

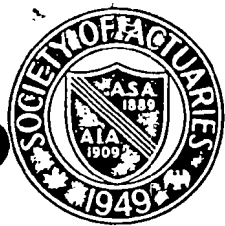


SOCIETY OF ACTUARIES

Article from:

# The Actuary

December 1971 – volume 5 - Issue 10



# The Actuary

The Newsletter of the Society of Actuaries

VOLUME 5, No. 10

DECEMBER, 1971

## FLYING HIGH

by Julius Vogel

The subject of Aviation Reinsurance was discussed Sept. 23, 1971, under the auspices of the Advanced Techniques Section of the Program Committee of the Actuaries' Club of New York. Gordon Shellard moderated a panel discussion in which David Halmstad and Julius Vogel were the principal speakers. What follows is an abstract of their remarks.

Airline hull and liability insurance must essentially be on a per accident basis; liability is governed by negligence principles. Thus, an airline might be liable (in a collision) for two 747 hulls at \$25 million apiece plus 750 passenger deaths. Settlements in 1970 on U.S. domestic flights averaged \$195,000 per death. Since settlements on deaths during coverage now being sold may not be made for some years, the airlines might need to be prepared for \$300,000 or more per death. This total potential liability—\$275 million or more per accident—probably exceeds the current capacity of the world market. The current world annual premium income for airline hull and liability insurance is about \$400 million.

Life insurers have the insuring power to take on amounts of aviation risk at least as great as their net life insurance retentions. Legislation enacted in New York and New Jersey permits life insurers, under Insurance Department supervision, to reinsure any risk arising from, related to, or incident to aircraft manufacture, operation, or ownership. The authorization for reinsurance reflects the market's need for capacity, not necessarily for duplication of existing engineering and claim settlement skills.

The Metropolitan and the Prudential are already providing some aviation re-

(Continued on page 4)

## Arthur A. McKinnie to Retire

On December 31, 1971, Mr. Arthur A. McKinnie, Executive Secretary of the Society, will officially retire. He has been Executive Secretary since the Society came into being and so might well be described as "The Establishment"—after all he has been at more meetings than any other individual!

We are sure that Art was not told in 1949 that the membership of the organization with which he was to be connected would increase and multiply from 1074 members in 1949 to 3847 members in 1971. This increase obviously cast many additional burdens upon the Society's office, burdens which have been cheerfully assumed by Art and his colleagues.

At the Toronto meeting, President Lancaster presented Art with a silver tray on which was engraved the signatures of the 22 Presidents under whom Mr. McKinnie has served. There was not room enough on any tray for the signatures of the many many members of the Society who have known Art, officially and unofficially, who would extend their good wishes for a long and happy retirement along with a permanent invitation to attend all future meetings and who would like to say "Thank You" for a job well done. □

## International Congress

The *Transactions* of the 19th International Congress of Actuaries, to be held in Oslo in June 1972, may be purchased by individuals not members of the Congress. Interested parties should get in touch with Mr. E. A. Lew.

## CONFESSIONS OF A SEMINARIAN

by Edward L. Robbins

### I. Introduction and Background

In 1971 I enrolled for an Actuarial Seminar at *Halyard*\* University and successfully passed Part 8.

A friend of mine, a Fellow of the Casualty Actuarial Society, mentioned that his Society would be most interested in my writing about my experience at the seminar; the Casualty Actuarial Society does not have the benefit of any such seminars.

The following is a set of impressions. The uniqueness of the actuarial exams suggests that you cannot lump classroom dynamics of this educational field with the general state teachers' college fare, that a worthwhile contribution can be made by an actuary's look at the experience.

### II. Theory—the Purpose of an Examination Seminar

The advantages of any resident academic preparation over a self-study program at home are as follows:

(1) Exclusion of company and family distractions.

(2) The competitive (yea, cutthroat) atmosphere, and the consequent measure of one's own performance relative to the class average.

(3) The help of a moderator in guiding students through difficult points.

(4) Getting a person into the mood to study eight hours a day. (I had personally never done this before).

(5) A well-organized study schedule and an accordingly well-organized set of text outlines. (As anyone who has taken the later actuarial examinations knows, preparing for them by oneself is—in addition to the learning itself—a large

\*Any resemblance to any recognized college or university is purely coincidental.

(Continued on page 7)

**DIRECTORY OF HISTORIANS OF MATHEMATICS**

A world directory of historians of mathematics, including actuarial science, is being prepared by the Commission on History of Mathematics of the International Union for the History and Philosophy of Science.

Scholars who are teaching or doing research in the history of mathematics should communicate with the Chairman of the Commission, Professor K. O. May, Department of Mathematics, University of Toronto, Toronto, 181, Canada. Please send name and address (as you wish it for mail), a statement of your special fields of interest, and the languages you read.

The Commission expects to begin publication of an international journal of the history of mathematics in 1973. Meanwhile a newsletter will be issued.

**Flying High**

(Continued from page 1)

insurance. However, the hope is for a permanent arrangement whereby life insurance companies share in aviation risks. Such arrangement would become effective Jan. 1, 1972 with approval of the New York and New Jersey Departments pursuant to the laws of those states. The Metropolitan and the Prudential are thinking in terms of contributing \$15 million of risk capacity each. An agreement is now being drafted, which will be submitted to interested life insurers. This plan should increase existing competition in aviation insurance.

It is hoped that other companies with substantial surplus funds will be included in the arrangement and thus a substantial amount of capacity will be provided. A life insurer's commitment of capacity would normally bear some relation to its net life retention. The business should produce a reasonable profit on a long range basis.

This business has catastrophe potential, and it is easy to be frightened—perhaps unjustifiably so. Under all the proposals, the liability for any one accident would have a maximum; in addition, it would normally be only a share of the total loss. With these limitations, common sense tells us the hazard is insurable. Risk theory permits the calculation of conservative premiums.

**NEW FEDERAL ESTATE AND GIFT TAX REGULATIONS**

by William H. Lewis

Treasury Decision 7077 introduced new regulations as to decedents dying after December 31, 1970 (Sec. 20.2031-10) and gifts made after the same date (Sec. 25.2512-9). Under these sections of the Regulations, Table LN (separate for males and females) with interest at 6% a year, compounded annually, replaces the former Table 38 with interest at 3½% a year, compounded annually. Table 38 and Table LN are based on the 1940 and the 1960 census, respectively. Table 38 is a Makehamized mortality table for total whites in the United States, whereas Table LN is a mortality table for total males and total females appearing as Tables 2 and 3, respectively, in United States Life Tables: 1959-61.

In comparing Table LN (male) with Table 38, we can expect that the substitution of total nonwhite males in the former for total white females in the latter would tend to increase the mortality rates. A similar comparison of Table LN (female) with Table 38 would lead to the expectation that the substitution of total nonwhite females in the former for total white males in the latter would tend to increase the mortality rates at the younger ages and decrease them at the higher ages. On the other hand, the substitution of 1960 experience for 1940 experience tends to decrease the mortality rates. Actually, in the range of ages from about 50 to 70, Table LN (male) shows about 10% greater mortality rates than Table 38, but shows less for practically all other ages. On the other hand, Table LN (female) shows considerably less mortality than Table 38 for the entire range of age examined, particularly at the younger ages.

Table A (1) (male) and Table A (2) (female) of the Regulations show the present value at 6% interest of a single life annuity, life interest, and a remainder interest for ages 0-109, based on Table LN male and female, respectively. As in Table I in the previous regulations (Table 38 at 3½%), these factors are derived as follows:

Annuity	$\ddot{a}_x = a_x + \frac{1}{2}A_x$
Life interest	$i \ddot{a}_x$
Remainder interest	$\bar{A}_x = 1 - i \ddot{a}_x$

In the case of males, the effect of changing the mortality table is to reduce the value of  $\bar{A}_x$  by about 1 or 2% except for the age range from about 40 to 60 where the value is increased slightly. The increase in interest from 3½% to 6% further reduces  $\bar{A}_x$  by percentages which vary from 56% at age 25 down to 9% at age 85. The overall effect is to reduce  $\bar{A}_x$  by percentages varying from 57% at age 25 down to 10% at age 85. In the case of females, the effect of the combined change in mortality and interest is to reduce  $\bar{A}_x$  by percentages varying from 69% at age 25 down to 11% at age 85.

Under Section 170 of the Internal Revenue Code of 1954, no deduction is allowed for the contribution to charity of a remainder interest of property transferred in trust unless the trust is a charitable remainder annuity trust or a charitable remainder unitrust (Section 664), or a pooled income fund [Section 642 (c) (5)].

In the case of a pooled income fund, Section 1.642(c)-6 (d) of the Income Tax Regulations shows Table G (1), male, and Table G (2), female, which contain the factors for the present worth of a remainder interest after a single life, based on Yearly Rates of Return varying from 2.2% to 8.0%.