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ELECTION COMMITTEE INVITATION

Fellows who have the experience, interest and time to serve on the Board of Governors, but think our Committee might overlook them when compiling the customary first ballot listing, are cordially invited to write to me *before May* 2nd summarizing their accomplishments and background.

Robin B. Leckie
Chairman,
Committee on Elections

Letters

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Cruelty To Readers

Sir:

I'm sure that economic considerations influence selection of type sizes for Society publications, such as the *Record* and most recently "A Strategic Premise for Actuarial Education". And I suppose people like me can get bifocals or buy a magnifying glass.

But, mightn't the Society consider a minimum standard such as that now generally used in the *Transactions* or in *"The Actuary"?*

C. Lee Fischbeck

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Falling By The Wayside

Sir:

Linden N. Cole (Jan. issue) didn't mention one problem for pension actuaries in the 1976 exam restructuring—its timing. That change was announced at about the time ERISA passed; the transition period coincided with time-killing efforts to conform our clients' plans to the new legislation.

Faced with either passing four partials or losing Parts 6 through 8, I applied for Fellowship in the Conference. I wonder how many other career Associates reached a similar decision.

Frank D. Repp, Jr.

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Actuary's Cranium

Sir:

The way in which you identified the Actuarial Society members in the 1893 photo (Nov. 1982 issue) reminds me of a similar occurrence at the first meeting I attended as a Fellow more than 60 years ago. On that occasion the key to the names was simply a reproduction of the official picture, with the features of each face blocked out and numbers inserted.

This led a non-actuary to say, "I could tell readily that that was a group of actuaries: nothing in their heads but figures".

James E. Hoskins

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LEAST SQUARES, CONVENIENTLY

by Peter S. Kornya

When in the course of preparing statements it becomes necessary to estimate a minor item from prior years' data, here's a quick method easily taught to non-statisticians:

Rule: To arrive at the weights, just double the number of prior values and subtract two to get the weight for the last observed value. Count back by threes to get the other weights. For example, if five past values are used, the weight for the most recent such value will be 8, and the arithmetic will be:

Year	*Observed Value*	*Weight*	*Product*
1978	$ 11,102	−4	−44,408
1979	13,347	−1	−13,347
1980	9,006	2	18,012
1981	15,175	5	75,875
1982	17,222	8	137,776
		10	173,908
		Estimated Value	$17,391

If the entire regression line is needed, apply the rule in reverse. In this example, an extrapolated value for 1977 emerges at $8,950, and the estimated average annual increase will be (17,391 − 8,950) ÷ 6 = $1,407.

Although quite easily verified from the least squares formula, this method seems not widely known—meaning that I haven't come across it before. □

JOINT AND SURVIVOR FACTORS

by Ralph Garfield

In defined benefit plans, ERISA requires that the normal form of the pension must be on a qualified joint and survivor basis. This means that a pension is payable to the plan participant with at least 50% of it continuing to the participant's beneficiary.

Often the plan will define the pension in terms of a lifetime pension to the participant only. To compute the required qualified joint and survivor pension, the lifetime pension must be multiplied by a factor which we call "Joint and Survivor Factor."

For example, if we define f(100) as the 100% joint and survivor factor, i.e., the factor which when applied to the participant's lifetime pension produces a pension to the participant with the same amount (100%) continuing to the participant's beneficiary, then it is clear that if x is the age of the participant and y the age of the beneficiary then:

$$f(100) = \frac{\ddot{a}_x}{\ddot{a}_{\overline{xy}}}$$

An often posed question is what happens to f(100) if the interest rate changes. The well known answer is that as the interest rate increases, f(100) increases and vice versa. A simple way to verify this is as follows:

$$f(100) = \frac{\ddot{a}_x}{\ddot{a}_x + \ddot{a}_y - \ddot{a}_{xy}}$$

Now choose a particular set of mortality rates for y, namely, y is immortal. Clearly under this assumption

$$\ddot{a}_y = \frac{1}{d} \quad \text{and} \quad \ddot{a}_{xy} = \ddot{a}_x$$

Thus:

$$f(100) = \frac{\ddot{a}_x}{\ddot{a}_x + \frac{1}{d} - \ddot{a}_x} = d\ddot{a}_x = 1 - A_x$$

It is clear that as i increases, A_x decreases and $1-A_x$ increases. Note also that since f(p), i.e. the p% joint and survivor factor, equals:

$$\frac{f(100)}{(1 - \frac{p}{100})f(100) + \frac{p}{100}}$$

and the derivative of this factor with respect to f(100) is positive, the same result holds for the p% joint and survivor factor. □