life insurance industry was expected to pay all costs in an insolvency, it was looking for some control over the process or some means by which either the consumer or the government had an interest in keeping the costs down. As a safeguard, the industry looked at the possibility of:

- coinsurance with the consumer
- deductibility of assessments to the industry from premium tax (as is done in the United States)
- the right to force the issue with a regulator if a company in financial difficulty was not being dealt with
- the right to get information directly from an insurer that seemed to be in some difficulty

COMPCORP
SIAP

The regulators did not grant any of these forms of control that would help the industry limit the cost of an insolvency.

Government role

In late 1989, the industry decided to launch a voluntary plan. Three months later when this plan was introduced, companies representing 95% of the life and health premium income in Canada had joined voluntarily. In that three-month period, CompCorp worked closely with the regulators to ensure that the plan implemented was reasonable and had no major flaws from the regulator's viewpoint.

CompCorp also got each jurisdiction's regulators to sign a participation agreement. The quid pro quo of the participation agreement was that regulators would force all companies doing business in their jurisdiction to be members of the plan and to abide by its regulations. In return, CompCorp would turn over the "trigger" to the regulators. This trigger is the right to discontinue coverage on new business of a company that is deemed to be in financial difficulty. Without the participation agreement, CompCorp had the right to discontinue coverage on future new business when its prudential standards were breached by a company. This gave CompCorp the role of a quasi-regulator, a power that regulators wished to reclaim. Now 11 of 13 jurisdictions have either passed or introduced legislation to enable participation, and the other two jurisdictions plan to do so as soon as legislatively feasible.

Capital adequacy standard

The establishment of prudential criteria was critical to the development of this plan. An industry committee had worked for several years in establishing an MCCSR (Minimum Continuing Capital and

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CompCorp cont'd

Surplus Requirement). This is a 26-page formula that produces a risk-weighed capital adequacy ratio. Capital requirements are based on the type of liabilities and the class and quality of assets. An actual to required capital ratio, expected to be more than 100%, is determined.

If the plan had been government-sponsored, it is unlikely that a national capital adequacy standard could have been achieved. As a voluntary plan, the industry-developed capital standard was used, and the plan only required that the regulators consider it to be a reasonable measure of capital adequacy. When the regulators participate they use their own standards, but still pay attention to the industry's.

Monitoring role

Although the only true accountability of CompCorp is to pay whatever is necessary in an insolvency to continue coverage up to the limits, it also can perform a monitoring role. We have defined our prudential criteria as 66.6% of required capital. Any company below that should not be allowed to continue to issue new business. We have established an early-warning list and a watch-list. The watch-list contains companies that are below 100% or have not yet provided their current MCCSR. The CEO of a company on our watch-list receives a registered letter, and a copy goes to the appropriate regulator. We then discuss with the regulator the actions he or she plans to take and provide help and advice wherever possible. In the case of the early-warning list, we let the CEO know the company is on the early-warning list and urge him or her to take the emerging capital problem seriously.

First test

In November, CompCorp faced its first test with an insolvent company. The company had a relatively high percentage of its assets in subsidiaries and real estate, which were difficult to evaluate and were illiquid. CompCorp allowed it to become insolvent but ignored the limits and covered all the policyholders. The reasons for choosing this option were that most policyholders of the company would be covered within the limits anyway, and an opportunity could arise to sell the block of insurance business to another company. Either this route or a complete bailout was deemed to be the cheapest route for the industry. Consumer concern was minimized, as were shockwaves to the stability of the industry.

As a result of this first test, CompCorp will be expanding its monitoring role by developing tests in addition to the MCCSR. It also will use the opportunity to show the need for changes in the plan that give access to more information from the companies and to work even more closely with the regulator.

CompCorp versus a guaranty fund

A comparison of CompCorp to state guaranty funds is an interesting one. The most important difference is that CompCorp is national in scope, which vastly reduces the administrative complexity and costs involved in a multi-jurisdictional insolvency. It also facilitates a national solvency standard. The national scope makes a bailout possible, which would be difficult to achieve on a timely basis with a plan that differs by jurisdiction. CompCorp became national in scope because it was an industry, instead of a government, initiative and because of the regulatory system in Canada. More than 90% of the premium income in Canada is sold through companies that are federally registered. Most of the balance of the business is sold by Quebec-chartered companies, and only 1% of the business is sold by companies chartered in other provinces.

A disadvantage of the CompCorp plan is that it is not a statutory plan. At the time of insolvency, each policyholder must sign a waiver for the fund to pay the policyholder and then to stand in his or her place to collect from the insolvent company (unless all policy values are covered, in which case CompCorp funds the liquidator who then continues the business and pays all policyholders their full values directly). If insolvency became a major problem in the country, the capacity of CompCorp to respond could be called into question. The maximum assessment is .5% of covered premium income per year from each member company, compared to 2% in the United States.

Alan E. Morson is president of CompCorp.

Minority recruiting needs your help

by Edward John Mullen

The Committee on Minority Recruiting needs help funding scholarships. Since 1977, this committee has been administered jointly by the Society of Actuaries and the Casualty Actuarial Society to encourage qualified minorities (blacks, Hispanics, Orientals, native North Americans, and others) to seek an actuarial career. This encouragement is in the form of individual scholarships and financial support of actuarial summer programs for talented high school students at Howard University in Washington, D.C., and Florida A&M in Tallahassee. Twenty-seven scholarship recipients are now members of the sponsoring societies, with more taking exams.

Applications to increase

Donations are needed. Scholarship applications for the 1992-93 school year will be reviewed in June. Sixty-one applications were submitted last year, and 34 scholarships were awarded. These numbers were 13% and 17% higher than 1990, respectively. Scholarships awarded in 1991 totaled about $34,000. Support for the summer programs was about $50,000. While the committee wants to encourage all well-qualified minority applicants, it is limited to the funds that are available.

Donations tax deductible

Contributions are deductible for U.S. federal income tax. If an employer has a "matching contribution" program for contributions to a 501(c)(3) organization, an individual contribution is maximized by an employer match. To make a donation, please make checks payable to "CAS/SOA Minority Recruiting Program" and mail them to the Society of Actuaries, 475 North Martingale Road, Suite 800, Schaumburg, IL 60173-2226.

Edward John Mullen, Chairperson of the Joint Committee on Minority Recruiting, is a principal with Ernst & Young, Boston.

A CEO talks about solvency

by Robin B. Leckie

John D. McNeil, chairman and chief executive officer of Sun Life Assurance Company of Canada, addressed the Financial Reporting Section at the Society's annual meeting in October. This informed and concerned observer had some interesting and provocative thoughts on the issues behind the current solvency crisis afflicting the financial services industry in North America.

I received his permission to print an edited version of his remarks, which follow.

Canada versus United States

Many of the decisions of the California courts horrify Canadians. In weighing individual rights and collective interests, Canadians have the balance point at a different place than Americans. That point has some significance for the actuarial profession. (Editorial comment: The balance between individual and group rights has important implications for all people; however, it is seldom discussed or debated.)

Bank failures

One of the principal reasons some of the American banks failed was that their deposit sources and loan portfolios were insufficiently diversified. Canada's own financial history shows that regional institutions tend to fail when local autonomy takes precedence over soundness and solvency.

In an attempt to overcome the inherent weakness of the banking system, several "shoring-up" measures have been taken over the years. The Glass Steagall Act was one; Regulation Q was another; and deposit insurance was another.

Deposit insurance

Deposit insurance is something that should engage the logical propensities of actuaries. The rule is: deposit insurance is something you don't need if you don't have it; and do need, if you do have it.

Canada provides an instructive case history. Deposit insurance was introduced in the 1970s for banks and trust companies, though no failures had occurred in the previous 50 years. The stated reasons for deposit insurance were to promote innovation,

John D. McNeil

competition, and the formation of smaller regional institutions that would be sensitive to local conditions and needs. What it did promote were financial failures that have cost the taxpayers dearly.

Savings and loan associations

Two principles of regulating financial institutions exist that have wide support:

- The interlinking of ownership and control of commercial enterprises and financial institutions should be forcefully discouraged.
- Financial institutions should be widely held in terms of ownership.

The Reagan reforms of the early 1980s violated these principles by lifting the prohibition on more than 10% ownership of an S&L and by encouraging commercial interests (particularly real estate developers) to enter the industry.

Life insurance observations

U.S. insurers can, if they choose, create liabilities and acquire earning assets across the country, so under-diversification need not occur.

Second, we note that mutuals make up a large part of the industry, and they are, by definition, widely held in terms of ownership. The same applies to practically all the large stockholder-owned companies, though this is not the case in Canada.

The third observation is the inherent complexities of life insurance require that companies employ many people with a high level of intellectual ability – actuarial, accounting, investment, legal – with the former, in particular, there to help preserve solvency.

Armstrong Investigation and its aftermath

In the 25 years before New York State's Armstrong Investigation in 1905, life companies were the fastest growing financial intermediaries in America. In the 50-odd years after Armstrong, they were the slowest. This is not a coincidence. A goal of Armstrong was to counter the growing powers and perceived lack of accountability of the industry. This was achieved by tight regulation that was justified on the grounds of what we call "consumer protection" today. This set the tone for regulatory philosophy that lasts to this day.

Most parts of the world have no minimum non-forfeiture laws. In the United States, minimum non-forfeiture laws are a mechanism for guaranteeing bankruptcy under certain given conditions. In Canada, policy loan rate ceilings were liberalized in 1969, and eventually market rates were permitted. The great replacement "feeding frenzy" of the early 1980s never happened in Canada.

Market value adjustments

In Canada, companies long have been able to apply full market value adjustments to annuities in the event of premature surrender. This has been important in protecting the solvency of insurers. If market value adjustments had been permitted and adopted in the contract terms for First Executive's policies, the company presumably still would be with us. Its policyholders, in turn, would have received precisely the poor result they should have expected, and the rest of the industry would not be worrying about guarantee fund assessments.

Conclusion

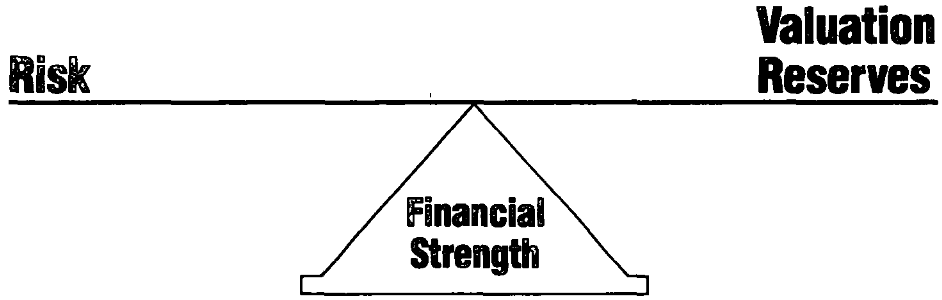
To sum up his views on solvency, McNeil said, "I think in the United States, there have been too many efforts to protect consumers and not enough recognition that rapid change required new rules to enable insurers to protect their financial positions. Scrapping minimum nonforfeiture laws would be a start on the road to reform."

Robin B. Leckie is consultant, R.B. Leckie and Associates.

Risk and risk management

The challenge of the valuation actuary

by Mike Mateja



Since the beginning of the actuarial profession, valuation of insurance company liabilities has been one of the major responsibilities of actuaries. Those responsibilities have been under severe pressure since about 1980. The pressure came to a head in December 1990, when the National Association of Insurance Commissioners (NAIC) adopted amendments to the Standard Valuation Law to implement what has become commonly known as the "valuation actuary concept." This is landmark legislation that will have significant long-term impact on the insurance industry and the actuarial profession. Last August, the NAIC adopted supporting regulations.

Forces producing concept

All the forces driving the recent changes in the responsibilities of the valuation actuary can be condensed into one four-letter word – risk. Risk management is what insurance is all about. The early history of the actuarial profession demonstrates that actuaries were concerned about risk, and the record shows they were outstanding risk managers.

By the time I entered the profession in 1959 as an eager actuarial student, actuaries had, to some extent, lost sight of their risk management responsibilities. I did not regard risk with the same respect I do today. A successful insurance company today is one that carefully manages all the risks it assumes.

How did actuaries lose their focus on risk and risk management? The simplest explanation is that for several generations, the risks assumed by insurance companies did not change dramatically. Classical valuation theory, with its focus on conservatism, was able to accommodate evolutionary changes in the risks assumed without any fundamental weakening in risk management capacity. It was easy, therefore, for the current generation of actuaries to rely on the excellent work of their predecessors.

All actuaries are familiar with classical valuation theory with its idealized assumptions of future cash flows. It wasn't until the mid-1970s that actuaries began to recognize its problems.

The problem simply was that actual cash flows were materially different from the idealized cash flows assumed. Certainly the 1970s wasn't the first time that actual insurance cash flows differed from those assumed in the valuation model. Steadily climbing interest rates, however, made the 1970s different. In this environment, the market value of fixed income investments (bonds and mortgages) was less than book value. For many companies, the difference was quite large – more than 20% in many instances.

In a stable interest environment, a dollar of asset is essentially equal to a dollar of cash. Before the 1970s, no one paid much attention to when cash was to be paid out, especially cash paid out years in the future. The cash was always magically there as assumed in the valuation model. Insurance companies for years were enjoying what one observer called "eternal positive cash flow," which can substantially distort the problem of depressed market value of securities.

The 1980s brought double-digit interest rates and an assortment of new risks. Classical valuation theory with its idealized cash flows was all but dead.

The actuarial profession began working on the valuation implications of high interest rates at the request of the regulators in the mid-1970s. By 1979, the conceptual solution had been developed. It is interesting that in Great Britain the English actuaries had recognized the same problem and developed an appropriate solution more than 30 years earlier. The problem was a mismatch risk in the timing of asset cash flows and liability cash flows. The solution was matching of cash flows. Mismatch risk became a household word around insurance companies during the 1980s. The prescription for controlling mismatch risk required a firm understanding of future asset and liability cash flows. Matching became a passion.

Impact on industry and profession

The passion associated with mismatch produced what we now call a "valuation actuary," and the insurance business will never be the same. The charge to the valuation actuary is to understand the risks assumed in an insurance company and to set valuation reserves appropriately. Despite the fact that risk is not easy to understand and is very difficult to quantify, the efforts of actuaries to understand risk will produce new tensions in insurance companies – all of it directed at improving underlying financial strength.

The recent amendments to the Standard Valuation Law adopted by the NAIC will formally implement the valuation actuary in the United States. Valuation responsibilities of actuaries signing statutory actuarial opinions to reserve adequacy will undergo fundamental changes. Measurement and management of risk will be professional and statutory mandates.

I think the long-term outlook is for a strengthened valuation process. Over the short term, the classical valuation model will be improved, but I suspect there still will be problems. Above all, the valuation actuary concept will not eliminate insolvencies. But the frequency and size of insolvencies should trend down.

Perhaps the most important impact is the institutionalization of risk analysis. The actuarial profession is accountable for developing the skills and knowledge necessary to fulfill its members' professional obligations under the law. The leadership of the actuarial profession is committed to fulfilling this responsibility.

I think valuation actuaries already are having greater influence on their companies' operations. This practically means that the companies are developing better risk management skills. Conceptually, the valuation actuary should react to any expansion of risks assumed with additional reserves. Given the nature of risk, the reaction is not likely to be immediate. But sooner or later, the valuation actuary will have to act or face the potential for professional discipline.

I see increased sensitivity to risk within the industry, with actuaries assuming a leadership position. This will present new challenges in effectively communicating actuarial assessments of risks and how they can be managed. This effort will extend beyond valuation reserves to risk based capital standards, currently a high priority NAIC issue.

To grow and prosper, the insurance industry needs to be highly regarded for its financial strength. I believe the actuarial profession will be a major factor in the industry effort to rebuild and maintain its image in this regard.

Risk and risk management are the technical foundations on which the solutions to solvency concerns will be built. Just as the founders of the profession proved equal to the original challenges in this area, I am confident that the new generation of actuaries will meet the challenges that lie ahead.

Michael Mateja, Chairperson of the SOA Research Policy Committee, is vice president and corporate actuary with Aetna Life & Casualty.

Help for exams

Study manuals and textbooks for the May 1992 SOA exams are available from Actuarial Study Materials. For a complete list, write to A.S.M., P.O. Box 522, Merrick, NY 11566, or call 516-868-2083.

* * *

An intensive three-day problem-solving workshop for the EA-1,B exam will be given by Actuarial Study Materials on April 10-12, 1992, in New York City. For details, write to A.S.M. at the address listed above, or call 516-868-2924.

* * *

Georgia State University will sponsor examination preparation seminars between April 6 and May 8 on the following courses:

110	140	162
120	150	165
130	151	200
135	160	EA-1,A
		EA-1,B

For more information, call Robert W. Batten at 404-651-2736.

* * *

ACTEX Study Manuals for the May 1992 exams will be available for all Associateship and Fellowship courses. All manuals will be up-to-date for the current syllabus.

Details are available in your Society Study Note package, or from ACTEX, P.O. Box 974, Winsted, CT 06098, 203-379-5470.

* * *

Exam preparation seminars for the November exam period will be conducted in April and May, 1992, in Chicago, New York, and Toronto for Courses 120, 130, 135, EA-1,A (141), 150, and 151. For details please contact Professor Samuel Broverman of the University of Toronto at his *Yearbook* address, or call 416-978-4453.

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Waterloo Actuarial Seminars will be conducted in St. Louis, Mo., on April 11-26 for Courses 150, 200, 340, 443, 520, 525, 540, 550, and 564, and in Waterloo from April 17-May 3 for Courses 150, 151, 161, 162, 165, 200, 420, 421, 422, 442, and 480. Contact Professor F.G. Reynolds, P.O. Box 773, Waterloo, ON N2J 4C2, 519-886-5232 for more information.

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The University of Washington Extension will conduct spring classes in Seattle beginning in March for courses 100 and 110. For more information, contact Jim Terry, Continuing Education Specialist, 5001 25th Ave. NE, GH-21, Seattle, WA 98195, 206-543-2300, Ext. 402.

Faculty position announcement

Position: Tenure track position in actuarial science in the Department of Mathematical Sciences at Ball State University, effective August 1992.

Qualifications: Minimum qualifications are a Ph.D. in mathematical science and evidence of accomplishment or promise in college or university level teaching. Preferred qualifications are Associateship in the Society of Actuaries, which is required for tenure, and practical work experience, such as insurance company or consulting actuarial work.

Duties: Teach at both the graduate and undergraduate levels, research, and professional service.

Applications: Initial evaluation of applications will begin in February 1992 and will continue until the position is filled. To apply, send a letter of application, curriculum vitae, research plan or list of publications, and at least three letters of reference to Dr. John A. Beekman, Faculty Search Committee, Department of Mathematical Sciences, Ball State University, Muncie, IN 47306-0490.

Interview cont'd

the risk of insolvency in the future. And, if we are not visible in providing those solutions, the public may see us as part of the problem.

The Academy is gearing up to provide support to the overall professional effort to provide a sound basis for managing the risk of insolvency. As AAA's President-Elect, I chair a task force that will coordinate among all organizations representing actuaries that have an interest in the U.S. issues. Some very dedicated and capable people have agreed enthusiastically to support the efforts of the task force. As the effort moves forward, the Academy will be prepared to work with federal and state authorities, as well as the insurance industry, to implement a system in which the public can place its confidence.

Question: *How is the Society of Actuaries relating to this effort?*
Rugland: Since 1979, the Society of Actuaries has been breaking new ground and furthering our understanding of this issue.

The ultimate test is whether an insurer can fulfill its promises. The solvency test is whether an insurer at a certain point in time, based on the applicable reporting rules, can satisfy those rules.

Historically, the reporting rules have been presumed an adequate proxy for the analysis of fulfillment of promises. Our work over the past decade shows this is not the case. The ultimate test requires far more risk analysis, and the Society has been making giant strides in this direction with our research and education. Can you imagine life without the C-1, C-2, and C-3 risks? With this kit of new techniques and analysis, the Academy is moving forward for the profession in the public arena.

Question: *What SOA research is going on now?*
Rugland: The SOA is deeply involved in research on asset quality, with data based on insurer investment structures and investment management. This covers all investments, and it is a big job. Some results should be available in 1992. We also are studying persistency resulting from new types of contract designs, and preliminary data will be available soon. These are just a few areas.

Question: *How serious is the current situation? What do you believe are the major reasons behind the crisis?*
Harding: I believe the elements of crisis lie in the arena of public confidence. However, we all are aware of the many contributing factors. The dynamic forces of the past two decades have lead to many stresses and opportunities within the insurance industry. Where actuaries have been able to identify and manage the risks, our response to change has provided our markets with good, safe new products and services. Where we have outstripped our existing ability to deal with the challenges, we have provided the potential for failure. New, seemingly bizarre events, such as the impact of rating agencies on the liquidity risk, have compounded the problems. However, if a company understands and manages the risks it takes, these new potholes in the road have little effect on the journey.

Rugland: I agree with John Harding that the major fallout from the current situation is a decline in public confidence, and his analysis of events and reasons is good. I add the following:

The statutory statement as a solvency test is only a set of rules. The rules were developed 50 years ago, with minor changes since then. They were not designed to provide an index of financial strength of a life insurer, at least not in today's environment when no two insurers are alike.

In the early 1970s, many agreed the statutory statement was of no value. In fact, it rewarded non-management. Not only did it not measure financial strength, it didn't measure economic worth or return on economic value. GAAP was defined for life insurers; this new set of rules liberalized the rules and rearranged the reporting basis for cash flows. GAAP rewarded risk taking and forced capital utilization, but it adopted the statutory assumptions with respect to asset values. And, GAAP set the standard for the 1980s.

Question: *What are the limits for a company actuary in preventing a problem from becoming an insolvency?*
Harding: Several key factors will define those limits. We cannot prevent an insolvency, but we can assist in managing the risk to reduce its likelihood. The limits will depend on how well the actuary can identify and quantify those risks and provide the means to help manage them. They will depend on the corporate and regulatory structures that allow for the environment in which the actuary can work. The limits also will depend on our profession's ability to provide quality control by setting appropriate standards and by providing a compliance review process to assure that those standards are being met.

Rugland: The practicing actuary's role in a life insurance company is to advise management. The actuary should ensure that management understands the financial implications of their decisions in setting reserves, budgets, dividends, and contract specifications. Our development as a profession will allow actuaries to do this better. The public, through regulators, may directly involve actuaries in the process of oversight and inquiry. Our long-term hope should be: if you have a question about risk, ask an actuary.

Question: *Is the profession properly positioned to increase our contribution to a smoothly functioning solvent life insurance industry?*
Harding: In Canada and Great Britain, the answer is more positive than in the United States. Implementing the valuation actuary process goes part way in the United States, but not far enough. We must be able to consider total assets in relation to reserves in managing the risk, not only as of a specified date, but also at future key points in a company's existing business plan.

Rugland: As a profession, we are positioned as well as can be expected in bringing skills and understanding to the problem. I think the problem still is undefined. As long as we have a solvency test that is not responsive to risk taking or economic value motivation, we are working with a moving target. The U.S. life insurance industry needs a new basis of solvency that requires the insurer's actual risk profile to be reflected and that creates value for embedded economic worth. Actuaries are the key to implementing such a measure.

Question: *Do you have any final thoughts to pass on to newly qualified life insurance actuaries?*
Rugland: If "newly qualified" means new FSAs, to them I say, "welcome," and get set for a great ride. Focus on skill development and learn how to

write better and read faster. Build on a solid foundation of actuarial savvy that gets applied around the world in an amazing number of fascinating ways, all with a consistent thrust of integrity.

Harding: I have two responses: one for those attaining FSA status and one for those newly qualified to be valuation actuaries.

I became an FSA more than a quarter century ago. The life insurance world is very different today. While our profession is feeling the stress of a fast-moving environment with changes that dramatically impact our jobs, I have never seen a time when our profession was in a better position to gain substantially from these changes than today. While our educational process does not always look at next year's problems, it does provide an outstanding foundation to understand the issues of the insurance business. We can help manage and shape change by using that education effectively. However, the world now recognizes that we are not the only profession with relevant knowledge of the life insurance business. The opportunity for us to influence the present and the future is possible only if our profession takes an active role in making sure the public and our clients understand what we can do for them. We must work actively to assure them that we are ready, willing, and able to shape the environment for their benefit.

Newly qualified valuation actuaries will see tremendous change in the nature and scope of what it means to be a valuation actuary. This function will grow and prosper if we keep it credible through long-term performance that benefits our clients and the public. We need to extend our technology as conditions change. We need to make sure that our standards actually support our opinions and that those of our peers who fall short are disciplined.

Because the actuarial profession has been subject to tight regulation, some of it antiquated and not relevant to today's problem, in some cases, actuaries have tried to work around the rules. As we assure the public that our profession can help manage the risk of insolvency, we must be sure that our opinions provide full value to the public.

Global strategies addressed at PIC

by Robert D. Shapiro

The 15th Annual Pacific Insurance Conference (PIC) conducted in Taipei, Taiwan, November 3-8, focused on "Global Strategies for the Life Insurance Industry in the Next Decade." A variety of viewpoints were brought to the conference by 330 delegates from 20 countries. Participants presented papers on investment, marketing, regulatory, and management aspects of global insurance development.

I co-chaired the general session on "Management Structure in a Global Life Insurance Business" with Peter Wilde, Citibank, N.A. Six papers were presented on the assigned subject, three concentrating on general principles of global management and three presenting specific global insurance situations. Three general requirements for success in global insurance marketing emerged by the end of the session – knowledge, commitment, and fit.

Knowledge is required at three levels:

(1) A life insurance company looking at the global market must have a clear picture of its own strengths, limitations, and long-term goals.

(2) The social, political, economic, and cultural realities of each potential new market must be well understood.

(3) Special language, demographic, psychographic, and other characteristics of targeted life insurance customers must be addressed.

Commitment is required to assure the needed long-term view is taken. A clear vision for the company's global expansion will guarantee that limited capital and human resources are focused effectively. Understanding and approval from the board will assure that the global plan continues through generations of management changes. And finally, an institutionalized global vision will aid related decision-making and issues resolution, as each emerging situation can be evaluated to see if it enhances achievement of the broader vision.

Fit of the skills needed to carry out key strategic actions with the company's capabilities and potentials is key to long-term success. Success usually requires that a global player bring more than capital to the effort. A distinctive strength, such as special marketing skills or valuable information, brings the probability of success to a reasonable level.

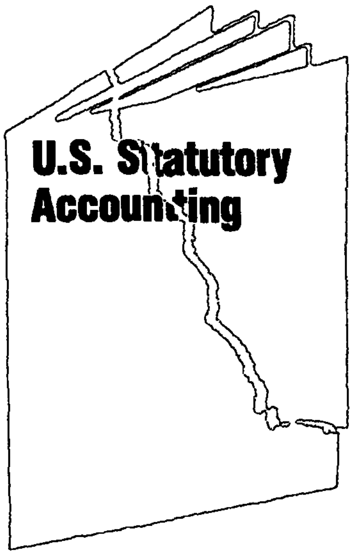
In short, just as management expert Peter Drucker preaches that "structure follows strategy," the PIC session suggested that "strategy follows vision." If a global player follows a clear vision that has balanced its strengths with marketplace opportunities, it has a good chance for long-term success. Without such a well-lighted path, a global effort may not be worth the risk and diversion of resources.

The 16th PIC will be in San Francisco in September 1993. Contact John Cantrell at Lincoln National Life in Fort Wayne, Indiana, for more information.

Robert D. Shapiro, Chairperson of the Task Force on the Actuary of the Future/The Future of the Actuary, is president of The Shapiro Network, Inc.

U.S. statutory accounting – is it fatally flawed?

by Curtis E. Huntington



The statutory accounting system in the United States has not kept pace with the product revolution of the life and health industry or with the economic changes in the marketplace. Instead, the system has suffered a series of increasingly complex adjustments, many without a clearly defined long-term rationale. As a result, the final product, the annual statement, is of little use to anyone.

How did we get into this fix? It is partly the result of a supervisory system that is so politically complex that rapid changes are not possible. It is partly the result of an actuarial community too long interested in technical reserve issues at the expense of some of the broader issues involved in evaluating solvency and profitability.

While the "valuation actuary movement" bodes well for the future, the statutory accounting structure and tools may not be in place to support the valuation actuary concept. The current laws and regulations produce results that are not realistic.

Most companies manage their operations using different financial reporting tools. For stock companies, the Federal Accounting Standards Board mandates GAAP reporting. Most mutual companies have adopted GAAP standards, but frequently with significant modifications.

In the United States, we are aware that actuaries in other countries have different responsibilities in reviewing and reporting on the financial conditions of companies. And, in some countries, accounting tools have kept pace with regulatory changes.

A recent paper, "Realistic Reporting for Life Insurance Companies," prepared by W.S. Hawkyard for the New Zealand Society of Actuaries, reviews the methods used or proposed in four jurisdictions (Australia, Canada, United Kingdom, and the United States) for the realistic reporting of financial results for life insurance companies.

The proposed Australian method, the "Margin on Services Method," was first released in 1989 by the Life Insurance Committee of the Institute of Actuaries of Australia. In the Australian model, assumptions are not locked in at issue. If assumptions are changed at a later valuation date, future profits are amortized, and future losses are capitalized.

In the United Kingdom, the Association of British Insurers released proposals in 1990 formulated by a steering group that included observers from the actuarial profession. The proposed "Accruals Method" requires that profits be recognized over the term of each contract. It attempts to establish methodology, using prudent best estimates of future experience, to have profits emerge on the statutory statement as they are earned.

The Canadian Institute of Chartered Accountants, after discussion with the Canadian Institute of Actuaries, has issued a draft of a proposed GAAP method. The proposed method does not lock in assumptions, as in the Australian proposal, but requires use of the most appropriate assumption at each valuation. Losses are recognized immediately.

U.S. statutory accounting rules are complex and represent outdated traditional practices. The National Association of Insurance Commissioners Convention Blank's income statement formerly ended with net operating gain, a traditional measure of profitability. Since 1988, however, it ends with net income or net loss. Both are measured after dividends for participating policies.

Net operating gain on the statutory form includes some types of capital gains and losses. Net income, however, includes all capital gains and losses. Some financial analysts consider capital gains to be extraordinary items, an irregular source of income that should be excluded when analyzing results for profitability. With controversy over the appropriate measurement, no standard for consistent comparisons among companies exists and, in fact, significant (intentional or accidental) distortions of financial results frequently occur. This results in a further erosion of consumer confidence in the industry.

If the U.S. life industry is to recover its reputation, there is a critical need for reliable, realistic reporting of results that accurately portray the results that are widely accepted.

The title of this article asks a question. It is my view that the answer is "yes" – today's U.S. statutory accounting system is fatally flawed and should be replaced.

As shown in Hawkyard's paper, better alternatives exist and are being discussed by our actuarial colleagues in other countries. It is time for the U.S. actuarial community to initiate discussion on realistic reporting standards for our industry so that in the era of the "valuation actuary," appropriate tools will be available.

Curtis E. Huntington, Chairperson of the SOA Committee on International Relations and of the Actuarial Education and Research Fund, is corporate actuary with New England Mutual Life Insurance Company.

COVARA cont'd

- The ability to value lapse supported products by exactly the same rules as products whose profitability depends on a continued high level of persistency
- The requirement to value products with very different expected mortality experience in the same way
- The requirement to maintain what in many cases may be redundant reserves merely to satisfy formula requirements

In Canada, the situation is somewhat different. There, the statutory valuation system deals with many of these areas of concern, because the system is driven by professional standards of practice rather than by prescribed rules.

The charge of the Committee on Valuation and Related Areas (COVARA), reads, in part:

The purpose of this committee is to study the actuarial principles and practical ramifications of the valuation of assets and liabilities, the determination of adequate surplus levels, and related solvency issues.

COVARA's charge is especially germane today with the crisis of confidence confronting the U.S. life insurance industry. As a research committee, COVARA's job is not to advocate specific changes in the regulatory environment, but to examine objectively the economic fundamentals of the valuation of insurance liabilities and corresponding assets.

Consistent with its charge, COVARA proposes to sponsor a research program that would examine appropriate principles for the valuation of both assets and liabilities in the context of valuations that focus on solvency. Central to these principles is a focus on expected cash flows and on the potential variances in these cash flows. These cash flows differ not only among different product and asset classes, but also among companies. For example, two companies may have very different expected mortality experience, expected lapse experience, or expected credit experience.

The issue of asset valuation must be met head on. We cannot examine the right-hand side of the balance sheet independently of the left. No tenet of current statutory accounting should be considered a given.

The core of COVARA's proposed research program is a concept we call "economic solvency." This is a working definition:

At every future point in time there are expected to be, with probability at least c, *sufficient funds available to make expected payments.*

It is understood that such funds could become available through scheduled or unscheduled cash flows, borrowing, or reinvestment. The factor *c* is the "solvency comfort level." This definition has nothing to do with the way in which assets or liabilities are valued. In fact, the central issue is to evaluate various possible approaches to the valuation of assets and liabilities within this or a similar definition of economic solvency.

Economic solvency focuses on the adequacy of anticipated asset payments to meet potential obligations. This contrasts with statutory solvency, which requires that the statutory value of assets exceeds the statutory value of liabilities. In an ideal environment, the notion of statutory solvency would coincide with economic solvency with an explicit solvency comfort level specified by regulators.

Currently, the relationship between economic and statutory solvency is not clear and appears to be influenced by psychological and objective factors. For example, the life insurance industry has witnessed instances where the perception of potential statutory insolvency has been a major contributor to economic insolvency.

COVARA's vision is to identify a set of principles for valuing assets and liabilities that appropriately measure economic solvency and can be applied in practice.

An enormous undertaking, the research program will need to be carefully defined and segmented into manageable pieces. The committee will define subject areas of investigation with Program Oversight Groups (POGs) to oversee each area. The POGs will report back periodically (once or twice a year) to COVARA.

At this point, two subject areas have been tentatively identified. The first deals with valuation of universal life assuming the product is backed by assets with no credit risk (but with interest rate risk) and that the current statutory rules for valuation of assets remain unchanged. This is a "liability side" approach. The second subject area deals with the issue of valuation of fixed income investments in relation to liabilities in the setting of assets backing universal life products. Both interest rate and credit risk would be considered. Other areas of investigation will be identified in the future.

The committee needs volunteers. We are looking for actuaries and other professionals who would be interested in serving on COVARA or one of the POGs. There are only two qualifications – expertise in the area and the willingness to commit the time needed, two to four weeks a year. Anyone interested should write to Mark Doherty, COVARA's SOA liaison, at the Society of Actuaries. Please include a summary of your experience in valuation or other relevant areas. We believe this exciting program is of vital importance to the industry we serve.

Peter Duran, senior consulting actuary with Ernst & Young, is Chairperson of COVARA and the SOA Committee on Valuation and Related Areas.

Pension Industry Bulletin Board

The telephone number for the Pension Industry Bulletin Board (BBS) has been changed to 703-709-7506, as of December 15, 1991. To use the BBS, you need communications software and a Hayes-compatible model with a speed of 1,200 baud or more. If you want full file access, leave a message for the systems operator your first time on the BBS. If you have questions or need communications software, call Becky Roach at 703-709-7504.

The Pension Industry Bulletin Board System is not an activity of the Society of Actuaries or the American Academy of Actuaries. These organizations take no responsibility for information appearing in the Pension Industry Bulletin System. However, if you have recommendations for the bulletin board after you have used it, please write to Dan Arnold, editor of *Pension Section News*, at his *Yearbook* address.

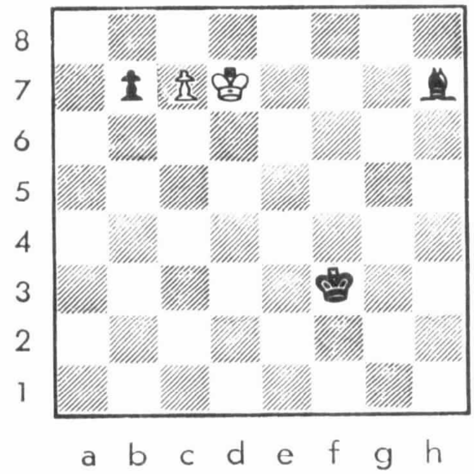
Charles Wittenberg submitted this actuarial reference from "News of the Weird" (copyright by Universal Press Syndicate) in the November 29, 1991, *Chicago Reader:*

> David Kendrick of Berkshire, New York, recently received a patent for a watch that runs in reverse chronological order. The wearer sets it according to an actuarial table, and the watch indicates how much time he has left on Earth. Kendrick says the watch will encourage people not to waste time. D-day can be adjusted depending on life-style changes.

* * *

Elmer D. Sangalang wrote that *Actuary* readers might enjoy a chess quiz since "the affinity of mathematics and chess has been a subject of serious scholarly papers. In fact, three of the 13 world chess champions held doctorate degrees in mathematics and engineering." He submitted the following chess quiz for the entertainment of chess playing members:

Black



White

White to play and draw
(solution on page 19)

1992 Seminar Calendar

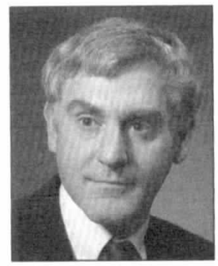
Advanced Asset Liability Management for Life Insurers	March 4-6	Wharton School Philadelphia, Pa.
Solvency Symposium	April 16	Waldorf=Astoria New York
Chief Actuaries Open Forum	May 4-5	InterContinental Toronto, Ontario
Cash Flow Testing Seminar	June 10	Disneyland Hotel Anaheim, Calif.
Valuation Actuary Symposium	September 17-18	Waldorf=Astoria New York
Critical Issues in Underwriting	November 15-17	Hyatt Regency San Antonio, Texas

For more information on seminars, call 708-706-3545.

Transactions authors profiled

Ten papers have been accepted for publication in Volume 43 of the *Transactions*. The following biographical sketches describe authors of six papers. The other authors were profiled in the January *Actuary*.

"Modeling Home Equity Conversion Mortgages" by Thomas N. Herzog and Theresa R. DiVenti



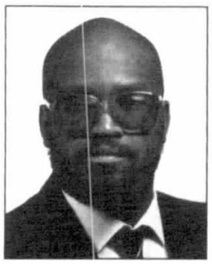
THOMAS N. HERZOG, ASA 1977, is chief actuary of the U.S. Department of Housing and Urban Development and is primarily involved with the FHA mortgage guarantee insurance programs. He previously worked as a mathematical statistician for the Social Security Administration and the National Highway Traffic Safety Administration. He has a bachelor's degree in applied mathematics from Brown University and a Ph.D. in mathematical statistics from the University of Maryland. Herzog is the author of many technical articles, including the Society's Course 130 Study Note. He also has taught science courses at several universities and companies in the Washington, D.C., area. Previous *Transactions* papers are "Analyzing Recent Experience on FHA Investor Loans," Volume 40 (1988), and "Credibility: The Bayesian Model versus Buhlmann's Model," Volume 41 (1989). This paper, coauthored with Theresa R. DiVenti, won the AERF Practitioners Award in 1990.

THERESA R. DIVENTI, not a member of the Society, is an actuary for the U.S. Department of Housing and Urban Development. She received bachelor's degrees in mathematics and in economics from Trinity College, Washington, D.C., and planned to complete a master's degree in applied statistics from George Washington University in December 1991. Previous work experience includes an internship with the International Trade Administration of the U.S. Department of Commerce and a year as an economist at the U.S. Department of Labor Statistics.

"Select and Ultimate Models in Multiple Decrement Theory" by S. David Promislow

S. DAVID PROMISLOW, FSA 1962, is a professor in the mathematics and statistics department at York University. He received a B.Comm. (Hons) degree from the University of Manitoba and began his actuarial career with the Crown Life Insurance Company in 1960. He received a Ph.D. from the University of British Columbia. He serves on the SOA Publications Index Committee and served on the 1991 Committee on Research on Theory and Applications. Promislow has published many papers in actuarial science and pure mathematics. His *Transactions* papers include "New Approach to the Theory of Interest," Volume 32 (1980); "Extensions of Lidstone's Theorem," Volume 33 (1981); and "Measurement of Equity," Volume 39 (1987).

"Minimum Variance Moving-Weighted-Average Graduation" by Colin M. Ramsay



COLIN M. RAMSAY, ASA 1984, is an associate professor of actuarial science at the University of Nebraska-Lincoln. He obtained a bachelor's degree in actuarial science from the City University (London) in 1979 and a master's and a Ph.D. degree in statistics from the University of Waterloo (Ontario). His research interests include ruin theory, the impact of AIDS on insurance, and the adequacy of pension funding levels. Ramsay's papers have appeared in several journals and newsletters. His papers, "AIDS and the Calculation of Life Insurance Functions" and "The Impact of Mortality on Panjer's Model of AIDS Survival," appeared in Volume 44 (1989) and in Volume 42 (1990), respectively, of the *Transactions.*

"Multivariate Immunization Theory" and "Multivariate Duration Analysis" by Robert R. Reitano

ROBERT R. REITANO, FSA 1980, received a bachelor's and a master's degree in mathematics from the University of Massachusetts and a Ph.D. in mathematics from the Massachusetts Institute of Technology. He is senior investment policy officer and director of research at John Hancock Mutual Life Insurance. He has been an assistant professor at the University of Massachusetts, an instructor for the Actuaries Club of Boston, and a visiting scholar at M.I.T. He is a member of the SOA Committee on Papers. He has published papers in *ARCH, Journal of Portfolio Management,* and the *Transactions:* "Mortality Cost Valuation of Underwriting Requirements," Volume 34 (1982), and "A Statistical Analysis of Banded Data with Applications," Volume 42 (1990).

"Intervention Effects Among a Collection of Risks" by H. Dennis Tolley and Kenneth G. Manton

H. DENNIS TOLLEY, ASA 1981, graduated from Brigham Young University and received his Ph.D. in biostatistics from the University of North Carolina. He has taught at Duke University Medical School and Texas A&M University Institute of Statistics and has worked at the Radiation Effects Research Foundation in Hiroshima, Japan, and Battelle Pacific Northwest Laboratories in Richland, Washington. Currently, Tolley is professor in the department of statistics at Brigham Young University. His research interests are primarily in health statistics and health modeling. Tolley has published research articles in many journals, including *Transactions* ("An Empirical Method of Comparing Risks Using Stochastic Dominance," with Michael Korosok, Volume 41, 1989).

KENNETH G. MANTON, not a member of the Society, is research professor and research director of demographic studies at Duke University and medical research professor at Duke University Medical Center's department of community and family medicine. Manton also is a senior fellow of the Duke University Medical Center's Center for the Study of Aging and Human Development and assistant director of the Duke University Center for Demographic Studies. In 1986, he became head of the World Health Organization Collaborating Center for Research and Training in the Methods of Assessing Risk and Forecasting Health Status Trends as Related to Multiple Disease Outcomes. In 1990, Manton received the Mindel C. Sheps Award in Mathematical Demography presented by the Population Association of America.

Swiss Actuaries conduct 9th summer school

by Donald A. Jones

In the past ten years, the Swiss Association of Actuaries has sponsored nine summer schools. They are designed to allow actuaries to learn about new applications in their field. I was a participant and invited observer at the 9th International Summer School conducted August 26-30, 1991, at the University of Lausanne, Switzerland. The topic was the APL computer language. Thirty actuaries from fifteen countries participated in this event.

The use of APL by actuaries in North America was encouraged by the late David Halmstad, who kept our *ARCH* subscription list in APL 20 years ago. APL is a convenient language for statisticians and actuaries because of its ease of handling arrays. IBM released the first version of APL 30 years ago and now supports APL II. Scientific Time Share Corporation's APL-PLUS is the version used in the computer network at Lausanne.

The three lecturers were Marc-Henri Amsler, professor at the University of Lausanne; Francois Dufresne, professor at the University of Laval, Quebec; and Marc Goovaertz, professor at Louvain and Amsterdam universities. Hans Gerber of the University of Lausanne was in charge of the arrangements for the school.

The 9th International Summer School gathers for a "Class of '91" photo. Don Jones, author of this article, is seated with a backpack, third row, just right of center.

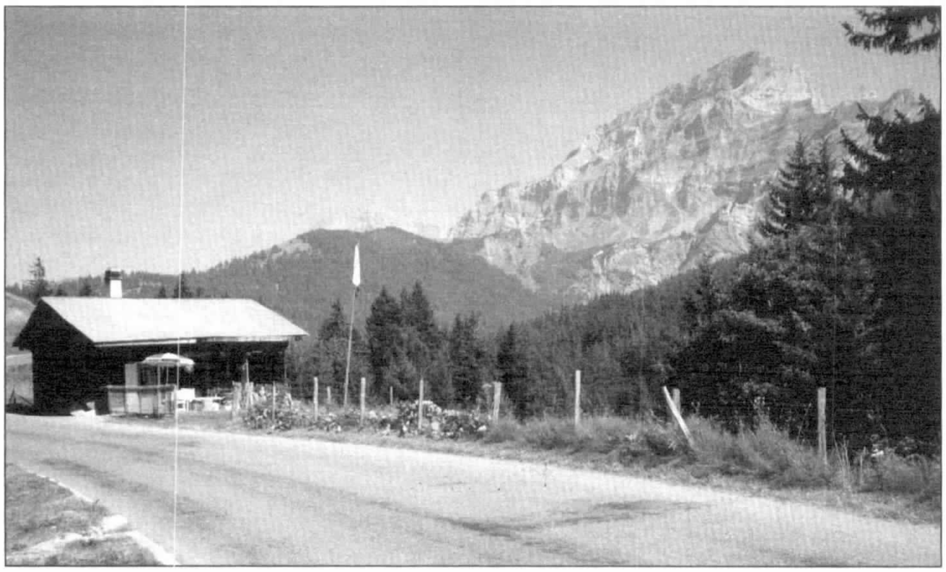
During the first three days, each lecturer talked about the language. More than half of the time was spent in the computer lab. Each student was assigned a work station in a networked lab consisting of IBM PCs.

Actuarial applications were covered in the final three half days. Each lecturer discussed his area of interest. Amsler demonstrated a simulation model for the aggregate claims distribution that he uses in his teaching. Dufresne demonstrated Risky Business, an APL-based software package written by Dufresne and Gerber, which enables users to work through examples of the ideas in chapters 11-13 of the Society's textbook, *Actuarial Mathematics*. The participants saw the quick computation of the adjustment coefficient, bounds on the stop-loss premiums, and the probabilities of ruin as done by the concise APL programs. Information on this software can be obtained from Hans Gerber at his *Yearbook* address. Goovaertz distributed copies of Chapter 10 of *APL and its Actuarial Applications*, by Goovaertz and others, published by North-Holland. This chapter has application programs, and he discussed those for the incurred but not reported claims.

The traditional excursion on the second afternoon was a six-mile walk along Lake Geneva to Morges, followed by a boat ride back to the dock at Ouchy.

The 10th International Summer School will be conducted August 24-28, 1992, in Villars, Switzerland, a resort in the Alps near Lausanne. The topic, which will be covered in English, is "Financing Retirement Benefits," with special emphasis on U.S. practice. It is designed for actuaries not knowledgeable in the U.S. retirement benefits field for either geographical or occupational reasons. Information can be obtained from faculty members Newton Bowers, Donald A. Jones, Howard Young, and Hans Gerber.

Donald A. Jones is associate professor in the mathematics department, Oregon State University.



This spectacular Alpine scene is near Villars, the site of the 10th International Summer School in August 1992.

Book Review

Actuarial pioneer and reformer subject of new book

by Kenneth W. Faig, Jr.

Abolitionist, Actuary, Atheist: Elizur Wright and the Reform Impulse by Lawrence B. Goodheart. Published by The Kent State University Press, Kent, Ohio, and London, England, 1990, (1-800-666-2211) xiii + 282pp, $27.50.

Since the centenary of his death in 1985, the actuarial profession has paid several tributes to pioneer North American actuary Elizur Wright. Ernest J. Moorhead, Charles G. Groeschell, and Walter L. Rugland presented a commemorative panel discussion of Wright's role as an actuarial practitioner at the New Orleans annual meeting in 1985 (*RSA* 11, pp. 2,399-2,409). Moorhead's *Our Yesterdays: The History of the Actuarial Profession in North America* (Schaumburg, Illinois: Society of Actuaries, 1989), released for the SOA's Centennial Celebration, discussed Wright's pivotal role in placing the business of insurance on a financially sound and equitable basis in North America, first in his role as Massachusetts Insurance Commissioner (1858-1867) and later as an independent consulting actuary. A rare example of the mechanical calculating machine or arithmeter that Wright developed and patented to aid actuaries in their computations was exhibited by John Fibiger at the Centennial Celebration.

Drawing on the Wright papers at the Harvard Business School Library and the Library of Congress, historian Lawrence Goodheart now presents us with a full biography of Elizur Wright that places his long and fruitful life in the context of nineteenth century reform. An 1826 graduate of Yale University, Wright began his adult life with the intention of pursuing a career in the ministry. Near the end of his life, he was with Colonel Robert Ingersoll, one of the most notable atheists among American intellectuals. In the intervening decades, he was college professor, antislavery editor and organizer, book translator, newspaper proprietor and editor, consulting actuary, insurance reformer, civil libertarian, and conservationist. Insurance reform was only a part of the "sisterhood of reforms" for which Elizur Wright labored.

Among the most poignant impressions left by Goodheart's book surely will be the glimpses of Wright's full but difficult personal life. His long marriage to Susan Clark Wright produced 18 children, of whom 13 predeceased their father. (Two of the children, Lucy Jane Wright and Walter Channing Wright, practiced as actuaries.) Financial and personal distress of the Wright family followed Elizur's departure from the organized abolition movement. While Wright was in England in 1844 to promote his translation of the *Fables of La Fontaine* and to study the operations of English insurance companies, the family home in suburban Boston burned. Wright and his wife persevered only with their own strength and financial help from their antislavery friends.

The outspoken Wright made powerful enemies throughout his long and varied career. He was accused of impropriety during his term as Massachusetts Insurance Commissioner (he had paid his children $1,000 for clerical assistance with his laborious computations). He was criticized later in life for accepting a retainer from the Equitable Assurance Society, one of the foremost writers of the tontine dividend plans that he had criticized so strongly earlier in his career. As president of the National Liberal League, he was painted as an advocate of smut and blasphemy. He spent his final years largely occupied with the conservation of what is today the Middlesex Fells Preserve near his home in suburban Boston.

Wright has been called "the father of life insurance" (the title of a 1937 biography published by the University of Chicago Press) and his reports as Massachusetts Commissioner have been reprinted as *The Bible of Life Insurance* (Chicago, Illinois: American Conservation Company, 1932). His advocacy of net premium reserves, nonforfeiture values, and annual dividend distribution were salutory influences in the overheated insurance business of the second half of the nineteenth century. Wright himself certainly would have questioned whether they would continue to represent solutions for the problems of the more mature business of a century later. However, his insistence on the responsibility of insurance organizations to conduct their business in a responsible and equitable manner is as relevant today as it was a century ago.

Wright should be an inspiration for regulators seeking a modern solution to the problem of life insurance company insolvency. His principles, if not all his tools, remain perfectly valid.

I could not think of better reading for the Fellowship Admission Course than this fine biography of America's greatest pioneer actuary. Wright's entire public career forms a case study in conscientious devotion to the public interest as he saw it. If our profession can preserve the intellectual and entrepreneurial freedom of its members while assuring public accountability, it will continue to fulfill the role that this North American pioneer foresaw for it.

Kenneth W. Faig, Jr., is manager-actuarial services, Poly Systems, Inc.

Sections evolve from needs of members

by Judy Yore
SOA Section and Research Coordinator

One of the interesting and exciting opportunities that the Society of Actuaries offers is participation in its special interest Sections.

Special interest Sections evolved naturally as a response to two major concerns: the education of actuaries and the ability of the Society to meet the diverse needs of its members. As membership grew and the number of specialties increased, it became increasingly difficult for the Society to address all members' functional and professional interests. Sections developed a way to bring together groups who want to study and discuss common functional and professional interests and to contribute information on these interests to the actuarial profession.

Sections are successful because their members get involved. They operate on the "bottom up" philosophy. They play a key role in relating important and timely information to participants. To accomplish this, Sections publish newsletters and special reports, help plan Society meetings and seminars, hold breakfasts and luncheons with guest speakers at Society meetings, sponsor contests, and support actuarial research efforts.

Section Membership Growth

Section (Date Organized)	Nov 1986	Nov 1987	June 1988	June 1989	June 1990	June 1991	Nov 1991
Health (October 1981)	1,673	1,805	1,914	2,170	2,386	2,578	2,653
Futurism (April 1982)	1,042	1,135	1,158	1,238	1,286	1,295	1,325
Reinsurance (April 1982)	948	1,061	1,148	1,216	1,287	1,341	1,369
Product Development (October 1982)	2,143	2,331	2,420	2,645	2,802	2,988	3,057
Financial Reporting (October 1982)	1,661	1,868	2,043	2,251	2,451	2,647	2,689
Pension (October 1983)	2,480	2,663	2,784	3,046	3,324	3,639	3,742
Nontraditional (October 1984)	911	950	966	965	982	1,014	1,039
Investment (May 1987)		898	1,482	1,937	2,233	2,581	2,678
Education & Research (August 1991)						516	561

Growth

Since the first Section organized in 1981, Society members have shown support for these special interest groups. The table on this page illustrates the growth in Section membership from November 1986 through November 1991. (The Society did not maintain membership statistics before fall 1986.)

The number of members vary widely from group to group. Some Sections have memberships that are fairly stable, while others have more than doubled in size. More than 9,500 Society members belong to at least one Section, representing about 75% of the total Society membership. A total of 19,113 Section memberships means that each Section member belongs to an average of two Sections.

Society staff support increased after the Research Department assumed responsibilities for Sections in 1987, and in November 1990, the position of Section and research coordinator was created. This person acts as liaison to the Section Councils, coordinating activities, elections, and Council meetings. Financial records for each Section are maintained, and statements are sent regularly to Section chairs and treasurers. In 1991, Communications staff members began editing and arranging for production and mailing of Section publications.

Education and Research

The newest Section, Education and Research, will have a positive influence on strengthening the relationship between universities and the actuarial profession. It also serves as a good example of the transfer of a responsibility to a Section when it appears the Section can effectively perform a function previously performed by a Society committee. The Education and Research Section is taking over the responsibilities of the Committee on Theory on Research and Applications and will oversee the editorial review board of *Actuarial Research Clearing House (ARCH).*

Pension

The Pension Section is the largest with 3,742 members, and it makes significant contributions to its members and the profession. Its quarterly newsletter, *Pension Section*

News, is noteworthy. In addition, it periodically publishes *The Pension Forum* as a vehicle for more lengthy pension-related articles. Annually, the Section sponsors *Economic Statistics for Pension Actuaries*, a 100-page pamphlet. To help pension actuaries stay current with new developments, the Section also sponsors the listing, *References for Pension Actuaries.*

Health

The Health Section has a regularly published newsletter, *Health Section News*, to alert members of new developments in their field of specialty. One of its activities in the past year was developing a research project proposal for developing a health care catastrophic claims database. It also sponsored a papers contest and awarded cash prizes to two papers that generated much interest when they were presented at the 1991 spring meeting in Colorado Springs. The Society Communications Department sent out news releases on the winners, resulting in local newspaper coverage and more visibility for the Society.

Financial Reporting

The Financial Reporting Section recently completed a successful survey of its membership. The survey resulted in more than 70 new volunteers and identified member priorities and areas of interest. This Section has sponsored several research projects and continues to put much effort into the Valuation Actuary Symposium, as well as other continuing education projects.

Futurism

The Futurism Section recently redefined its objectives and narrowed the scope of its activities. With a more well-defined focus, the Council feels positive about its new direction. It publishes a newsletter, *Actuarial Futures*. A Section librarian selects books to purchase for the SOA's Futurism Library maintained within the Society's library. The Futurism Section will be offering input on the 1992 annual meeting, which focuses on "Financial Services in the Twenty-First Century."

Reinsurance

The Reinsurance Section has an extensive network of active committees. The Section recommended and outlined a proposal for an experience study on reinsurance mortality. It also regularly publishes *Reinsurance Section News* and produces reports of importance to its members.

Product Development

The Product Development Section is another active group. In keeping with its name, this group is perhaps our most entrepreneurial Section. In 1991, it sponsored speakers from outside the actuarial arena to give presentations at the spring meeting in New Orleans and the annual meeting in Toronto. The response to these presentations has been positive. One Toronto session, "Influence Without Authority," was videotaped and is available for viewing to members through the Society library at no charge. The Section successfully sponsors at least one seminar per year and publishes a newsletter, *Product Development News.*

Nontraditional Marketing

The Nontraditional Marketing Section faces a special challenge in finding its focus. A group of actuaries have an interest in this area, but because of member concern about proprietary information, it has been difficult to get articles for this Section's newsletter, *News Direct*, and to get participation in activities. However, this Section has appointed liaisons to related organizations, and the leadership of the Nontraditional Marketing Section is determined to bring more vitality to this group by redefining its goals and sponsoring more activities.

Investment

The Investment Section has been active in helping evaluate material for investment course content. Its newsletter, *Risks and Rewards*, regularly offers members articles on investment related topics. The group sponsors a biannual prize for a paper on an investment related topic of substantial value to members of the Section. The group works hard to recruit good moderators and panelists for Society meetings and supports Society research in areas of interest to members.

New groups

The Society continues to be responsive to the expanding needs of members practicing in specialty areas. Two new Sections, Computer Science and International, were approved by the Board of Governors on October 20, 1991. They are in the organizational stage and should be operational within the year.

Continued support needed

Several concerns cross Section boundaries, affecting each of the Sections in varying degrees. All Sections struggle to offer members valuable programs at Society meetings, and all look for new ways to recruit quality speakers. They also share the problem of finding authors to write articles of interest for Section newsletters and of identifying quality candidates to run for Council positions.

Areas of specialty are dynamic, and it is vital that all interests be served. The current format allows these groups the freedom to pursue individual interests and activities within the Society's overall structure. Sections often offer members, particularly ASAs, their first opportunity to become actively involved in their professional organization. We are fortunate to have dedicated, talented Section members who are willing to share their time and expertise with their fellow actuaries.

News flash

It's official – the two new Sections, Computer Science and International, are a go. SOA guidelines for new Sections require that 200 or more members pay dues as charter members before the Section is officially established. As of January 13, 1992, 521 had joined the Computer Science Section, and 225 had paid dues for the International Section. The organizing committees will hold elections for Council members soon.

Dear Editor:

Is SOA growth good for members?

I am responding to Stanley A. Roberts' letter to the editor in the September *Actuary.*

I have been actively recruiting actuaries and other employee benefits professionals for four years. During this period, I have seen a steady decrease in the number of jobs available for actuaries at all levels, from FSAs down to actuarial students with one or two exams. My files now contain the largest number of unemployed actuaries and students I ever have had. Many self-employed actuaries are giving up their businesses and seeking alternative ways to develop income in other career fields.

Fewer opportunities, lower salaries, actuaries changing careers, underemployed actuaries, unemployment, and age discrimination are a reality now.

Congratulations to Stanley Roberts for having the courage to bring this to our attention. Now what is the membership going to do about it? Do we really care?

Ronald E. Witt

No time for tradition

I have serious reservations about the approach and direction being taken by the industry advisory committee to the NAIC on risk based capital. The advisory committee should reconsider its decision to follow the general structure of traditional risk based formulas in light of the following unresolved issues:

- No simplistic formula can be suitably applied to all companies. Though the intent of such formulas may be to distinguish the weak from the strong, I fear that within the context of such formulas too many companies may fall somewhere in between. A wider view of the implications suggests there could be a significant danger of further deterioration of public confidence in the industry because these formulas are likely to be misunderstood and misapplied.
- These simplistic formulas produce capital requirements that are excessive because they assume that all risks are 100% correlated (i.e., they all occur at the same time).
- The law requires conservative minimum reserves. Clearly, there is a "surplus" element buried in here. The formula-based approach to risk based capital does not take this into consideration (except to the extent that excess reserves arising out of a Reg. 126 filing can be an offset). The combination of legally prescribed conservative reserves and mandated capital formulas will produce an excessive capital requirement.
- We could be painting ourselves into a regulatory corner today which could hurt our case for having an appointed actuary with a wide degree of latitude and responsibility in the future, as is found in other countries such as Canada and the United Kingdom.

While I can appreciate the urgent need to address public and regulatory concerns about the solvency of life insurance companies and the life insurance industry in general, I believe we have responded in a fashion that reinforces the perception of actuaries as technocrats. I see the current turmoil as an opportunity for the profession to take an aggressive leadership role on these matters of national public concern.

This is no time for tradition.

Garth A. Bernard

Editor's note: This letter has been forwarded on to the Industry Advisory Committee to the NAIC Life Risk Based Capital Working Group.

Accuracy counts in math

Most of what Jim Beauchamp said in his letter in the October *Actuary* was correct. If I may nitpick, I would like to correct one subtle error.

Beauchamp noted that the real numbers are uncountable (as opposed to countably infinite), and presented the fact that they are dense (i.e., between any two distinct reals, there are infinitely many other reals). While it is true that the reals are both uncountable and dense, it is not true that density implies uncountability. The rational numbers are a familiar counterexample: despite their density, they are countable.

I realize this is a subtle point that some will consider unimportant, but in this age of innumeracy, I believe it is important to be as accurate as possible when discussing mathematics issues.

Marc I. Whinston

Actuarial empathy

One dictionary defines empathy as "capacity for participating in the feelings or ideas of another." As actuaries doing some of the most important work in the history of our profession in North America, I believe we must consciously develop our empathy.

Life, health, and pension actuaries work every day with human life topics. While we use scientific models to understand the challenges we face, humans often do not conform to model behavior. Further, the quality of our models depends on the accurate observations of life patterns, often from a variety of vantage points.

In my mind, actuarial empathy involves incorporating the ideas or feelings (yes, feelings) of others into our models. In fact, we often are best served by limiting our attention to building the models, and leave others to create the ideas and feelings that are used as input.

Consider a few examples. In health care, we hear from the public that medical treatment is a right, not a privilege. Further, many believe that treatment should be provided at little, if any, cost to the recipients. We also hear from health care providers that the training and research necessary to deliver the desired level of care is very costly. Surely an actuary is no better positioned than any other person to establish priorities for health care. We can, however, establish models that help all the constituents understand the probable impact of each proposal on all participants in the system.

The U.S. life insurance industry faces many difficult challenges. Costly, inefficient distribution and administration, combined with deteriorating investment performance and potentially adverse mortality and persistency experience, paint a bleak picture.

The actuarial profession can help solve these problems, but actuaries do not have the solution. Life insurance is a personal product that requires special sales skills. Cost-effective distribution can be achieved only through a feeling of trust in the field force. Actuaries can use their models to monitor financial soundness of life insurance companies, but inspired leadership builds the trust that makes those companies viable.

Actuaries have the talent and training to make major contributions in addressing many challenges faced by our clients, employees, and society as a whole. We will be most effective when we learn to participate in the feelings and ideas of others and incorporate them into workable solutions.

Jeffrey D. Miller

Publish tables in *Reports*

I would like to suggest a change to the process of approving papers for the *Transactions.*

I served on the Papers Committee a few years ago, coauthored a *TSA* paper on hospitalization experience in the late 1970s and, most recently, worked as an informal adviser to Mark Chesner in his unsuccessful attempt to get a paper on group medical area factors in the *Transactions.* Chesner's paper will be published in Volume 41 of the *Proceedings of the Conference* (Conference of Consulting Actuaries) in 1992.

Being on the Papers Committee is a lot of work, takes a lot of time, and exposes one to a lot of abuse. People willing to put up with this are a nonrandom sample of FSAs. My impression is group insurance and qualified plan people are under-represented, and individual policy, social insurance, and academic people are over-represented. This is not by design; there must be some Darwinian process that I do not understand.

For many actuaries, the best-thumbed pages in their *Transactions* are the various experience studies and standard tables. Publishing such a table in the *Transactions* is not a straightforward matter, as Chesner's experience reveals. One reason for this is that experience tables are, to a greater or lesser extent, of transitory interest. No doubt, 15 years of changed medical care practice have completely overtaken my paper. Similarly, it would be a surprise if Chesner's paper were still valid 15 years from now.

The same point can be made about the 1955 to 1960 basic table or the experience studies in the *Reports* volume. However, nobody is complaining about an overrun of experience tables. On the contrary, the situation appears to be deteriorating.

This leads to my proposal to rethink the contents of the *Reports* volume. Suppose we decided that it would hold any signed article and associated experience table, however transitory its interest, that an appropriately qualified panel of actuaries thought valid and useful. This approach could improve the quality of our literature in especially important areas and avoid driving our authors to other journals. No one expects to find an experience table on group medical costs in *The Actuary* or in the *Conference Proceedings* or in the *Health Section Newsletter.* An expanded *Reports* volume would be a great place for such a paper.

Peter L. Hutchings

Reply by Ken McFarquhar, Director of Publications

Thank you for your suggestion to increase the range of articles that could be included in the *Reports* volume. The current philosophy of this publication is to publish only the regular studies that currently appear. The SOA Board decided this some time ago. Occasionally, appropriate experience studies by other organizations are included, such as the LIMRA and CIA studies in the *1985-86-87 Reports.*

However, you have made a good argument for a reconsideration of this publication's content. At its next meeting, the Publications Committee will again look at the philosophy governing the *Reports* volume.

In the meantime, because this issue will take some time to explore, you might consider some other avenues to get Chesner's experience paper published. One possibility is to submit it to the editor of the appropriate Section newsletter. Another possible vehicle is *ARCH.* It also could be submitted to the *Transactions,* but this would mean it would be refereed. Finally, Chesner's paper could become a special publication, but this must be approved by the Board as being of value to most Society members.

Once again, thank you for your idea. We are always looking for ways to make our publications more useful to our membership.

In memoriam

James J. Bagshaw ASA 1952
Reuben I. Jacobson FSA 1938, FFA
Robert J. Towne FSA 1941

Editorial board changes

Last month's *Actuary* was the last issue for one of this publication's most faithful associate editors, Irwin Vanderhoof. He was the last of the original associate editors who began their duties with the new *Actuary* format in September 1987. Irwin always gave a unique and interesting perspective of actuarial issues, and with his expertise in investments and research, filled an important role on our editorial board. We're grateful for his five years of dedication and support.

We welcome Barbara Lautzenheiser as the new associate editor. She was the SOA President in 1982-83 and is principal with Lautzenheiser & Associates in Hartford.

The Actuary also gratefully acknowledges the services of assistant editors Steve Frankel and David Lee, who also are going off the editorial board.

Coming on the editorial board as new assistant editors are Peter J. Bondy, Eric P. Lofgren, and J. Bruce MacDonald.

We currently are looking for persons to serve as humor editor, puzzle editor, and assistant editors. If you are interested in these assignments or any other volunteer opportunity with *The Actuary,* please contact Linda Emory, Editor, P.O. Box 105006, Atlanta, GA 30348-5006.

Solution to chess quiz

Alexander & Kirill Sarychev, 1929

White seems to be quite hopeless. Queening is useless, and 1.Ke6 is repulsed by 1...Ke4. White's first two moves look absurd.

1. Kc8 b5
2. Kd7 b4

White is a Bishop down, and apparently he invites Black's Pawn to queen as soon as possible, but...

3. Kd6 Bf5

Preventing White from queening.

4. Ke5 Bc8
5. Kd4

It's a well known idea, isn't it?

5. ...b3
6. Kc3 Be6
7. c8Q Bxc8
8. Kxb3 with a draw.

ACTUCROSSWORD

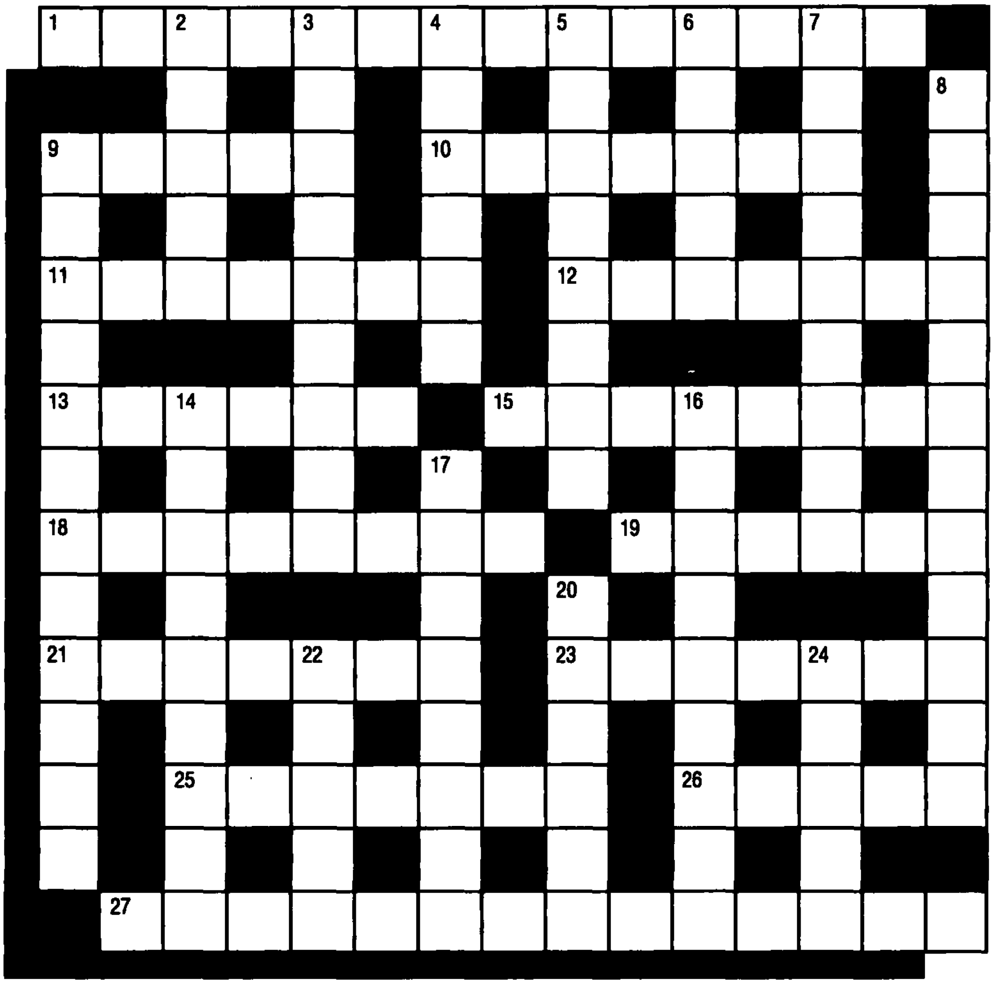
by R. Graham Deas

Across

1. Liquid on layer a measure of anger (2,3,2,1,3,3)
9. Herb in Kansas attains fame (5)
10. Soccer action resulting from childhood rib blemish (7)
11. Servants with 100,000 notes (7)
12. Considered you, of old, and right without state (7)
13. Extrasensory perception state 50 observing (6)
15. Clothing a regrettable fact (8)
18. Not 99 a bit round causes sleep (8)
19. Spirit to which integral part can return (6)
21. Disable clipper (7)
23. Two persons in canvasser for interval (4,3)
25. Organ in sport one should keep its start on its finish (7)
26. A thousand and the rest harbor a vessel (5)
27. Inflexible rules as chosen by the payer (8,6)

Down

2. Dwarf introducing himself with wine (5)
3. Lawbreaker who might pose dread to others (9)
4. Located in Tulsa, distinguished for cruelty (6)
5. Noisy artist. Goldeneye? (8)
6. Not in order. Graduate in, too! (5)
7. State of one-way traffic in Washington (9)
8. Pat the creature. It's sweet! (6,6)
9. Knack in style caused their unyielding battle (8,4)
14. Pointedly clever in starting entertainment (9)
16. Tradesman to shake Rome (9)
17. Those with learning could well retail it (8)
20. Place of confinement - males with the French female inside (6)
22. God surrounding each hymn of praise (5)
24. Nothing true? Ridiculously different (5)



100% Solvers - November: A Amodeo, T Boehmer, F Clarke, F&M David, C Galloway, P Hepokosky, G Horrocks, V Hosler & T Luker, B&J Koch, W Luther, P Marks, G Sherritt, P Thomson, M Vandeteeg & A White, A Whiton, F Zaret.

January's Solution

Send solutions to: Competition Editor, 209 N. Comanche Lane, Waukesha, WI 53188