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The Newsletter of the
Society of Actuaries

VOL. 26, NO. 8
OCTOBER 1992

THE Actuary

E&E developments

by Bruce Moore

The Society's Education and Examination (E&E) system has changed and grown substantially over the past few years. In 1991, the Society administered 60,400 examinations on 52 courses. Nearly 500 Fellows, or 7% of all FSAs, are involved in E&E committees. Many others are involved in support roles as proctors and study note authors.

Over the past few years, the Flexible Education Methods (FEM) and Flexible Education System (FES) have been implemented for Fellowship and Associateship courses. They provide enhanced educational opportunities and flexibility in our system.

FEM developments

FEM programs have been expanded in several ways. The intensive seminars continue to play an important role at the ASA level. The Applied Statistical Methods seminar has been offered for four years to 789 students. A seminar on Risk Theory was added this year in August.

Credit for research papers is another FEM program. While not used by many students, it provides a valuable opportunity for some. It also has resulted in some impressive additions to actuarial literature. To date, 30 research paper proposals have been submitted. Ten candidates have submitted papers and seven have received credit.

We also have implemented procedures recognizing credit, where appropriate, for examinations of other professional organizations. We recently decided to give Course 220 credit for candidates who have a Certified Financial Analyst (CFA)

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Society announces election results

R. Stephen Radcliffe was elected President-Elect of the Society of Actuaries for 1992-93.

Radcliffe is senior vice president and chief actuary with American United Life Insurance Company, Indianapolis, Indiana. He served on the SOA Board of Governors from 1984-87 and as Vice President from 1987-89. He also served on the Board of Directors for the American Academy of Actuaries from 1989-91 and is currently an Academy Vice President.

Vice Presidents elected were Harry D. Garber, Sam Gutterman, and Diane Wallace. Garber, vice chairman with Equitable Life Assurance Society, New York, served on the SOA Board from 1985-88. Gutterman, director and consulting actuary with Price Waterhouse, Chicago, was an SOA Board member from 1988-91. Wallace,



R. Stephen Radcliffe

president of The D.B. Wallace Company, Tryon, North Carolina, has been an SOA Board member since 1989.

Elected to Board seats were Robert L. Brown, associate professor and director with the Institute of

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Tony Spano



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Editorial

Education: Maintaining excellence through change

by Anthony T. Spano

Recent efforts to delineate the responsibilities of the different actuarial organizations have sharpened the focus on the Society's two main functions: education and research. In the last issue in which I served as editor (March 1992), the spotlight was on research. This issue contains several articles on basic and continuing education.

Education is by far the Society's biggest activity, accounting for 44% of the expenses in the current \$13 million budget. Despite some decrease in the past year, examination registrations have doubled compared with those of eight years ago when I was first elected to the Society Board of Governors. This takes a massive volunteer effort, involving 7% of all our FSAs in Education and Examination committees. The continuing education Program Committee planned 11 seminars and symposiums for this fall, in addition to an annual meeting with more than 90 sessions.

All these numbers are very impressive, and the numbers undoubtedly will grow in the years ahead. More interest in the profession, more actuaries, more employment diversity among actuaries — all these factors will continue the demand for a significant commitment to the Society's educational activities. This will require not only more dollars, more people, and additional sessions, but also a continuous effort to respond to evolving needs.

It is encouraging to see solid evidence of the Society's commitment to these objectives. In this issue, Bruce Moore reports on the expansion of several educational programs, the constant updating and upgrading of the syllabus, and some creative experiments to enhance the examination system. Harry Panjer's article describes promising proposals to strengthen our continuing education program, including a closer involvement of Sections in the process. And

in last month's issue, a Society task force recommended increasing the educational requirements for the ASA designation.

I'm confident these efforts to make our educational activities responsive to an ever-changing environment will continue. In this regard, I'd like to say a word first to the Society leadership and then to the membership. To the leadership, I emphasize an obligation to communicate any proposed changes or innovations clearly and candidly to the members and to provide ample opportunity for feedback. We've made some substantial strides recently in

I urge we keep an open mind as we evaluate new ideas.

improving the Society's communication lines. The extensive use of *The Actuary* for this purpose has been especially encouraging. Sometimes it may seem that our members are not very interested in what goes on in the Society, as witnessed by our low election participation. But those of us on the Society Board at the time certainly remember the outpouring of votes on the proposed constitutional amendment on examination credit for college courses.

To the membership, I urge that we keep an open mind as we evaluate new ideas. Certainly, we need to maintain our traditionally high standards, especially in regard to professional designation, but let's not be afraid of new approaches just because they are new. Keeping pace with a changing world often requires that we adjust our thinking. Let's also remember that changes are not irreversible if we find they don't work out the way we thought they would. Finally, let's all participate in these collective efforts, offering our time and ideas to ensure that our educational activities maintain their long-established standards of excellence.

Task force recommends major CE initiatives

by Harry Panjer

An SOA Task Force on Continuing Education and Seminars was formed in late 1991 and met earlier this year. The task force expanded its study to the entire system of Continuing Education (CE), recognizing that seminars represent a single delivery mechanism for CE. The task force presented a draft report to the Board of Governors in June and distributed the final report in August.

Factors influencing CE

The task force recognized several factors that influenced the final report. Among these factors are:

- The Society has evolved into an organization with a healthy system of special interest Sections. The task force recommended Sections become more involved in overall planning of all meetings, seminars, and other CE opportunities the Society provides. This is to be accomplished through a revised committee structure.
- Recently, the requirement for mandatory continuing education (or professional development) has been growing in U.S. and Canadian actuarial and other professions, as well as in other countries. While the SOA imposes no CE requirements, it is a key provider of CE services to its members. With the expansion of actuarial responsibilities as the "appointed actuary" concept develops, the need for CE will increase. The development of standards of practice also will make CE necessary for persons subject to the standards.
- Actuarial methodology in the traditional fields of life insurance and pensions is becoming rapidly more sophisticated through the increased use of financial economics and more complicated financial instruments. Although the Fellowship syllabus changes frequently to keep pace with these developments, it is more difficult for the already qualified Fellow to maintain currency in them.
- With decreases in demand in some areas of actuarial practice and

increases in others, movement from one area of practice to another will increase. These actuaries can benefit from basic education in the new practice area. Although the material may be on Fellowship exams, the already qualified Fellow can benefit from continuing education in a compact seminar format. The Professional Actuarial Specialty Guides (PASG) already provide reading lists for persons pursuing individual studies in new areas of practice. The content of these can be used in seminar or other format.

- As the horizons of actuarial practice change and new practice areas emerge, the need for continuing education will increase to ensure that the actuarial profession can compete effectively with other professions. The Task Force of the Actuary of the Future has been working on identifying new opportunities for actuaries.

An ideal system

In its report, the task force identified six characteristics of an ideal system:

- 1) *Comprehensive* — It should provide basic and advanced CE for most practice areas as demand warrants.
- 2) *Coherent* — The various parts of CE should fit logically together with a minimum of duplication.
- 3) *Continuity* — The system should be designed so Society members can obtain expertise in a new area of practice in a short time.
- 4) *Responsive* — The system should be responsive to newly emerging issues ("hot topics"). A seminar or symposium should be able to be mounted very quickly.
- 5) *Planning* — The CE system should lend itself naturally to long-term planning by both SOA members and by the employers of actuaries.
- 6) *Quality* — The quality of Society CE should be high enough so members prefer SOA seminars and programs over those of others. As a membership service organization, the Society has a duty to provide educational services and not to rely on other providers.

CE recommendations

The task force made several recommendations in its report, including publishing annually a CE catalog, similar in format to the Fellowship catalog, listing all planned CE opportunities, the content, and the anticipated frequency of offering. The catalog should include information on seminars, programs, audio tapes, and video tapes, as well as offerings of other actuarial organizations. The listings in the catalog should identify target audiences using Section membership and other criteria. The CE Committee should use the Sections to identify appropriate topics in each practice area. The Fellowship catalog and PASGs can be used to develop content. The CE Committee will work with the Task Force of the Actuary of the Future and its successors in identifying emerging areas of practice. A more responsive "hot topics" monitoring system also is recommended.

The need for greater Section involvement in the planning process is a recurring theme in the task force's report. It recognized the Sections' vitality and the profession's increased strength from the Society's "sectionalization." Most SOA members identify closely with their areas of practice and the Section representing that practice area. The task force believed that CE should be a coordinated effort of the Society staff, the Sections, and other committees, with all parties actively participating in the planning process.

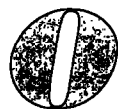
The task force consisted of Peter Bondy, William Carroll, William Cutlip, James Hickman, Alice Rosenblatt, Patricia Scahill, John Tiller, and me as chairperson.

The Task Force on Continuing Education Seminars report is available from the Continuing Education Department in the Society office.

Harry Panjer is SOA Vice President, Continuing Education and Career Encouragement, and professor at the University of Waterloo.

Disciplinary action for SOA exam candidates

by Neville Henderson
and Marta Holmberg



Over the past few months, major U.S. and Canadian newspapers have reported on what appears to be a significant change in the ethics of high school and university students. This news creates a concern that, in general, students are responding to a more competitive employment market by resorting to unethical practices to gain an advantage. In the actuarial profession, our concern must extend beyond the issue of unfair advantage to the question of whether an individual who believes that it is acceptable to cheat on an examination also might take unethical advantage of his or her professional position for personal gain.

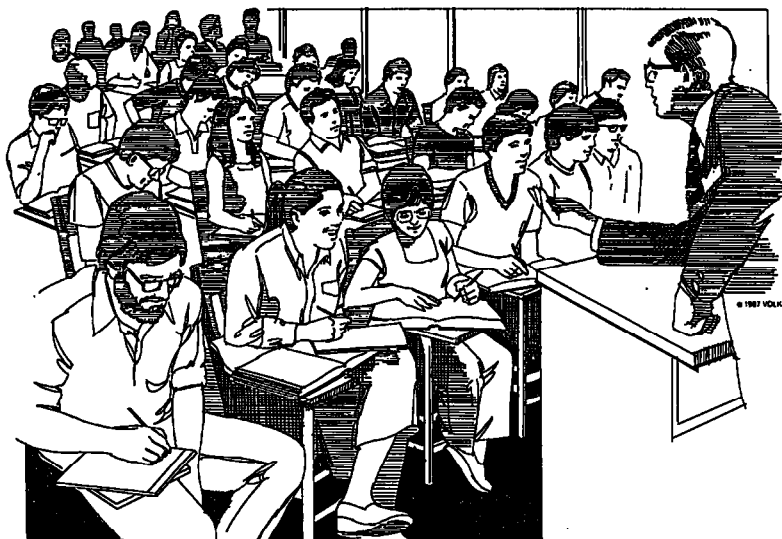
This article should not be read as sounding an alarm. The vast majority of our candidates behave entirely appropriately in writing examinations. Nonetheless, we must be concerned with the few who violate the examination rules.

Infractions and penalties

Cheating does occur in actuarial exams, though the incidence is very low. Not all infractions are equal in severity, and penalties vary accordingly. Penalties include:

- A warning, where conclusive proof is not possible but strong suspicion exists
- Disqualifying an examination for a simple infraction, such as writing after time has expired
- Disqualifying or rescinding credit for one or more examinations and being barred from writing examinations for a specified time period or for life. This penalty category is reserved for very serious violations.

The Education and Examination Committee is diligent and persistent in investigating breaches of examination guidelines. The catalogs, instructions sent to candidates with tickets of admission, verbal instructions at the beginning of each examination, and instructions on each exam cover include information on proper exam conduct. The guidelines are comprehensive in what can and



cannot be done during the examination.

Most infractions are minor, such as writing beyond the allotted time for an exam. The rules for this are explicit, and the penalty, disqualifying the examination, is automatic. No attempt is made to determine whether the candidate was filling in ovals, erasing ovals, or even making sure prior erasures were complete. Whether a disqualified exam would have earned a passing or failing grade is not considered.

More serious, but less frequent, are cases of a candidate observed copying from another candidate or using notes brought into the exam room. As with less serious incidents, the supervisor or proctor usually notes and reports the infraction, although occasionally another candidate will report an incident. How certain the supervisor or proctor is about what was observed plays a major part in determining whether the Examination Committee will penalize the candidate. In these cases, the penalty is more severe, and the candidate is barred from writing any actuarial exams for at least two years.

The most serious cases involve cheating that is premeditated and sustained. These cases are dealt with harshly and may result in the rescission of credit for multiple exams and a lifetime ban on writing exams. Occasionally a proctor identifies some activity that alerts the E&E Committee to review a candidate's examination. Candidates who believe that another

candidate is getting an unfair advantage also may report infractions of this type.

Though infrequent, some extreme cases involving candidates taking advantage of the examination system have occurred. These have ranged from candidates misrepresenting their situation to be allowed to write the exam under preferred circumstances, to candidates having someone else take the examination for them, to candidates sharing answers on a series of examinations over an extended time.

If the candidate under suspicion wrote several exams during that session, all those exams are reviewed. If strong evidence of collusion between candidates or an extensive pattern of cheating exists, the review would be extended to prior exam sessions.

The investigation will go through several levels of review. If enough evidence exists to support the charge, the candidate is notified of the allegations, the E&E Committee's findings, and the standard penalty being invoked.

Investigation process

Candidates charged with a violation that involves a penalty beyond disqualification of an exam are offered the opportunity for an administrative hearing. The hearing panel consists of three Fellows which the candidate selects from a list of potential hearing Fellows. The candidate can bring a lawyer to the hearing. The Examination chairperson, the education executive from the SOA

staff, and legal counsel represent the E&E Committee. The Society usually will call one or more of the staff education actuaries as expert witnesses and may call in the supervisor or proctor for the exam. The candidate also may call witnesses, and all present can question the witnesses. The hearing offers the candidate the opportunity to present his or her case and to allow the hearing panel members to determine if the charges are justified. Although not as rigorous as a trial, the session is recorded and transcribed. The decision of the hearing panel is final.

Cheating incidence

In 1991, as many as 17,500 candidates wrote SOA examinations in any one session. Examinations taken totalled 60,400 that year. Because so many opportunities existed for violations to occur, it is reassuring that only 29 candidates had one or more exams disqualified, with only 10 others banned from writing SOA exams for a period.

Three appeal hearings stemming from 1991 actions have been held this year. In one case, the hearing panel reversed the decision of the E&E Committee, based on evidence presented at the hearing. In the other two cases, affecting three candidates, the panel sustained the E&E Committee's decisions. One candidate was barred from writing for three years, and the other two have been banned for life from writing SOA examinations. As this article was being written, another hearing was pending.

An important point is that the E&E Committee's primary concern is to provide all candidates with fair and consistent treatment. That is one reason for the considerable attention given to examination violations. Despite the very low incidence of such violations, it is important to ensure that candidates do not gain an unfair advantage through major or minor rule violations. Anyone who becomes aware of a violation should call or write the SOA office immediately. The integrity of the examinations is critical to the reputation and success of our profession.

Neville Henderson is Education and Examination General Chairperson and a vice president at Manulife Financial. Marta Holmberg, Ph.D., is education executive at the Society of Actuaries.

E&E developments cont'd

designation. A few candidates have received that credit.

Our policy on granting credits for exams of other bodies is restrictive, so it does not provide an easier route for students seeking exam credit. By waiving exam requirements for people who clearly have shown mastery of the subject, these procedures should help us attract new types of members to the profession.

We also have provided for elective credit for Casualty Actuarial Society (CAS) exams at both the ASA and FSA level. That, combined with CAS's segmentation of its exams, will make it much easier for students to learn about property and casualty subjects. This should be of particular interest to actuaries working for employers active in both areas.

FES developments and results

The FES system has been fully implemented for Fellowship exams. As with the Associateship exams, we will monitor results under this program and monitor its effect on travel time to the FSA designation.

The FES approach offers students much greater flexibility in structuring their study time to be compatible with varying career pressures and goals. It also provides the Society flexibility to change the education structure easily, without the transition problems common in the past. Some examples of this include:

- Restructuring the individual life and annuity courses to allow Canadian students to be tested more extensively on valuation subjects. FES allowed us to adjust only those parts of the syllabus that were affected, leaving the others undisturbed.
- We have added new electives on important emerging topics. For example, the health policy elective and three new investment elections recently were added to the group track. Two additional investment electives now are near completion.
- We are restructuring the core exams to remove property and casualty materials and substantially increase the investment content.
- We also are adding a new finance track to the existing three tracks.

Other education developments

With a shift to the FES system, a separate education committee structure was developed to focus on

maintaining and upgrading the syllabus. In the past, this work sometimes lagged because of the more pressing demands of administering examinations.

Several steps have been taken to upgrade investment education. Many of these steps have been suggested and endorsed by high-level Society task forces, such as the Task Force on the Actuary of the Future and the Investment Track Task Force. The changes include updating and strengthening Course 220 material and adding 15 more core credits on investments. Six advanced investment electives were developed on a very fast track by the Investment Course Content Committee. One of those has been adopted to strengthen the core, and two others will be used to form the new finance track to be introduced this year.

The Fellowship Admissions Course (FAC) is another important innovation. Its use of case studies on integrated problem solving and ethics has enabled important subjects to be covered that are difficult to address well in self-study examinations. The contact with other new Fellows and with senior members of the profession will help preserve the values of our profession.

Other examination developments

We have experimented with several creative approaches to make the examination process focus more on conceptual questions and less on memory. Long case-study questions have been introduced on a few exams. In some cases, text material is reproduced and distributed with the exam to move away from pure memory questions.

Substantial efforts have been made to improve the examination grading and pass-mark setting processes. New training programs for volunteer members of the E&E committees have been developed. Modern approaches to analyzing exam results and equating results of different examinations have been adopted where practical.

Future directions

We will continue to strengthen the E&E system and to enhance its value to the profession. New courses will be introduced, and significant changes in courses will be made where appropriate. We also need to review our examinations and consider pruning those

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Society continues to meet students' special needs

by Judy Bluder

For several years, the Society of Actuaries has been making special arrangements for exam students with disabilities. It created written guidelines a few years ago and recently reviewed them in light of the Americans with Disabilities Act, Title III provisions, enacted January 26, 1992.

"We don't believe in putting people at a disadvantage," said Neville Henderson, general chairperson of the SOA Education & Examination Committee. "We try to make the exam process as fair as possible."

The regulations issued recently by the U.S. Department of Justice interpret the "public accommodations" provisions in Title III of the Act. The rules set specific requirements for private entities that conduct examinations and courses related to applications, licensing and certification, or credentialing for educational, professional, or trade purposes.

The Act provides wide protection for disabled individuals against discrimination by public or private organizations in areas of employment, public accommodations, state and local government services, and telecommunications, regardless of whether the organizations receive any federal funds.

The Society's guidelines offer special arrangements for exam candidates in the following categories:

- blind or visually impaired
- deaf or hearing impaired
- physically impaired — paraplegic, quadriplegic, cerebral palsy, multiple-sclerosis, or writing disability
- physically injured — broken limbs, sprains, or arthritis
- learning disability

Exam applications now instruct disabled students to contact the Society if they need special examination arrangements. Anyone interested in obtaining information about the Society's guidelines can call Martha Quattrocchi, supervisor of Examination Services, at 708-706-3589.

July 18, 1992

John E. O'Connor, Jr.
Executive Director
Society of Actuaries
475 N. Martingale Road
Schaumburg, IL 60173-2226

Dear Mr. O'Connor:

I am a pension actuary with a visual impairment. Through word of mouth, I became aware of the disabled candidate program sponsored by the Society of Actuaries and special provisions were made to attempt to put me on equal footing with the general body of students.

If it were not for this program, I could have never completed the examinations for enrollment as a pension actuary, a milestone in my career. I would like to specifically thank Martha Quattrocchi, Debbie Jay, Pierce Lee-Williams, Jerry Lynch and Jim Murlough for accommodating my special needs and continuously coordinating and reassessing my arrangements.

A job well done!!!

Sincerely,



Michael S. Eisenberg

One student took the time to write a letter of appreciation for the special provisions in the Society's program.

The University of Illinois Committee on Accountancy follows similar guidelines, which were developed last year for CPA exams. About 10 out of 10,000 individuals taking the exams each year need special accommodations, said Linda Sergent, secretary to the committee. The committee provides disabled candidates accommodations like extra time on exams, private rooms, enlarged type, and reader/writers. The committee requires candidates to provide a doctor's letter explaining the disability and two letters from professors or teachers with the history of accommodations granted in the classroom.

The Illinois Admissions to the Bar currently is developing a policy for disabled individuals taking the Bar examinations, according to Donald Funk, secretary of the Illinois Admissions to the Bar. "We're going to determine what their needs are from past experiences and cases," he said. This organization has been providing services for disabled candidates for many years but, unlike the Society, hadn't developed a formal policy. It provides accommodations like sign language interpreters for the hearing impaired, scribes for individuals who can't write, and extra time on exams for dyslexics.

Special testing arrangements for SOA disabled candidates are reviewed

individually to determine what accommodations are appropriate. For example, blind candidates require braille exam books, talking calculators, and braillewriters. "Most of these students need more time on exams, auxiliary aids, separate rooms, or assistance by a proctor," said Quattrocchi.

Candidates must provide documentation of the disability and the need for special arrangements. Usually, this documentation comes from the candidate's physician. The Society also considers if a candidate has had previous accommodations in an educational program or work setting and any diagnostic test results.

After a disabled candidate uses the Society's program, someone from SOA Examination Services follows up with a letter and a telephone call. "We continually review arrangements to make sure they're consistent and fair," Quattrocchi said.

One of the 16 candidates who requested special arrangements for the May 1992 exams didn't find out about his learning disability until after he became an ASA in 1985 and began taking the Fellowship exams. After he struggled through his first FSA exam, he thought something might be wrong. He was tested and discovered he had a learning disability that required him to spend more time on essay exams. When he found out he could request extra time to take an exam, he decided to try it again. "I still got discouraged even with the extra time, so I took a break from exams," he said. After a two-year break, he took another FSA exam this May.

Getting the word out about this program is essential, according to one candidate who has been using the Society's services for disabled candidates for many years. The candidate, blind since birth, said, "The Society makes an effort and is open to suggestions. That's what counts." He hopes to become a Fellow soon and urges anyone with a disability to take advantage of the Society's program. "If you have a disability, but have good mathematical skills," he said, "think seriously about taking the exams."

Amortization by a life annuity

by Cecil Nesbitt
and Marjorie Rosenberg

In a paper, "Annuities for the Aged," presented at the 26th Annual Actuarial Research Conference at the University of Illinois-Urbana in August 1991, we briefly introduced the concept of amortization by a life annuity. We called the concept "survivorship amortization," and we remain fascinated by the concept. This article presents a setting for, and a numerical illustration of, a simple survivorship amortization. Several ways of viewing the process exist. Some of these may be discarded for lack of practical relevance or for the extra complexity that results.

A simple form of survivorship amortization is given by a whole life immediate annuity of 1 payable at the end of each year while (x) survives. The actuarial present value of such an annuity at issue age x is a_x .

For ages $y \geq x$, we have the recurrence relation

$$a_y = v p_y (1 + a_{y+1}) \quad (a)$$

which may be rearranged as

$$a_y \frac{1+i}{p_y} = 1 + a_{y+1}$$

or

$$1 = \left[\frac{1+i}{p_y} - 1 \right] a_y + (a_y - a_{y+1}) \quad (b)$$

The interest and survivorship rate between the first square brackets in (b) may be written as

$$\frac{i + q_y}{p_y} \quad (c)$$

which is enlightening, but the format in (b) is convenient for calculation.

Formula (b) indicates that the payment at age $y + 1$ if (x) survives consists of two components:

- 1) The interest and survivorship rate

$$\left[\frac{1+i}{p_y} - 1 \right] = \frac{i + q_y}{p_y}$$

applied to a_y , the actuarial present value of the annuity as of attained age y . The product is the amount of increase, under interest and survivorship, of the actuarial present value before the year-end payment of 1 is made.

- 2) The repayment of principal at age $y + 1$, namely,

$$1 - \left[\frac{1+i}{p_y} - 1 \right] a_y = a_y - a_{y+1}$$

This brings the outstanding principal down from a_y to a_{y+1} after the payment is made.

We illustrate this survivorship amortization by exhibiting selected lines from an amortization schedule for a life annuity issued initially at age 65. Survivorship is according to the Blended 1983 a-D-Mortality Table, and interest is at the effective annual rate of 4%.

One notable feature is that the rate of increase (under interest and survivorship) is 5.06% for the initial

to most forms of life annuities. It will take much actuarial study and communication to develop all the practical ramifications such as extension to monthly payment life annuities, the treatment of expenses, adjustment to experience by dividend distributions in the form of graded benefits, and a new view of federal income tax liabilities under life annuities. Will such a new annuity theory be adapted to practice, or will it remain as a mathematical diversion?

Note that the foregoing model is deterministic but has the possibility of periodic adjustments to emerging experience.

A final observation considers compound interest amortization,

Illustration of Survivorship Amortization

(1) Attained Age	(2) Outstanding principal at beginning of year of age (y,y+1), i.e. actuarial present value	(3) Rate of increase under interest and survivorship over year of age (y,y+1) $\left[\frac{1.04}{p_y} - 1 \right] = \frac{.04 + q_y}{p_y}$	(4) Amount of increase under interest and survivorship over year of age (2) x (3)	(5) Repayment of principal at end of year of age $1 - (4) = a_y - a_{y+1}$
65	12.735	.0506	.6444	.3556
75	9.038	.0691	.6245	.3755
85	5.516	.1259	.6945	.3055
95	3.029	.2689	.8145	.1855
105	1.303	.6445	.8398	.1602
110	.559	1.5597	.8719	.1281
114	.09556	9.4649	.9045	.0955

year on a principal of 12.735. For the year of age (85, 86), the rate is 12.59% on a principal of 43% of the original. But for the year of age (114, 115), the rate is 946% on a principal of less than 1% of the original.

The amount of increase (under interest and survivorship) is lower for the year beginning at age 75 than for the years beginning at ages 65 and 85. Correspondingly, the repayment of principal is higher for the year beginning at age 75 than for the other two years.

It appears that survivorship amortization analysis can be applied broadly

established by the relation $A = Ra_{\overline{n}|i}$ where A denotes the initial principal and R the level payment at the end of each interest interval. Splitting the payments R into principal and interest components can be somewhat arbitrary. For example, the payment of R at the end of the j th interest period may have the components P_j and $(R - P_j)$, respectively, for principal and interest, subject to the condition that $P_1 + P_2 + \dots + P_n = A$. By actuarial reasoning, or as an interesting mathematical exercise, one can show that the present value of the

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Paper on group medical area factors available

by Mark Alan Chesner

This article reports on the findings in the paper, "Group Comprehensive Major Medical Net Claim Cost Relationships by Area." I presented to the Conference of Consulting Actuaries (CCA) in 1991. Peter Hutchings referred to this paper in a letter to the editor in the February 1992 *Actuary*.

In late 1989, I used the small group rate manuals of 16 major carriers to extract the underlying net claim cost relationships for each of 400 United States cities. These relationships were expressed in terms of an under-age-65 nationwide population weighted factor for each company of 1.00. Minimum, maximum, and mean factors for each city were presented, with an overview of the reasons behind the wide variation among cities.

The least expensive and most expensive cities are shown in the tables on this page.

The wide variation of the factors was no surprise. The clustering of factors in many states, however, was unexpected. For example, mean

Least Expensive

1.	Appleton, WI	.73
2.	Glens Falls, NY	.73
3.	Green Bay, WI	.73
4.	Eau Claire, WI	.74
5.	Elmira, NY	.74
6.	Wausau, WI	.74
7.	Buffalo, NY	.75
8.	Burlington, NC	.75
9.	Hickory, NC	.75
10.	Jacksonville, NC	.75
11.	La Crosse, WI	.75
12.	Niagara Falls, NY	.75
13.	Asheville, NC	.76
14.	Bloomington, IN	.76
15.	Burlington, VT	.76
16.	Cedar Rapids, IA	.76
17.	Duluth, MN	.76
18.	Fayetteville, NC	.76
19.	Greensboro, NC	.76
20.	Greenville, SC	.76
21.	Iowa City, IA	.76
22.	Muncie, IN	.76
23.	Rapid City, SD	.76
24.	Terre Haute, IN	.76
25.	Wilmington, NC	.76
26.	Winston-Salem, NC	.76

Most Expensive

1.	Los Angeles, CA	1.73
2.	Inglewood, CA	1.72
3.	Miami, FL	1.70
4.	Hialeah, FL	1.66
5.	Glendale, CA	1.62
6.	Pasadena, CA	1.62
7.	Torrance, CA	1.62
8.	Long Beach, CA	1.61
9.	Pomona, CA	1.58
10.	Hollywood, FL	1.53
11.	Fort Lauderdale, FL	1.47
12.	Santa Ana, CA	1.46
13.	Anaheim, CA	1.45
14.	Fullerton, CA	1.45
15.	Garden Grove, CA	1.45
16.	Huntington Beach, CA	1.45
17.	Orange, CA	1.45
18.	Ontario, CA	1.44
19.	New York, NY	1.39
20.	San Francisco, CA	1.34

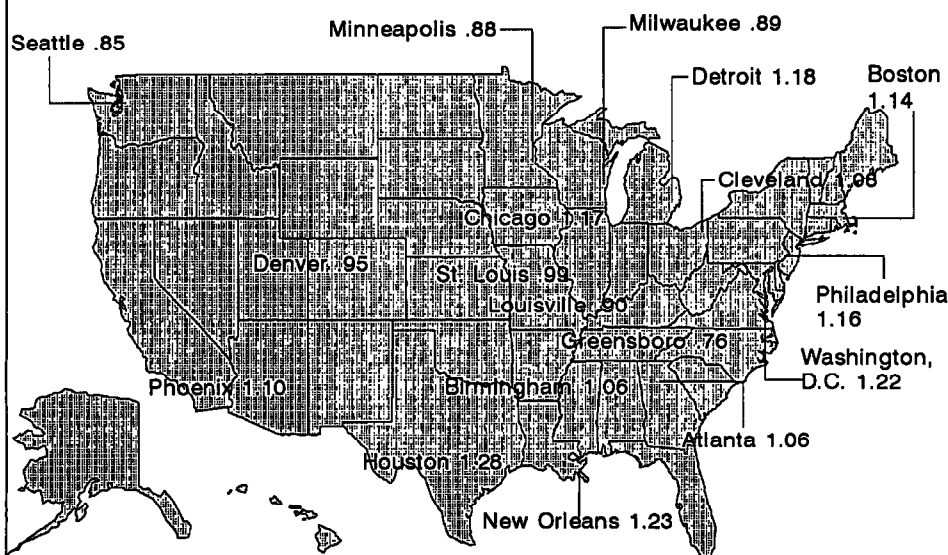
factors produced for the 33 examined Texas cities fell into only the following five narrow ranges: 1.26-1.28; 1.20-1.21; 1.06-1.11; 1.01-1.03; and .89-.94.

The map on this page displays the factors for some major cities.

Contact me at my 1992 *Directory* address, or contact the CCA or the Society's library for copies of the paper.

Mean Group Medical Area Factor For Selected Cities

Nationwide = 1.00



Errata for TSA, Vol. 40

On page 665 (Part II) of Volume 40 (1988) of the *Transactions* of the Society of Actuaries is "Table 5 — Comparison of U.S. Population Annual Mortality Improvement Rates under Social Security Administration's *Actuarial Study No. 87* and the Society's Committee Deriving 1983 Table a." Please note that for age 35-39, Projection G for males should be "2.00."

Annuities structured for safety

by Felix Schirripa

Basing the purchase of a group annuity contract solely on the current financial strength of an insurance company could be a costly mistake. Strong financials are necessary, but they are not enough to guarantee permanent security to participants. In addition, buyers need to evaluate the contract's structure and the insurer's ability to manage assets over a long period.

Whatever the reason for the purchase — economic value, settlement gain, asset reversion, or plan termination — annuity (i.e., closeout) contracts are permanent and irrevocable commitments. From this perspective, buying an annuity contract could be one of the most important fiduciary decisions defined benefit plan sponsors face.

So what is an annuity buyer to do? How can sponsors be assured that the contract they buy today will make annuity payments 50 years from now? Does the market offer a "bulletproof" annuity contract at an affordable price?

Modern designs emphasize security
Insurance companies are responding to these concerns by developing innovative participating (par) annuity structures that emphasize permanent security. In addition, some new contracts could reduce the true cost of annuitization and so benefit the sponsor and the participant.

Compared to conventional nonparticipating annuities, the new designs often require an extra premium. The extra up-front cost could range from 5-10% of the corresponding nonpar annuity premium. (As long as the extra premium falls below 10%, the contract should qualify for settlement treatment.) In exchange for the extra premium, however, the sponsor shares in favorable investment and actuarial experience.

As a result, par contracts should not be purchased using premium information alone. Favorable investment, early retirement, and mortality experience can, in some cases, reduce the ultimate cost below the premium charged for nonpar contracts. On the other hand, the

insurer absorbs catastrophic downside risks — mortality breakthroughs, early retirement, and investment losses — so additional premium payments are never required.

How modern annuity designs work
Designs vary from company to company, but most modern par contracts have some features in common. The more important elements are:

- **Separate account structure** — Contracts funded using separate accounts can normally be "walled off" from the claims of general account creditors in the event of insolvency. For example, New York Insurance Law Sections 4240(a)(12) and 7435(b) provide immunity from claims of other creditors. (In New Jersey, this was the result for Mutual Benefit's separate accounts.) Therefore, participants and the plan sponsor are assured that assets will be available to make benefit payments. The separate account structure creates a "bulletproof" annuity contract by eliminating the general account risk.

- **Investment flexibility/constraints** — High quality assets and tight duration matching between assets and liabilities are critical to the long-term success of these products. The value of using the separate account structure would be lost if there is too much investment flexibility. For example, a separate account invested in speculative assets provides little comfort to the buyer. On the other hand, removing all forms of investment discretion reduces the insurer's opportunity to add value by actively managing the portfolio.

A proper balance is needed. Restricting asset quality to investment grade and limiting asset/liability duration mismatches to within one-half year would be reasonable.

- **Visible operation** — The operation of the contract and separate account should be visible to the buyer. Fees, risk and profit margins, actuarial assumptions, and calculation of dividends should be revealed to the client. There is little reason to accept less than full disclosure (as is typically the case with nonpar contracts).

Until recently, these new separate account annuity structures had been available only to clients who were willing to commit to \$100 million contracts. At least one insurance company now is offering a pooled product that achieves economies of scale for a minimum of \$10 million per contract.

If the sponsor chooses a pooled separate account annuity contract, complete disclosure also would require an explanation of how investment results are shared. Further, each contract should be self-supporting, i.e., underwriting gains and losses should not be shared with other contracts. It would be inappropriate for one contract to subsidize another.

Buying a par annuity contract does not require special governmental approval. The decision to purchase conventional nonpar versus modern par is left to the buyer. In fact, the instructions to PBGC Form 500 (filing instructions for standard plan terminations) contemplate the use of par annuity designs. Participating contracts may be used to satisfy plan obligations if:

- The guarantee of benefits is unconditional, irrevocable, and non-cancellable
- Unfavorable investment, early retirement, and mortality experience do not decrease amounts paid to participants
- For contributory plans, participant contributions are not used to pay for the participation feature (i.e., residual assets must be allocated using the price of the equivalent nonpar contract)

Conclusions

The modern par contracts can help simplify the difficult fiduciary decision that sponsors face when they buy annuities. Besides the added security to participants, par contracts have the potential to lower the true cost of annuities and so are an important vehicle for the plan sponsor community.

Of course, these new annuity arrangements are not a panacea. Plan sponsors still should evaluate the insurer's financial strength, commitment to the business, and

continued on page 16 column 1

Book Review

Social Security: how sound, how desirable?

by Robert J. Myers

Social Security: What Every Taxpayer Should Know, by A. Haeworth Robertson. Published by Retirement Policy Institute, Washington D.C., Publications Division, Charlotte, NC, 1992, 704-553-9193, pp. xxiv, 321, \$40.

This book on Social Security — using the term to include both Old-Age, Survivors, and Disability Insurance (OASDI) and Medicare (Hospital Insurance, HI, and Supplementary Medical Insurance, SMI) — is largely very objective and educational. However, the average reader may not note the thread of subjectivity that runs through it. Robertson appropriately dedicates the book to “the actuaries of the Social Security Administration and the Health Care Financing Administration who endeavor tirelessly to provide the financial information needed to ensure that Americans will be able to keep the financial promises that one generation imposes upon another.”

Robertson was impelled to write this book because he is convinced that the public is badly misinformed about the underlying nature of Social Security and, if they did understand it, they would demand significant, sweeping changes. This is a very subjective matter. I am convinced that most people are satisfied with the system. They need only slightly more education about it and do not want all the thoughtful analytical presentations in this book.

The fact is that people are content, and rightly so, with only general knowledge about the many complex elements of our modern social and economic lives. For example, how many people know (or wish or need to know) what makes a television set work. What they are interested in is how to operate it, expecting that it will function faithfully when needed. This also applies to the Social Security program.

This book, however, will be interesting, informative, and even essential reading for students of Social Security and the general economy (as all actuaries should be).

The book was written on the basis of the situation in early 1990, including the actuarial estimates in the 1990 Trustees Reports, though it was not published until May 1992. By then, two additional Trustees Reports had been issued. The legislated program changes since early 1990 are summarized in an appendix. As it turns out, the later actuarial estimates show somewhat less favorable pictures, and so Robertson's pessimistic conclusions about the status of the Social Security program tend to be reinforced.

Incidentally, I found that the book contains several factual errors and omissions, although I recognize that, for such complicated programs, all details cannot be described. Yet, within such confines, precision and accuracy could have been better achieved. Anyone interested in a listing of 43 such items can contact me at my 1992 *Directory* address.

Chapters 2 to 7 give basic information about the benefit and financing provisions of the OASDI, HI, and SMI programs. They also give past experience and future cost projections in percentages of taxable payroll, according to the intermediate estimates. The author also effectively describes funding practices, including the concepts of “actuarial deficits” and “accrued liabilities” and their significance. He makes the important point that, over the long range, both OASDI and HI are not adequately financed under present provisions and that taxpayers should be made aware of this, so something can be done. However, he does not point out that most of this deficiency is due to HI, which I believe may not be in existence after a decade or two, being replaced by some sort of national health care plan.

The next 14 interesting chapters comment on topics such as the appropriateness of the earnings test, the proper minimum retirement age, whether people get their money's worth, the desirability of automatic adjustment of benefits, and the validity of the assumptions used in the actuarial estimates. The author tries to present all sides of the questions and succeeds reasonably well.

The most important part of the book may be the last three chapters, which deal with the future outlook for the several programs. Robertson believes that, although higher payroll taxes may be required, the public will object and that more general revenues will be used. He believes, as I do, that part of the problem can, and should, be solved by raising the minimum retirement age. He also fears that, with continuing inflation (especially if at a high level), the portion of the economic security needs met by the private sector will decrease, shifting to governmental programs. Also, he recognizes that Medicare may be changed beyond recognition in the next decade. Thus, it may not be financed on a payroll-tax social-insurance basis, and the deficit problem under such a basis will be shifted to other, perhaps more difficult-to-achieve, bases.

Robertson's conclusions are somewhat surprising in view of his generally objective approach throughout the book. He believes, “There is no reason for this country to continue with a social insurance system that is so controversial and unpopular and whose financial status must constantly be debated.” I do not agree that the program is controversial and unpopular, and I believe that debate about its financing is healthy.

Milton Friedman, a Nobel laureate economist, refers to the book as “an extraordinary accomplishment.” He comments, “As Mr. Robertson says, it needs at the very least a ‘massive overhaul,’ and preferably, despite his statement to the contrary, complete termination.” Robertson says that Social Security is not “understood” by the citizenry, is not perceived of as “fair and reasonable” by the majority, and “hinders the attainment of a healthy and productive national economy.” In saying this, he has a responsibility to give details on how he would restructure OASDI and Medicare, but has not done so.

Robert J. Myers, a past President of the Society of Actuaries, was chief actuary for the Social Security Administration from 1947-1970. He is professor emeritus of Temple University.

Specialty guides represent opportunities

by William H. Lewis, Jr.

A challenge?...An opportunity?...Maybe a challenging opportunity?

Have you ever had these thoughts as you looked at areas outside your actuarial specialty? The Society of Actuaries can help turn a challenge into an opportunity with Professional Actuarial Specialty Guides (PASG) to help pave the way.

Each PASG includes introductory material, a "road map" organizing topics related to an actuarial specialty, and descriptions of carefully selected papers, articles, books, and government publications. Guides are edited by one or more actuaries and then reviewed by experts in that specialty. They make sure that what's included is accurate, up-to-date, and useful for an actuary at any level of involvement.

Eight new PASGs covering U.S. and Canadian topics are available now or will be available soon. The new guides, as well as previously issued ones, are available from Donna Klehr at the SOA office. Single copies are free to members; multiples are available at reasonable cost. The SOA staff will help members obtain references mentioned in the guides.

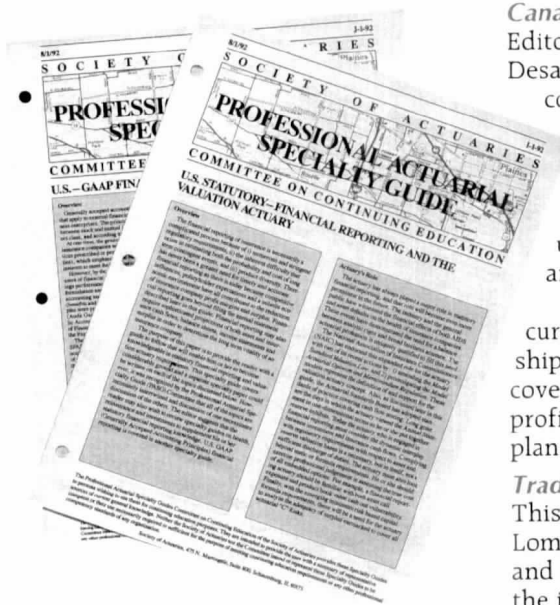
The new PASGs include:

U.S. Statutory Financial Reporting and the Valuation Actuary

Editor Marc F. Pitoniak has collected a thorough bibliography of readings on financial reporting for U.S. insurance companies.

General categories covered include statutory financial reporting, regulation and professional standards, valuation methodology, and the valuation actuary.

In this guide, the editor states that financial reporting of insurance is complicated because of the many stringent regulatory requirements, of the inherent difficulty in estimating both the probability and cost of long-term contingent events, and of product diversity. "The purpose of this guide is to enable a reader to become knowledgeable in statutory financial reporting and valuation actuary requirements," Pitoniak writes.



U.S. GAAP Financial Reporting

Bruce R. Darling's guide provides an overview of generally accepted accounting principles (GAAP) as they apply to external financial reporting of publicly owned business enterprises. GAAP principles vary from product class to product class and according to the purchase status of the business.

The introduction reviews material that describes the evolution of GAAP principles as they apply to stock life insurance companies. Darling also covers sources on the range of authoritative accounting guidance (AICPA, FASB, and others).

He also describes where to obtain information on actuarial standards of practice and principles not easily gleaned from original guidance. As he explains, "...Widespread adoption of such interpretations in practice may result in de facto recognition as being generally accepted."

Financial Reporting and the Actuary — Canada

Ken McFarquhar provides a quick summary of the volatile environment faced by a valuation actuary and the difference between Canadian and U.S. requirements. He also provides a comprehensive list of relevant government regulations and requirements and published professional papers that touch on Canadian financial reporting, including the 1991 law expanding the role of the actuary.

Canadian Pensions

Editors Malcolm Hamilton and Paule Desaulniers have put together a comprehensive reading list related to pensions in Canada. This guide covers taxation, minimum pension standards, accounting for pension costs, valuation of defined benefit plans, and design of retirement programs.

Information also is available on current issues such as surplus ownership and inflation protection. Also covered are multi-employer plans, profit-sharing plans, and pension plans for public sector employees.

Traditional Marketing

This guide, assembled by Lucian J. Lombardi, covers marketing "how to" and legal aspects related specifically to the insurance industry. A sample of sections include: "Understanding the Process," "Evaluating a Marketing Strategy," "Managing the Marketing Effort," and "Regulation of Marketing and Sales Promotion." This PASG, because of its topic, uses sources from within and outside the insurance industry.

Mergers and Acquisitions—Employee Benefits

According to Editor Curtis Morgan, "Recent promulgations regarding the accounting for post-retirement pension and welfare benefit programs have clarified the importance of these programs as company obligations....A company considering the acquisition of, or merger with, another company or the divestiture of an operation may find that issues regarding employee benefit programs have a profound effect on the viability of the transaction.

"...Recapture of pension and surplus has both raised the visibility of benefit programs as corporate assets and increased employee concerns regarding benefit security in the face of corporate restructuring."

This guide offers readings in due diligence, the assimilation process, and using employee benefit programs as takeover defenses.

Individual Disability Income

Editor Robert Beal has collected a comprehensive selection of readings. He sees the actuary's involvement in this product as crucial to the success

continued on page 13 column 1



Basketballs and ping pong balls

A reader seeks comments on the relative probabilities for success in what the National Basketball Association (NBA) calls the "lottery." The 11 teams who don't make the playoffs are thrown into a lottery to determine the order in which they will draft college players. The team with the worst record gets 11 ping pong balls; the next worst, 10 balls; and so on, down to one ball. The balls are identified by team and thrown into a hopper. One is randomly drawn, and that team gets first pick among available college players. The probability for any team is simple: divide the number of balls it is allotted by 66 (total).

So far, so good. But what is the probability of getting the second pick? It's important to know that any remaining balls of the first team chosen are not removed from the hopper. If one of these balls is chosen, it is discarded and the selection continues.

For example, if Minnesota (worst team this year, with 11 balls) were the first team chosen, then 65 balls remain. Each of the other 10 teams has a probability of being the second choice determined by the number of balls divided by 65. But is it? If the second ball chosen belongs to Minnesota, then it is discarded and probabilities are now the number of balls divided by 64, and so on.



Six of these young geniuses, under the watchful eye of the Albert Einstein statue at the National Academy of Science Building, made up the U.S. team that took second place among 52 countries at the International Math Olympiad in Moscow. These eight top scorers in the USA Math Olympiad were honored in Washington, D.C. Joseph Applebaum (front row, far right) represented the SOA, one of the competition's sponsors. The students are (front row, L-R) Sergey Levin, Michail Sunitsky, Andrew Schultz, Akira Negi, (back row, L-R) Robert Kleinburg, Lenhard Ng, Wei-Hwa Huang, and Kiran Kedlaya.

What then is the probability of Team A being the second team chosen? This question can be subdivided: (1) given that no balls have been drawn yet or (2) given that A is not the first team (that is, just one ball has been drawn and it does not belong to A). Obviously, these are different questions.

The reader, who prefers to remain anonymous, says he only poses the question, but does not answer it. He leaves that up to "some enterprising readers."

Records are made to be broken

SOA Fellow Leonard F. Helfgott believes his son may be the youngest person known to have passed Exam 100. Mark Kinzer's nephew, Jim Rath, was 15 years old (see October 1991 *Actuary*), but Craig Helfgott took Exam 100 on May 12, 1992, two days before his 15th birthday. The proud father says Craig achieved a score of 10 on the exam, but envisions a career in nuclear physics, not actuarial science.

On the other hand, Jack Newman lays claim to the longest travel time from passing his first exam to becoming an ASA. He passed his first two actuarial exams in spring 1956, when he was a freshman at Cornell. He decided to major in physics and got his Ph.D. in mathematics. Years passed, he said, and while teaching,

he passed Part 2 (now Course 110). "More years passed," he said, "and I found myself unemployed. In January 1987, I was fortunate to obtain my first actuarial position and immediately began studying for my next exam. After passing three sets of exams ending in May 1988, I became an ASA, 32 years after sitting for and passing my first actuarial exam. Can anyone top this?"

Newman says he is happy with his new career and is studying for Fellowship exams.

Attention: Exam I-445 candidates

Several questions on the I-445 examination this November will be based on a long case study. Data for these questions were sent to all those registered for this examination. If you have not received the case study for Exam I-445, call the Society office at 708-706-3583.

Guides cont'd

of any company marketing this highly focused product.

According to Beal, "The complexity of the business and the potential volatility of the results demand that the actuary be proactively involved in most aspects of the business, including marketing, underwriting, claim management, product design, pricing, valuation, financial reporting, and analysis."

Readings are divided into sections related to the actuary's role, individual markets, product design and pricing, experience, reserves, underwriting and claim management, and reinsurance.

Individual Medical Expense Insurance

Editor Anthony Houghton focuses on pricing, reserving, and complying with regulations for health insurance.

The SOA Continuing Education's Professional Actuarial Specialty Guide Committee is charged with developing guides for all major actuarial specialties. All guides and updates are routinely sent to actuaries in related specialties.

SOA members with topic ideas or who are interested in editing a guide should contact Louis M. Weisz, chairperson. SOA members are already editing other specialty guides for release in the near future.

William H. Lewis, Jr., is president, Lewis & Ellis Inc., and a member of the Professional Actuarial Specialty Guides Committee.

New journal seeks authors

SOA member Colin M. Ramsay, associate professor of actuarial science at the University of Nebraska-Lincoln, will serve as editor of a new journal to begin publication in April 1993. *The Journal of Actuarial Practice* will be published twice a year.

Ramsay is asking for "practical and readable" technical and nontechnical articles on all aspects of actuarial practice. Submissions will be reviewed for content, originality, and clarity. For more information, write *The Journal of Actuarial Practice*, c/o Absalom Press, P.O. Box 67175, Lincoln, NE 68506, or call Ramsay at 402-472-5823.

Election results cont'd

Insurance and Pension Research, University of Waterloo; Paul R. Fleischacker, vice president with Towers Perrin, New York; John H. Harding, president and chief operating officer with National Life Insurance Company, Montpelier, Vermont; Daniel J. McCarthy, consulting actuary with Milliman & Robertson, Inc., New York; Patricia L. Scahill, principal with William M. Mercer, Inc., Baltimore, Maryland; and Robert D. Shapiro, president of The Shapiro Network, Inc., Milwaukee, Wisconsin.

As a result of Section elections, nine special interest Sections have added new Council members with three-year terms:

Education & Research Section — Sarah L. M. Christiansen, Charles S. Fuhrer, Aaron Tenenbein

Financial Reporting Section — Frank J. Buck, Bradley M. Smith, Michael L. Stickney

Futurism Section — Paul A. Gewirtz, Kenneth E. Polk, Dennis R. Barry

Health Section — David S. Helwig, Joan E. Herman, Nancy F. Nelson

Investment Section — Cindy L. Forbes, Robert R. Reitano, Bruce F. Vane

Nontraditional Marketing Section — Jeffrey C. Harper, Jay M. Jaffe, Nancy A. Manning

Pension Section — Silvio Ingui, Judith E. Latta, Neil A. Parmenter

Product Development Section — Bradley E. Barks, Timothy C. Pfeifer, Klaus O. Shigley

Reinsurance Section — Wayne D. Bidelman, Kin K. Gee, John E. Tiller, Jr.

Amortization cont'd

$(R - P_i)$ interest payments equals the present value of the interest payments required on outstanding principal. Such payment for the end of interval h is $i[A - (P_1 + P_2 + \dots + P_{h-1})]$.

Despite the wealth of choices, we believe the actuarial view would be to require that each payment R be first applied to pay interest on outstanding principal and the balance of the payment be applied to principal repayment. This is a well-defined and widely understood amortization process, because it synchronizes the interest payments with the outstanding principal. A process using P_i 's is more complex but seems to be acceptable to the accounting profession.

Analogously, one can decompose life annuity payments into a principal repayment amount and a residual growth amount. Our actuarial view would lean to first determining the growth (under interest and survivorship) of the outstanding principal and using the remainder of the annuity payment to repay principal. Such a process has been followed in our life annuity illustration to provide the analogue of our actuarial view of compound interest amortization.

Cecil Nesbitt is professor emeritus, Department of Mathematics, at the University of Michigan. Marjorie Rosenberg also is with the Department of Mathematics at the University of Michigan.

Seminar Calendar

Cash Balance Plans (8 hours of EA credit)	October 21-22	Arizona Biltmore Phoenix
Annual Meeting (12 hours of EA Credit)	October 26-28	Washington Hilton Washington, D.C.
Symposium on Current Issues under IRC Regulations 7702 and 7702A	November 5-6	The Willard Inter-Continental Washington, D.C.
Critical Issues in Contemporary Risk Selection	November 16-17	San Antonio Hyatt San Antonio
Teleconference: 401(a)(4): Amended Regulations (4 hours of EA Credit)	November 19	Various locations

For registration information, please call the Society of Actuaries Continuing Education Department at 708-706-3545.

The complete actuary

Paradigm shifts

by Jon Rosenblith

“If everyone believes that something is true, it is true.” This challenging statement, made 20 years ago by an industrial engineering professor, stimulated a heated, two-hour discussion by a group of 30 students in an introductory class. By the end of that time, the class had discovered several key points that I still remember vividly:

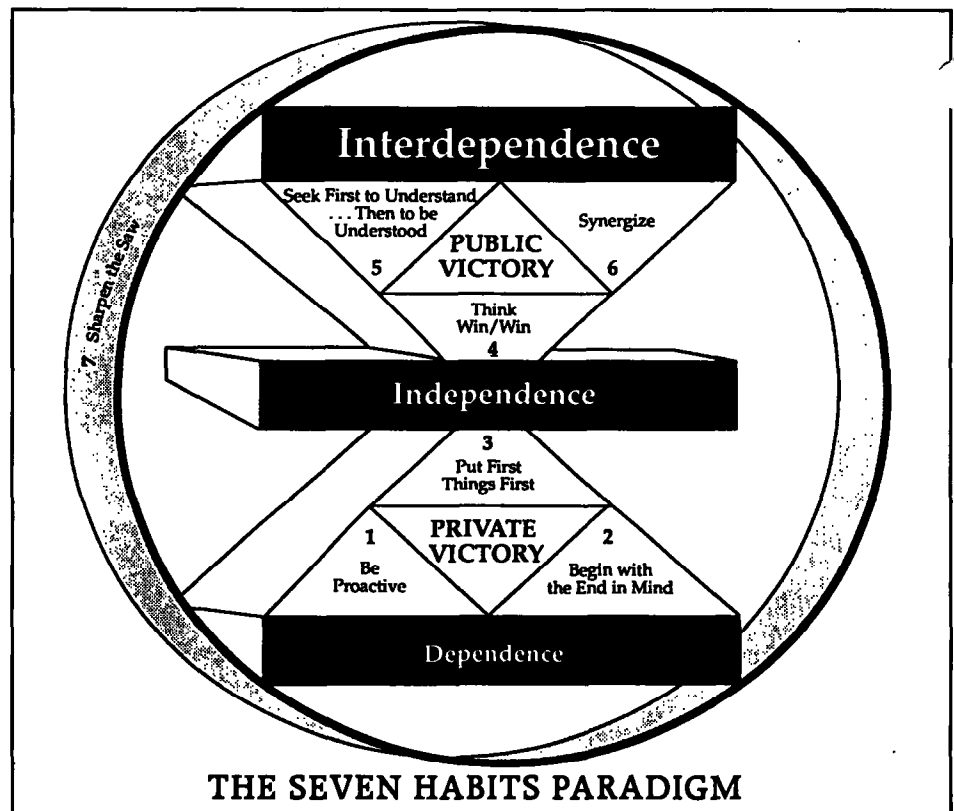
- We all live according to our “model of reality” (our beliefs about how the world works).
- No one’s model is complete or accurate.
- The ability to create new, more effective models is necessary for large effective changes in results.

These points can be unsettling for industrial engineers, actuaries, or any professional who is supposed to “know the answers.” They can be just as uncomfortable for companies and industries. It is much more comfortable, and dangerous, to believe that the “models” you already know are solid and unchanging or that you, the model builder, have already “substituted facts for appearances.”

The big picture and paradigm shifts
Paradigms are defined as examples, patterns, or models. A paradigm shift occurs when people first perceive “the big picture” in a new way. The new perception allows them to solve problems that were unsolvable by their old models.

The term “paradigm shift” was introduced by Thomas Kuhn in his book *The Structure of Scientific Revolutions*. Most significant breakthroughs in the field of scientific endeavor were breaks with tradition and with old ways of thinking.

In today’s fast-changing environment, understanding and being able to work effectively with personal, corporate, industry, government, and public paradigms have never been more important to the actuary. Actuaries who can develop the additional model building



skills of imaginatively questioning and testing their own and others' perceptions will prove invaluable to their clients. Those who cannot do this will create solutions that are effective only under stable, limited conditions.

Viewing ourselves

Dr. Stephen R. Covey has written extensively about paradigms and paradigm shifts in his book, *The Seven Habits of Highly Effective People* (1989, Simon and Schuster). A summary of some key points are:

- The more aware we are of our basic paradigms and the extent to which we have been influenced by our experience, the more we can take responsibility for those paradigms, examine them, listen to others' perceptions, and thereby develop a larger picture and a more objective view.
- Our paradigms, correct or incorrect, are the sources of our attitudes and behaviors and ultimately our relationships with others. A paradigm is like a pair of glasses; it affects the way you see everything in your life.
- Some of our most important paradigms are our views of ourselves. Our “social mirror” is what we believe others think about us and how they react to us. From this partially come our “self maps,”

as Covey describes in statements like, “I’m good with numbers,” or “I’m not a very good communicator.” We also are the social mirror for other people. We can use the principle of the social mirror to encourage people to expand their limits, rather than to live within them.

- We should live from imagination, not from memory, because our potential often is not accurately reflected by the social mirror. It is, at best, only partially correct.

Habits for effectiveness

Covey presents a major paradigm of effectiveness development for individuals. The figure on this page shows how to move from dependence to independence through the development of personal skills, and then on to interdependence through the development of interpersonal skills. The seven habits are:

- 1) *Be proactive* — Base your choices on your values and accept responsibility for who you are and what you do. Do not blame others for the results of your choices.
- 2) *Begin with the end in mind* — Identify your personal mission, roles, and goals. Rewrite these regularly. This process “is almost more an act of discovery than an act of creation.”
- 3) *Put first things first* — Gain control of time and events by seeing how

they relate to your mission.

Prioritize activities based on importance to your mission versus urgency of the activity.

- 4) *Think "win-win or no deal"* — Understand that we live in an interdependent world. We must cooperate with others to succeed. Look for alternatives that allow everyone to win. If a win-win option cannot be found, agree to disagree with no resentments. This will leave the door open for future win-win deals.
- 5) *Seek first to understand, then to be understood* — Always diagnose a problem before prescribing a solution for it. "Most people listen, not with the intent to understand, but with the intent to reply....By seeking to understand, we gain influence in the relationship." We may see another, more effective solution.
- 6) *Synergize* — "Synergy lets us discover jointly things that we are much less likely to discover by ourselves." We communicate with respect and creativity, while looking for a mutually satisfying solution with people who see the world differently. "Relationships that join people of different abilities and styles of thinking are opportunities for synergy."
- 7) *Sharpen the saw* — Take small positive daily steps to maintain and increase your personal production capabilities. This includes physical, mental, emotional/social, and spiritual exercises. Dedicate at least one hour a day to this activity.

The results achieved by any paradigm can be improved by comparing periodically the paradigm's assumptions with the most recent information available about the world in which the paradigm operates. Covey says, "It doesn't matter how good your behavior is or how good your attitude is if your paradigm is flawed." In a world of ever-faster changes, paradigm shifting becomes a necessary skill for the actuary or any other professional.

For more information, attend Teaching Session 8 on "Paradigm Shifts," offered Monday, October 26, at the Society of Actuaries' annual meeting in Washington, D.C.

Jon Rosenblith, associate actuary of Managed Care Product Development at Bankers Life and Casualty Company, is a member of the SOA Committee on Management and Personal Development.

Society publishes 2 new books

The Society of Actuaries has published two books that are now available.

Insurance Risk Models

This book by Harry H. Panjer and Gordon E. Willmot was funded by the Actuarial Education and Research Fund (AERF). It examines the mathematical modeling of the frequency and the severity of insurance losses, as well as the resulting total losses for a block of insurance business. The applications in all branches of insurance relate to the pricing and solvency of insurance and reinsurance. The book provides theoretical and practical justification for many mathematical models. The 442-page hardcover book sells for \$35 (U.S.). It is on the SOA syllabus for the Intensive Seminar on Risk Theory, Course 152.

Panjer and Willmot teach in the Department of Statistics and Actuarial Science at the University of Waterloo, Ontario, Canada. Panjer received his bachelor's, master's, and doctoral degrees in actuarial science and statistics from the University of Western Ontario. He has devoted most of his career to teaching and research in actuarial science at the University of Western Ontario, the University of Texas at Austin, and the University of Waterloo, where he is a professor. Willmot received his bachelor's, master's, and doctoral degrees in actuarial science and statistics from the University of Waterloo, where he is an associate professor. His research is in the areas of risk theory and other related areas such as statistics and queueing theory.

Options and the Management of Financial Risk

This book by Phelim P. Boyle introduces some basic concepts in modern investment finance. These concepts not only are relevant to the discipline of actuarial science but also provide the foundation for a wide spectrum of applications in the finance field. These models provide a theoretically sound framework for dealing with uncertainty and are based on strong economic intuitions. This 210-page softcover book will sell for a price yet to be determined.

Boyle holds the Harry A. Brandt Distinguished Chair in Financial Markets and Options at the University

of Illinois at Urbana-Champaign. He previously spent nine years at the University of Waterloo. He gained actuarial experience in Ireland and the United Kingdom before teaching at the University of British Columbia, Canada. Boyle was educated at Queen's University Belfast and received a Ph.D. in theoretical physics from Trinity College, Dublin.

Early release copies of TSA papers

The following papers have been accepted for publication in Volume 44 of the *Transactions*. Members who would like an early-release copy before it is published in a preprint should send \$5 for each paper to the SOA Books and Publications Department.

"A Practical Guide to Interest Rate Generators" by Sarah L. Christiansen

A new standard valuation law in the United States requires an actuarial opinion of asset adequacy. Often this opinion will be based on cash flow testing to assess the C-3 risk. Selection of interest rate scenarios is a critical part of any model used to perform cash flow testing. This paper discusses various methods of obtaining interest rate scenarios with particular emphasis on those methods that produce stochastic scenarios.

Several previously published generators are reviewed, along with two new generators. All easily programmable generators are parametrized for appropriate adjustments of bounds. A method of comparing generators was developed to aid an actuary in choosing a generator and to establish statistically that the generators reviewed are all distinct.

"Internal Rate of Return as an Evaluator of Tax Planning Strategies" by Edward L. Robbins and Kenneth A. LaSorella

The rapid evolution of tax law has seen a host of ambiguities and opportunities spring up, often with tax reserve issues, an area where large planning issues commonly are encountered. Since 1988, the industry also has confronted a series of both

continued on page 16 column 1

Annuities cont'd

ability to manage assets and liabilities. Face-to-face meetings are the best way for plan sponsors to evaluate an insurer's capabilities and commitment to this line of business.

Felix Schirripa is vice president, Metropolitan Life Insurance Company.

TSA cont'd

tax laws and statutory requirements that tend to push statutory liabilities and tax basis liabilities further apart.

Planning activities that bring tax basis liabilities and statutory liabilities closer often are valuable tools. Many companies would find certain tax planning activities desirable except for the statutory surplus strain that such activities often cause. This paper attempts to provide a means of evaluating those strategies for both stock and mutual life insurance companies under current law by computing an internal rate of return to measure their value. It provides guidance in computing a standard against which to measure that rate of return.

"A Practical Algorithm for Approximating the Probability of Ruin" by Colin M. Ramsay

A simple and practical algorithm for approximating the probability of ruin is developed. The approximation has an attractive feature in that it uses only the first four sample moments of the claim size distribution and the premium loading factor. The key concept is to fit a second order mixed exponential or a gamma distribution to the pdf $(1-P(x))/p_1$ where $P(x)$ is the claim size cdf and p_1 is the mean claim size. This approximation is compared to exact results and to the Cramer-Lundberg, Beekman-Bowers, and de Vylder approximations. Its accuracy generally is equal to that of the Cramer-Lundberg approximation and superior to the other two.

In memoriam

George Y. Cherlin FSA 1955,
ACAS 1961, MAAA 1965,
FCA 1982, EA 1976

Maurice E. Comfort FSA 1948,
FCIA 1965

Roderick Fraser-Petherbridge
ASA 1950, FIA

E&E developments cont'd

where there are few candidates.

Recently, the Society retained a consultant from the Rand Corporation who is an expert in professional education. He has had experience with many other professional organizations. His recently completed report includes several valuable ideas that we will pursue in areas such as examination construction and validation of pass-mark requirements.

The system will continue to be driven by the very valued efforts of E&E committee volunteers. At the same time, we will rely more on full-time Society staff, including an education professional and four FSAs. We will find the right mix of resources to maintain the E&E system as one of the finest professional educational systems in North America and as one of the key strengths of our profession.

Bruce Moore is Vice-General Chairperson of the Education and Examination Committee, Chairperson of the Investment/Financial Task Force, and senior vice president and chief financial officer, Prudential Insurance Company of America.

New E-Mail directory

William S. Jewell at the University of California in Berkeley is organizing an Electronic Mail (E-Mail) directory "to improve communication and encourage collaboration across the insurance research community." Using the chain letter approach, he has collected almost 80 E-Mail correspondents' names, affiliations, and addresses from 19 countries, mostly academics, using Internet, Bitnet, or their national equivalents.

Jewell asks that if you are part of the actuarial science, insurance mathematics or economics, risk theory, or similar community and want to participate, please send an EMAX to him at: <wsj@euler.Berkeley.edu>. Please give your full name, academic or business affiliation, address, and the external form of your E-Mail address. He especially encourages participation from governmental bureaus, research institutes, and insurance companies that are using commercial networks.

Dear Editor:

Head of Georgia State program protests withheld exams

In October 1985, the Society of Actuaries announced the implementation of a forward-thinking, but long overdue, policy on the distribution of "all multiple choice examinations" to its students. While this promise never was truly fulfilled (only four of more than 30 Course 100 and 110 exams for 1986-1991 have been released), it nevertheless provided an educational benefit of inestimable proportions to higher-level actuarial students during the six-year period.

With no prior notice, the Society withheld distribution of its November 1991 examinations. Indications are that such a policy is being continued in 1992. On behalf of many actuarial students sorely disappointed with that policy, I would like to register a strong protest.

In the academic world, especially at the undergraduate level, students often perceive that an antagonistic, competitive relationship exists between themselves and their instructors. Effective teachers work diligently to show their students that they share the ultimate goals of learning and thorough understanding. This antagonistic relationship seems to have existed for years, at or just below the surface, between the Society of Actuaries and its students. This previously was largely because of the secrecy of the examinations and the sense that the correlation between textbooks and other study materials and the exams themselves was not as high as it should have been. For six years, the Society eliminated the source of this criticism by publishing the exams.

The students' reaction to the recent change is predictable. Many students believe that examiners simply are unwilling to construct new tests with each exam administration. Exacerbating the effects of the policy change is the Society's attempt to implement a "gag rule," by which candidates are coerced into vowing not to discuss the examination with anyone, even after all the exams have been completed. This rule seems not only to be of dubious legality, but also is certain to increase antagonism toward the Society. Further, such a "gag rule" is certain to be ignored by many students.

The Society's argument that it wishes to repeat selected questions to compare test performance levels from year to year rings very hollow. Any positive benefit of such a procedure is far outweighed by the learning opportunities provided by actuarial test questions and by the Society's credibility in the eyes of its future members.

Examinations of other major actuarial organizations, notably those of the Joint Board and the Casualty Actuarial Society, are made available shortly after they are administered. Many other standardized tests are made public as well. High-school students, for example, may obtain five of the six versions of the Scholastic Aptitude Test used in any single year.

Actuarial students devote countless hours to examination preparation, realizing that their careers largely depend on their test performances. A strong case can be made for disclosure to each unsuccessful student of examination questions and a detailed analysis of his or her answer sheet. Instead, the Society appears to be retreating toward secrecy.

The Society's 1985 promise to actuarial students was justified by the following statement: "The E&E Committee believes this change will assist candidates in preparing for examinations and also will ensure that all candidates have equal access to prior examinations." I respectfully request that the current E&E Committee reconsider its recent position in the interests of its students, its own credibility, and the overall quality of study materials and of actuarial education.

Professor Robert W. Batten

Reply from Neville Henderson, Education and Examination General Chairperson:

The E&E Committee shares your concern with the education of candidates interested in becoming actuaries. Sample examinations do provide candidates with a concrete way to gauge their proficiency with the material and techniques being tested on the SOA exams. With a few exceptions, most courses have several recent sample examinations available to candidates. For the exams where the type of questions has changed substantially, the exam committees have developed new sample exams for candidates to use.

While we share your concern, we strongly disagree with the implication that the desire to compare performance levels over time is of little consequence. Repeating exam questions enables the E&E Committee to set exams that assure that a consistent level of performance is required to pass. Ensuring high and consistent standards for passing the SOA exams is a significant concern.

The E&E Committee is actively considering its policy on making sample exams available. Any decision will come after careful consideration of balancing the concerns of educational benefit and examination standards, with a view to treating all candidates equitably.

President-Elect explains Academy ties
I have discussed with many Society members the representation they have in the governance of the American Academy of Actuaries (AAA) and the composition of the Actuarial Standards Board (ASB). Unlike the SOA, which has competitive elections, the AAA elects officers and Board members from a single slate.

The governance of the Academy is directly linked to its constituent U.S. actuaries through their organizations. How are SOA actuaries represented?

The SOA President and President-Elect automatically serve on the Academy Board as fully accredited directors. They and the presidents and presidents-elect of all the U.S. bodies representing actuaries, along with the Academy's past president, are the nominators of the Academy's single slate of officers and at-large directors. This slate is proposed at the Academy's annual meeting and voted on by members present.

The Academy coordinates its activities through practice councils chaired by Academy vice presidents. SOA members are interested in the Pension Practice Council, Health Practice Council, and Life Practice Council. SOA Section chairpersons with related interests are members of these councils, plus some SOA Board of Governors members. The SOA President and President-Elect also may sit on AAA councils. This year they are members of the Life Practice Council.

The AAA president or president-elect regularly gives reports to the SOA Board of Governors, with appropriate discussion.

ASB members are selected by the presidents-elect of the constituent U.S. bodies, plus the president-elect and the president of the Academy, who serves as chairperson of the group. This same group selects members of the Actuarial Board for Counseling and Discipline (ABCD).

SOA President Don Sondergeld and I take our Academy responsibilities very seriously. All U.S. SOA members are eligible to be Academy members (or will be when they meet the Academy's experience requirement) and should be members so they can participate directly in Academy activities. President Sondergeld and I create another access point, and through our Academy ties are always ready to receive comments and ideas.

Walter S. Rugland

Training actuaries in Pakistan

When Pakistan nationalized life insurance in 1972, we had eight fully qualified actuaries in our country. All were Fellows of the Institute of Actuaries, London. After nationalization, we gained three or four new Fellows who had started their studies before nationalization. Others emigrated, so by 1984 the number of FIAs remained about the same as in 1972.

State Life, the nationalized life insurance body, tried to recruit actuarial trainees, but without worthwhile results. By 1984, the situation had become alarming. I was on the board of directors of State Life then and decided to make a fresh start at recruitment. I based my decision on the following two elements:

- An actuarial stipend scheme for talented persons under the age of 20 with mathematical backgrounds. This would lead to regular employment after two years subject to adequate exam passes. Qamaruddin Siddiqui, then chairman of State Life, immediately agreed to this and deserves the profession's thanks, as does M. Mazharuddin, who helped start and run the scheme.
- Instead of the Institute examinations, Pakistani students would switch to the SOA examinations. One reason was that the Institute no longer offers a half-way designation; the Society has the ASA. An ASA would have something to show for his or her work if, like many, he or she does not reach Fellowship.

continued on page 18 column 1

Dear Editor cont'd

The SOA held exams in Karachi, supervised by S.A. Zahid, in March 1986. Karachi was not a permanent overseas center then, and only those candidates who had passed at least one SOA exam could write there. In April 1986, the SOA established Karachi as an exam center.

The first six students were selected carefully in February 1986 after a nationwide advertisement, followed by tests in algebra, calculus, and English. Students had two study periods a week during office hours in addition to home study. Also, S. Subzwari taught Course 100, and later Course 110, for one period a week during office hours. A culture of success was developed by encouraging students to take exams only after proper preparation. Later, those who passed taught those in the rungs below them for one period a week in office hours as part of their duties.

And so this bootstrap operation got off the ground. From 1986 to now, 18 persons have been selected in Pakistan. Three have dropped out. The remaining 15 are studying actively for the exams (14 for the SOA). Six have become ASAs, and two hope to become FSAs soon. Three have emigrated, including two ASAs. So Pakistan still has 12 very bright young persons, including four ASAs, out of these home recruits. We hope to induct a few new recruits each year.

The Pakistani actuarial profession is still very small. But the new start made in 1986 has breathed fresh life into it. Life insurance was recently denationalized, and the pensions consultancy field has grown. There should be adequate opportunities for those studying now and for future

ORSA liaison points out articles and meetings

As SOA liaison representative to the Operations Research Society of America, I call SOA members' attention to an article by Ellerman, Sullo, and Tien, "An Alternative Approach to Modeling Recidivism Using Quantile Residual Life Functions," in *Operations Research*, Vol. 40, No. 3 (May-June 1992).

This seems appropriate in view of the emphasis in the June *Actuary* on alternative opportunities for life and health actuaries. The article states,

"Modeling and analysis of recidivism have been the focus of intense research during the past decade, primarily in conjunction with the policy-oriented assessment of various correctional, rehabilitative, and crime control programs."

An older article — "Clinical versus Actuarial Judgment," by Dawes, Faust, Meehl, 243 *Science* 1668 (March 31, 1989) — relates to psychology and has extensive references and notes. The distinction made between "clinical" and "actuarial" would not appeal to all SOA members.

Please contact me at my 1992 *Directory* address for abstracts and references.

I also call the membership's attention to the six sessions on AIDS research at the Operations Research Society of America/The Institute of Management Science Joint National Meeting in San Francisco November 2-4, 1992. These sessions will bring together AIDS researchers from a variety of disciplines with operations researchers who have studied AIDS in a synergistic attempt to cover major topics of importance.

I will send to anyone requesting them the three pages from *ORMS Today* describing these sessions and registration materials.

Nathan F. Jones

Meeting attendee asks for alternatives

I recently went to the SOA spring 1992 meeting in Anaheim. In general, the talks and handouts were good, but the format is inefficient. It seems that since continuing education has been required, the registration fees have increased. In addition to the registration fees, one can expect to pay about \$1,000 for hotel, food, and transportation for a two- or three-day meeting. If economic efficiency was not a very important virtue in years past, it certainly is now.

As an alternative to 12 hours of talking heads and handouts in the same room, we could have a video of the same with handouts.

Advantages to this approach are:

- One could sleep more comfortably through the show.
- If one wants to study the presentation, it could be shown at times of peak attention with the use of rewind.
- Hotel, food, and transportation expenses would be saved.
- The presentation could be edited to

stay on time and not duplicate the handouts.

- Lighting and sound could be optimized.

Against these advantages, as one attendee put it, "I feel guilty if I don't pay attention after my employer has paid so much for me to attend." Even this is not an ironclad counter-argument. The SOA could use credit teleconference presentations and have someone monitor attendance. As always, however, forced attendance does not ensure attention.

Doug Hawley

Reply by William C. Cutlip, Chairperson of the SOA Program Committee

Your suggestion that valuation actuary requirements be met through teleconferences or video tapes is interesting. The Society has used both methods for pension requirements. Teleconferencing has worked successfully, but there has been less demand for video tapes. Video tapes require extra work. The Continuing Education staff has developed exams to be used with the video tape, which must be graded and returned, so the actuary can demonstrate that CE requirements have been met.

Each year the Society presents a Valuation Actuary Symposium. In one-and-a-half or two days, you can meet CE requirements and get updates and new ideas in the valuation world. With advance planning, expenses for these sessions can be kept down. The Society's meeting arrangements include the opportunity for air fare discounts. This meeting, as opposed to a video tape, also offers the advantage of learning from contact with your peers. A *Valuation Actuary Proceedings* book is published six months after the session. A call to the Academy of Actuaries office could verify whether this book might help qualify for CE credit.

The Program Committee will look into teleconference and video opportunities and see if there is general interest.

ACTUCROSTIC

by Pete Hepokoski

A. One of the sacraments (2 wds.)

55 134 178 24 6 77 113 155 98

B. *Captains Courageous* author (2 wds.)

234 87 202 260 64 119 49 37 161

C. Teachings; directions

16 36 104 165 193 235 257 80 122
148 52 216

D. Annual gathering of cowboys and cowgirls (2 wds.)

129 221 9 40 73 259 142 105 86
18 136 44 93 123 147

E. Apparently free option when there is no alternative (2 wds.)

2 168 50 41 110 236 125 171 228
26 57 213 195

F. Lending locations

137 97 140 207 255 34 45 159 256

G. Seeking; requesting (2 wds.)

106 191 146 13 10 250 102 184 94
70 46

H. Actor Tony of *The Odd Couple*

74 12 111 101 126 163 65

I. Soldiers on unpopular detail (2 wds.)

249 69 22 157 83 100 79 149 188
61 205 237 218

J. In less offensive words

84 53 19 96 198 209 35 154 231
253 242 143 14 66 89

K. Displayed again, as a painting

5 173 141 71 206 252

L. Wordplays

43 208 131 185

M. Chances to win the grand prize (2 wds.)

127 215 232 63 8 48 245 115 175

199 158 33 152

N. Hires; makes use of

124 189 167 92 233 214 72

O. Candy-making events (2 wds.)

254 3 91 186 62 180 29 109 219 170

P. Gives power to; motivates

78 183 210 56 112 172 30 225 15

Q. Space group acronym

39 59 179 229

R. Meshes with; fits

88 120 194 145 21 67 200 220 156

S. F. Scott Fitzgerald submitted over 60 stories to it (3 wds.)

197 190 47 76 181 99 212 32 164

114 23 174 239 248 11 118

153 222 132

T. Chef's realm of knowledge (2 wds.)

58 42 244 182 107 258 144 117 20

196 160 85

U. In a very early stage

241 201 27 135 226 82

V. Participated in another's emotions

139 54 169 223 95 246 177 31 128 108

W. Style of some 1980s music (2 wds.)

230 130 217 1 243 121 151

X. Festive

68 133 150 176 162 187 7 116 90

211 51

Y. Easy; facile

103 204 28 166 238 4 60 192 81 17

1	W	2	E	3	O	4	Y		5	K	6	A	7	X	8	M	9	D	10	G		11	S	12	H	13	G	14	J	15	P		16	C	17	Y		18	D		19	J	20	T	21	R		
22	I	23	S	24	A	25	B		26	E	27	U		28	Y	29	O	30	P	31	V	32	S		33	M	34	F	35	J	36	C	37	B	38	A	39	Q	40	D		41	E	42	T	43	L	
44	D	45	F	46	G	47	S	48	M	49	B		50	E	51	X		52	C	53	J	54	V	55	A	56	P	57	E	58	T	59	Q	60	Y	61	I	62	O		63	M	64	B	65	H	66	J
67	R	68	X	69	I	70	G	71	K	72	N		73	D	74	H	75	B	76	S	77	A	78	P	79	I	80	C	81	Y		82	U	83	I	84	J		85	T	86	D	87	B	88	R	89	J
	90	X	91	O		92	N	93	D	94	G	95	V		96	J	97	F	98	A	99	S	100	I	101	H	102	G	103	Y	104	C	105	D		106	G	107	T	108	V		109	O	110	E		
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133	X	134	A	135	U	136	D	137	F	138	B	139	V		140	F	141	K	142	D		143	J	144	T	145	R		146	G	147	D	148	C	149	I	150	X	151	W		152	M	153	S			
154	J	155	A	156	R	157	I	158	M	159	F	160	T	161	B	162	X	163	H	164	S		165	C	166	Y		167	N	168	E	169	V		170	O	171	E	172	P	173	K	174	S	175	M	176	X
	177	V	178	A		179	Q	180	O	181	S	182	T	183	P	184	G	185	L		186	O	187	X	188	I	189	N		190	S		191	G	192	Y	193	C	194	R	195	E	196	T	197	S		
198	J		199	M	200	R	201	U	202	B		203	A	204	Y		205	I	206	K	207	F	208	L	209	J	210	P	211	X	212	S	213	E	214	N		215	M	216	C		217	W	218	I		
219	O	220	R		221	D	222	S		223	V		224	B	225	P	226	U	227	A	228	E	229	O	230	W	231	J		232	M	233	N	234	B		235	C	236	E	237	I	238	Y	239	S		
240	A	241	U	242	J	243	W	244	T		245	M	246	V	247	B	248	S	249	I	250	G	251	A	252	K		253	J	254	O	255	F		256	F	257	C	258	T	259	D	260	B				

Solution for June Actucrostic: What ever happened to recess? I remember bringing yo-yos and squirt guns to school ... and keeping them hidden until we were all set free. It was a time ... when you could abandon all rational thought and go completely berserk for 15 minutes on the playground. Don't you miss it? I think we all still need recess. — Tom Bakos, "The Mysteries of Life"



ACTUCROSSWORD

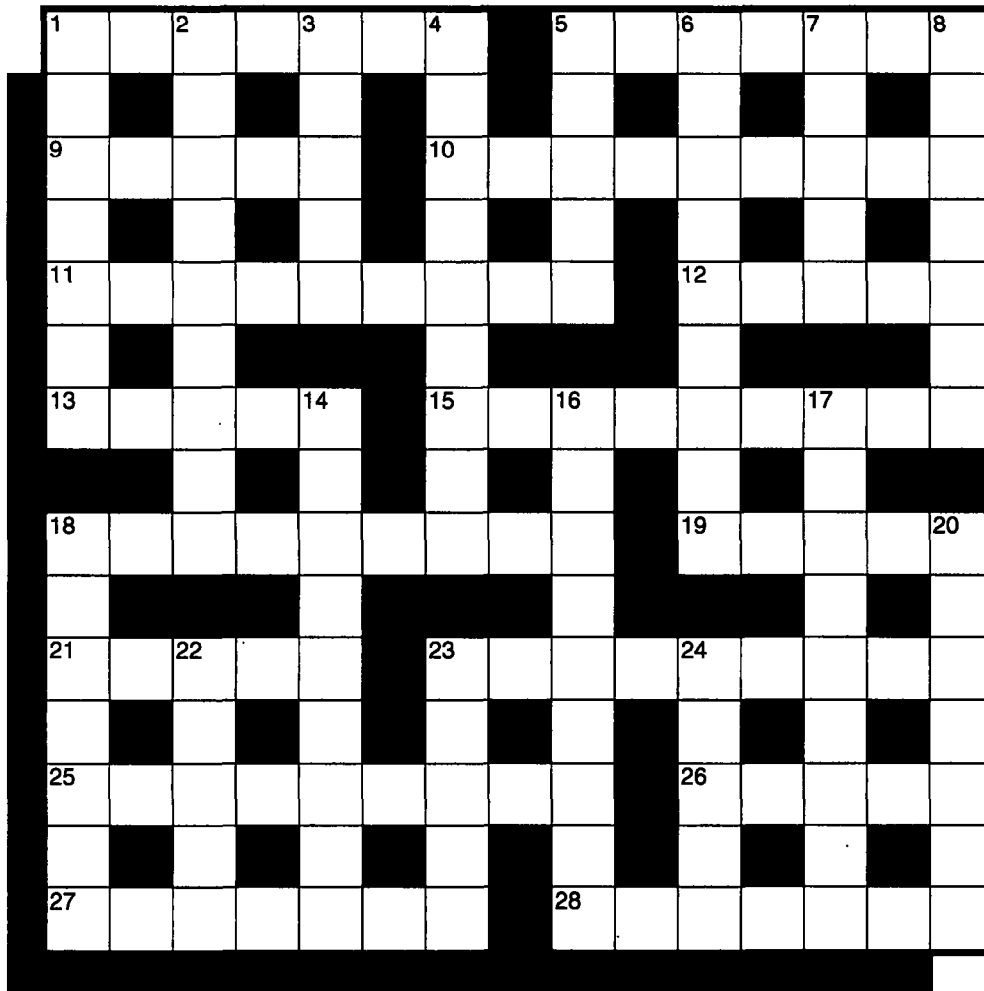
by Bob Hohertz

Across

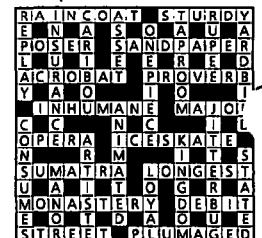
Down

1. It's very sticky to inquire, on reflection, after the lady (7)
5. Implement direction in movement of Copland's "Rodeo" (7)
9. Tree snake with maenad's heart (5)
10. Loved unwisely without end, Romeo and you could cycle in here (9)
11. Dunlop finagled in six funds (9)
12. Grievously lamed, getting the Croix de Guerre (5)
13. Imitating a sound made by a bullet (5)
15. Drilled and harassed, six recede (9)
18. Fellow has complete collection in New York city (9)
19. Ancestral spirits in Nepal are sacred (5)
21. "The valiant never _____ of death but once" — Julius Caesar (5)
23. Yank comes to Bath — like a one-horse town (9)
25. Electrical tubing and spring, wound tight, around key core (9)
26. Wet sauce, about two grams (5)
27. Reorient me and state your identification with me (7)
28. With ninety-nine out, it's still observed (7)

1. Directions to a North Sea port in Wales (7)
2. Out of slop mixed around charged group of atoms — the Big Bang (9)
3. Ruled officeholder framed by McCall's last editor (5)
4. They opposed the Roundheads and crushed ace rivals (9)
5. Before nine, Loki's daughter becomes a type of snail (5)
6. Native quarters have medical crisis (9)
7. Nothing eaten by "Metamorphoses" creator is like an egg (5)
8. Goaded demand governed (7)
14. Fruit stolen for cannon charge (9)
16. Note unknown wrongful action, one on removal by force (9)
17. Vital way smoke rises, covering limits of tree (9)
18. Doctor Steam is the leader of Fauvism (7)
20. Meandered, yet remained around river (7)
22. Flood floated quietly (5)
23. Very dark landing place (5)
24. Direction in desire did not exist (4'1)



September's Solution



100% SOLVERS — **June:** D Baillie, R Bailey & E Broge & M MacKinnon, J Braue, R Fleckenstein & P McEvoy, D Leapman, R Martin, G&D Mazaitis, D Weill

Send solutions to: Competition Editor, 35 Smithfield Court, Basking Ridge, NJ 07920

