



SOCIETY OF ACTUARIES

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# The Actuary

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**PROGRESS REPORT:  
PRE-1889 ACTUARIES**

An exciting array of reader responses has more than quadrupled our list of actuaries who practiced in North America too early in the nineteenth century to have become members of the Actuarial Society (see May issue, page 6). Though still incomplete, the roster now contains 59 names:

Francis B. Bacon	W. E. Harvey
Hugh C. Baker	John W. Hornor
Benjamin G. Balch	C. M. Hibbard
Stephen Ball	Edward Hsley
W. H. Beers	Benjamin Kendall
John Blackbridge	Benjamin D. Kennedy
Nathaniel I. Bowditch	George B. Lester
W. N. Bowers	Preston S. Lincoln
Joseph P. Bradley	James Weir Mason
W. A. Brewer, Jr.	Levi W. Meech
E. W. Bryant	Lewis Merrill
David Burke	I. J. Merritt
Charles Carpmael	Albert G. Milton
R. L. Case, Jr.	George L. Montague
Seth C. Chandler, Jr.	H. R. Morley
J. B. Cherriman	Carey Murdock
John E. Clark	Robert R. Pease
Osman D. Clark	Benjamin Peirce
W. J. Coffin	George W. Reed
N. G. De Groot	E. H. Sewell
Edward Dewey	Jacob Shoemaker
Amzi Dodd	Frederick Stancliffe
Ezekiel B. Elliott	Charles H. Stewart
John F. Entz	William P. Stewart
Pliny Freeman	John B. Thurston
David L. Gallup	A. M. Ward
Charles Gill	P. D. Whitmore
Leopold Goldman	Elizur Wright
Norman W. Harris	Lucy Jane Wright
Charles J. Harvey	

In some cases we lack enough particulars to be sure that the person's responsibilities warrant describing him as an actuary; in a number of others we have been given anecdotes easily worthy of inclusion in the historical essay that is in the works.

Please — those who have historical data but have not got around to writing — let us hear from you.

E.J.M.

**THE OPENING PROPOSAL FOR ACTUARIAL NOTATION REFORM**

by Frank G. Reynolds

(This is Article No. 2 in a series.)

Current reform negotiations have their origins in a paper presented to the 1968 International Congress of Actuaries by Boehm and Reichel in collaboration with nine other German-speaking actuaries. Its scope was vast as it undertook to give the rationale for a new system of notation, to develop a new International Actuarial Publication Language, to extend the notation to pensions and health insurance, and to provide a second computer-compatible language.

Paramount considerations were printability and compatibility with other mathematical fields. Accordingly, a linear, functional notation was offered. For symbols, it was proposed to use the 52 Latin letters, the lower case Greek letters, the ten Arabic numerals, and the fourteen common special characters.

The central letter of the present notation was to be retained. Modifying letters, such as "c" for continuous functions and "m" for insurances payable immediately on death (the "middle" of the policy year), could be appended.

Following the symbol were five blocks to be contained in brackets and separated by semi-colons:

- Block (i): Age(s) of the person(s) on whose survival payment depends.
- Block (ii): Information on
  - time of maturity
  - period of deferment
  - commencement ages
  - maximum duration
- Block (iii): Payment frequency, where appropriate.
- Block (iv): Interest rate.
- Block (v): Mortality table.

Thus, omitting the interest and mortality terms,

<i>Current</i>	<i>Proposed</i>
$\ddot{a}_{x:n}^{(4)}$	$\ddot{a}(x; x:n; 4)$
$\ddot{a}_{xy}$	$\ddot{a}(x; x:\omega) + \ddot{a}(y; y:\omega) - \ddot{a}(x,y; x:\omega, y:\omega)$
$\bar{A}_x$	$A_m(x; 0:\omega)$
${}_tV_x$	$V(A(x; 0:\omega), P(A(x; 0:\omega); \ddot{a}(x; x:\omega; t)))$

As can be seen, there was a considerable increase in volume, with, though, some increase in clarity for the beginner. A few shorthand rules were suggested for common cases.

For pension funds, the notation was to retain the same basic forms as for individual life functions but to use identifying letters for the six states—active, invalid, pensioner, widow, orphan, and full orphan. A sequence of these letters could be used when an individual goes through a series of states, e.g., the present value of a widow's pension for a person currently a pensioner would be  $\ddot{a}rw(\ )$ . For sickness insurance, the notation called for identifying the claim frequency and cost by a basic symbol modified to identify the sources of claims.

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## Actuarial Notation Reforms

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For the computer counterpart notation, the addition of letters P and T were used to translate a and  $\ddot{a}$  to upper case form. The stem was modified by a number or letter to identify each of the blocks in the printed notation. Lastly came the variables. Thus,

<i>Present</i>	<i>Proposed</i>
$\ddot{a}_x$	AT (X)
$\bar{A}_x$	AM (X)

Main objections were to the difficulty in reading the notation and the intermingling of letters and numbers. It was generally agreed that clarification and some fresh thinking were needed; the next few years proved fruitful. □

## THE E. & E. CORNER

*Ques.: For how much longer should we expect Parts 5A and 5B to be separate exams?*

*Ans.:* For all practical purposes, the Society now has eleven exams; in due course this will be made clear by renumbering.

This all began in 1980 when, to permit Part 4 to become also Part EA-1 (first exam for Enrolled Actuary in the U.S.), part of Life Contingencies was moved away to form the original Part 5A. Since then, the Risk Theory syllabus has been strengthened, and moved from Part 5B to 5A. And Part 5B itself has been evolving, with introduction of new texts.

*Ques.: What does a grade 5\* mean?*

*Ans.:* A grade of 5\* means that the candidate did not meet minimum standards required for each subject, but otherwise would have achieved a passing grade for the entire exam. Meeting a minimum standard for each subject is a current requirement of Parts 3, 5A and 5B; this is noted in the Course of Reading.

*Ques.: What should a student who observes apparent cheating during an examination do about this?*

*Ans.:* The student should immediately inform the exam supervisor or proctor, who will take whatever steps are needed to prevent cheating from continuing, and will report the incident in confidence to the Society office. Anonymity of all concerned will be assured by use of candidate numbers, not names. □

## Letters

(Continued from page 3)

### Ecclesiastes, 1:9\*

Sir:

Five score and seven years ago, Simon Schreiber, who was the original force behind establishment of Pacific Mutual Life Insurance Company, developed and marketed a universal-life-type product. The company's history (1928) by C.I.D. Moore describes the event thus:

"Mr. Schreiber . . . conceived the idea of separating the life and endowment elements of premiums paid for insurance, and depositing the endowment element in banks, which with the interest accumulated, would at the death of the insured be paid to the beneficiary, in addition to the life insurance. The Pacific Mutual could not carry out such a plan, hence Mr. Schreiber created for that purpose an independent concern, known as the Trust Fund Insurance Association . . . The pure life element (was) turned over to the Pacific Mutual, which carried the risk, and the endowment element placed on deposit with (a trust company) organized primarily for the purpose of receiving such deposits."

Sad to relate, the trust company "fell on evil days and was disrupted with considerable loss to the depositors."

Dennis M. Corbett

\*The thing that hath been, it is that which shall be;  
and that which is done is that which shall be done:  
and there is no new thing under the sun.

\* \* \* \*

## Board of Governors

Sir:

I think I have the answer to Peter W. Plumley's problem of an unrepresentative Board (May issue). Let's have the Board consist of everybody in the Society, even though it may be difficult to find a large enough Board Room.

Failing this, I propose that rather than imposing more quotas for representation, we do away with those that we now (albeit gently) lay upon our electorate.

The Society needs at its helm qualified people willing and able to lead us through our challenges and opportunities. The way to have younger members on our Board is to encourage younger members to get involved in our activities.

Robert E. Hunstad

*Ed. Note: See Edward S. Silins, "697 Volunteers", in this issue.*

### October Exam Seminars

Georgia State University will conduct the following:

Part 2	Part 5B
Part 3	Part 7E & EA-2
Part 4	Part 7I
Part 5A	Part 7(CAS)

Information from Prof. Robert W. Batten at his Yearbook address.

University of Waterloo will offer these:

Part 4	Part 7
Part 5A	Part 9
Part 5B	

Information from Prof. M. A. Bennett at his Yearbook address.

### Registration Fee For Retired Members Halved

Members whose annual dues are waived under Article IX of the By-Laws may now attend our Spring and Annual Meetings at half the regular registration fee. This has been voted by the Board of Governors.

The Washington Meeting registration fee for these members will therefore be \$55, not the \$110 shown in the meeting announcement. Those who have already sent in \$110 will be refunded \$55 automatically.