



SOCIETY OF ACTUARIES

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THE SOCIETY'S SECTIONS

Beginning with the November 1984 issue, *The Actuary* has presented a series of articles by the Society's officers and emphasizing their duties and responsibilities. This series has been under the direction of Julius Vogel, until very recently an Associate Editor, but now retiring. *The Actuary* takes this opportunity to thank Julius for this and other contributions to this newsletter.

There have been articles from the Vice-Presidents, the Secretary, the Treasurer, and the Director of Publications. Within this same series there have been stories from the Health Section (January) and the Product Development Section (May). *The Actuary* intends to continue the series into 1986, but its future emphasis will be upon the fast developing Section structure. It seems clear that more and more of the Society's affairs, especially in the area of continuing education, will be undertaken by the Sections.

At the present there are seven Sections, each with its own Section Council and officers. All of these Sections have some kind of newsletter, with an editor (not always a Council member) in charge. Each Section holds elections for its nine Council members, serving staggered three-year terms.

At the Society level, one of the Vice-Presidents is directly responsible for the Section activity, and one of the staff is directly responsible for Section support.

During 1986 *The Actuary* hopes to carry articles on each of the five Sections not already featured. In this issue we recognize the seven Sections by publishing their Councils, officers, and editors for 1986 (see page 4).

(Continued on page 4)

YOU SHOULD LIVE SO LONG

By Murray Projector

Editor's Note: Mr. Projector writes that this item was suggested by Solomon Goldfinger's study of "A Stationary Population Problem in the Bible" (September). He does not explain, however, why "You Should Live So Long" bears a date of May 9, 1977.

"The days of our years are three-score years and ten, Or even by reason of strength four-score years;"

These lines from Psalms 90.10, Masoretic text, are very much applicable to current mortality experience.

If we interpret "days of our years" as meaning life expectancy at birth, the psalmist is stating that life expectancy at birth is between 70 and 80 years.

For developed countries, life expectancy at birth is in this age 70-80 band. Current U.S. Life Tables, for example, show a life expectancy at birth (total males and females) of about 72 years.

Life expectancy is a measure of average lifetime, not a prediction of how long one person will live. About half of the population lives more than the numerical life expectancy value, about half lives less.

The life expectancy value is not a measure of maximum lifetime, but is a measure of "middle lifetime." Only in recent times has this middle value come up to the 70-80 year range.

What of maximum lifetime? If 70-80 represents the current population average, what is the current population maximum? 100?, 110?, 120?, 130?, 140?, 150?.

The conventional wisdom of the 19th century included many instances of death at very advanced ages, such as 130, 140, 150 and still older. Contem-

(Continued on page 3)

ACTUARIAL MEMORABILIA

By E.J. Moorhead

Historians and archeologists complete only the less interesting, less helpful part of their task if they merely recite their findings. They must try to tell why events occurred as they did, what kinds of people helped or hindered their happening, amidst what conditions they unfolded.

For example, English historian Dame Veronica Wedgwood in her fascinating 1984 work, *The Spoils of Time*, does not write:

In 55 BC, Julius Caesar made explorations into Britain, defeating the Britons a year later.

No, she gives her readers perspective by telling them:

"Two unnecessary and mismanaged expeditions against the island of Britain added nothing to Caesar's reputation but received disproportionate attention in later times because the first certain and recorded date in the history of the island — 55 BC — can be deduced from his *Commentaries*."

That documents saved from the past are essential to putting flesh upon the bones of history need hardly be said. Yet as the years go by, far too many letters, booklets, memoranda and newspaper clippings are accidentally or thoughtlessly destroyed. Fire and flood are sometimes responsible, but much more often destruction-of-records programs, company moves, and passing of ownership from those who have appreciated their value to those who begrudge even the space they occupy are the culprits.

Our Society's Executive Committee, eyes fixed on the hundredth anniversary celebrations less than four years ahead, tackled this matter of preserving and ex-

(Continued on page 3)

You Should Live So Long

(Continued from page 1)

Oratory conventional wisdom, with greater respect for documented proof of age, does acknowledge thousands of centenarians, but a scant few reaching 110, and maybe one in a hundred million, if any, reaching 120.

If we need to identify a maximum possible age, 120 is a reasonable choice. Some mortality tables, which are mathematical models of longevity, do extend to ages 110 or higher, but none reaches 120.

“And the Lord said: ‘My spirit shall not abide in man for ever, for that he also is flesh; therefore shall his days be a hundred and twenty years.’”

The above lines are from Genesis 6.3, again from the Masoretic text. The obvious interpretation is that 120 years is the maximum (omega), and not the average lifetime.

Thus we have a plausible reconciliation of Psalm 90.10 (70-80 years) with Genesis 6.3 (120 years). The 70-80 years average means pre-destination for large numbers, whereas 120 years is pre-destination for each individual.

Mathematical Olympiad

(Continued from page 2)

We now leave it to Mr. Gelles, or to any other reader, to decipher this code, and to come up with the explanation.

Having not quite decided as to the strength of reader interest, we here present still another of the Olympiad questions. Second easiest overall, and second easiest for the U.S. team, was this problem in set theory:

Let n and k be given relatively prime natural numbers, $0 < k < n$. Each number in the set $M = \{1, 2, \dots, n-1\}$ is coloured either blue or white.

It is given that

- (i) for each $i \in M$, both i and $n-i$ have the same colour, and
- (ii) for each $i \in M$, $i \neq k$, both i and $|i-k|$ have the same colour.

Prove that all numbers in M must have the same colour.

One further question occurs to *The Actuary*. What is the relationship between the spelling of the word “colour” and the observed fact that the Canadian team scored a perfect 42 on this one question?

Deaths

Neil W. MacIntyre	FSA 1946
Earl M. MacRae	FSA 1941
William F. Marples	ASA 1950
Eugene H. Neuschwander	FSA 1931
Donald J. van Keuren	FSA 1948

Actuarial Memorabilia

(Continued from page 1)

hibiting our professional records at their meeting last August. The minutes read:

It was suggested that with the 100th anniversary of the actuarial profession in North America being celebrated in 1989 it would be appropriate to display various items of historical nature, for example, pictures from early actuarial meetings, books (other than the *Transactions, Records*, etc.) or any kind of memorabilia.

Many such items are lodged at Society headquarters, as this writer can attest from two fruitful visits. And kind friends have entrusted others in response to my enquiries. but there's a great deal out there in the files of individual actuaries and in company archives and libraries that we need to know about.

Here, just to give an idea of the range of items that an actuarial body can bring together on an occasion such as we shall have in 1989, is a greatly shortened list of the exhibits displayed in London in 1948 at the centenary of the Institute of Actuaries:

Works of John Napier, John Graunt, Isaac Newton, Edmund Halley, Abraham de Moivre, Thomas Simpson, James Dodson, Thomas Bayes, Richard Price, William Morgan, George Barrett, John Heysham, Francis Baily, Joshua Milne, Benjamin Gompertz, Griffith Davies, John Finlaison and Augustus de Morgan.

The Institute's charter, portraits of its presidents, minutes of early meetings of the Institute and of its Council, the first paper delivered by a charter member, the first life contingencies text-book, busts of various leading members, gold

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Solution Manuals by Dr. Ralph Garfield are now available: PART 2 (Nov. '81 and May '82 exams) \$18. PART 3 (2 practice exams and solutions) \$29; (Nov. '84 exam) \$14; (Nov. '85 exam) \$14. PART 4 (2 practice exams and solutions) \$30; (May '84 exam and SOA practice exam) \$32; (Nov. '85 exam) \$16. EA-1 (May '84 exam) \$15; (May '85 exam) \$15. Order from A.S.M. Box 522, Merrick, NY 11566.

medals long ago presented to distinguished members, honour rolls from two world wars, book containing its hundred-year history, and a message received from the Actuarial Society of America and the American Institute of Actuaries at the end of the second war.

Several photographs of the offices of the Institute at Chatham Place and Staple Inn. (Staple Inn Hall had been destroyed by a flying bomb in 1944).

Documents from early bodies intimately connected to actuarial history: The Actuaries' Club, The Amicable Society and The Equitable Life Assurance Society. Early calculating machines: Japanese abacus, arithmometer, comptometer, Babbage's analytical engine, Vannevar Bush's differential analyser, Ohdner's arithmometer.

It's true that we in North America have not the history behind us that the Institute had. On the other hand, we have not been subjected to heavy wartime bombing as Great Britain has.

Many members will easily remember the fine exhibits displayed at our celebration at New Orleans in 1974. They are described in Vol. XXVI of our *Transactions* starting at page D385. Much of this material is in boxes at our headquarters.

Those who have historical material in your homes or offices, no matter how trivial it may seem to you, are cordially invited to tell E.J. Moorhead about it at my *Yearbook* address.