

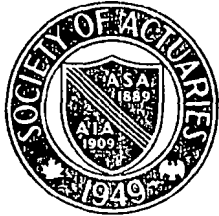


SOCIETY OF ACTUARIES

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LEAPIN' LIZARDS (AN ORPHAN ANNIE LIFE POLICY)

by Donald S. Grubbs, Jr.

Orphan Annie Life Insurance Company has just introduced its new policy, The Leapin' Lizard. Premiums are payable for twenty years. The death benefit is \$1,000 during the first twenty years and the cash value at the end of the twentieth year is \$1,000. At the end of the twentieth year the then cash value is applied to buy paid-up whole life, making the face amount leap to \$3,754.45 for issue age 10 (CSO 3½%).

If the policyholder surrenders his policy at the end of the twentieth year, Leapin' of minimum cash values for the Leapin' Lizard is compared with a twenty-year Lizard changes color and resembles a twenty-year endowment. The determination endowment below:

<u>Issue Age 10-CSO 3½%</u>	<u>20 Year Endowment</u>	<u>Leapin' Lizard</u>
Death Benefit		
1st 20 years	\$1,000.00	\$1,000.00
After 20 years	not applicable	3,754.45
20th Year Cash Value	1,000.00	1,000.00
Present Value of Benefits at issue:	508.75	508.75
Equivalent Uniform Amount	1,000.00	3,340.90
Present Value at Adjusted Premiums at issue		
(i) Present Value of Benefits	508.75	508.75
(ii) 2% of EUA	20.00	66.82
(iii) .4 P' (P' > .04 EUA)	.4 P'	.4 P'
(iv) .25 P' O.L. (EUA)	1.76	5.88
	530.51 + .4P'	581.45 + 4P'
$\ddot{a}_{10:\overline{20} }$	14.527077	14.527077
Adjusted Premium	530.51/14.127077	581.45/14.127077
Adjusted Premium	37.55	41.16
Minimum Cash Value		
2nd Year	37.25	.00
3rd Year	76.26	29.59

One might expect that the Leapin' Lizard ought to have cash values and reserves as large as the twenty-year endowment, since it can be used to provide exactly the same benefits as the twenty-year endowment policy. But the Leapin' Lizard does seem to comply with the literal reading of the Standard Non-forfeiture Law.

A similar comparison could be made for CRVM reserves. The law is a little more vague here, stating that "life insurance policies providing for varying amounts of insurance . . . shall be calculated by a method consistent with the prin-

(Continued on page 3)

ACTUARIAL CAREER SEMINAR

by Joseph J. Gayda

During recent years the Society of Actuaries as a body and its members as individuals have devoted considerable effort to informing the public, particularly students, of the opportunities which the actuarial profession can offer. It is obviously in the best interests of the profession to have such programs, since attracting an adequate number of recruits is necessary to the continued success of any profession.

We think we have found one method of communicating with students and teachers complementing the continuing activities of the Society of Actuaries and the various local actuarial clubs.

Our organization (Hewitt Associates) conducts seminars at the general office in Libertyville, Ill. during the Christmas and summer vacations. These seminars are designed to provide an introduction to the actuarial profession and knowledge of the various fields in which actuaries are employed. Recruiting pamphlets provided by many insurance companies are also distributed.

Participants include faculty members and students primarily from colleges in a seven-state area. The faculty members aim to supplement their own knowledge of the actuarial profession in order to better counsel their students on possible careers in mathematics. The student participants are predominantly undergraduates, many of whom have taken Part 1 on an exploratory basis.

The seminar topics include: The Actuarial Profession, Areas of Actuarial Employment, Actuarial Examinations, Career Opportunities and Alternatives, Introduction to Actuarial Mathematics, and Utilization of Computers.

The seminar is approximately six

(Continued on page 3)

To be Continued

(Continued from page 2)

basic life function, such as the l_x function, will produce a set of D_x columns for different interest rates. Three more short lines of instruction (less than 30 characters more) will produce the N_x columns for a number of interest rates.

In addition to there being many more operators in APL than in FORTRAN, most of these operators can have different meanings depending upon whether they are applied to a single or to double arguments. Another meaning is specified when the operators are used in combination. For example,—A makes all the terms in A minus, where A may be a single integer, a vector, or an array of any dimension. $A + B$ adds B to A, whether A and B are each single terms, vectors, or arrays. $A + . X B$ produces the matrix product of A and B, and takes the sum of each column of the resulting matrix.

Power of Simple Instruction

The language is so rich in this respect that the user tends to surfeit from its almost unlimited possibilities of elegance. This is no more a limitation than the richness of the English language is a limitation. It simply offers more possibilities.

The above simple example of table building was chosen to show the power of a simple instruction. The facilities for matrix manipulation, however, make the language important in any data processing, not necessarily table construction. A little experience soon teaches the user to set forth his problems in matrix format. This technique is especially powerful in simulation, where multiple subscripted variables can be expressed as arrays and very simply manipulated.

There are several time-sharing companies that offer the service of the APL language at reasonable costs. For anyone interested in an in-house system, the compiler is available without charge from IBM. As a minimum an IBM 360/Model 50 machine (256K storage) with three 2311 disk drives (or one 2314 direct access storage), a transmission control unit, and terminals are required.

LIKE AN ADVERTISER SHOULD?

In its Feb. 8, 1971 issue, *Advertising Age* published an article headed:

Actuarial Actuality? Admen Are Dying Younger Again in Reversal of Trend.

This gloomy conclusion was arrived at from averaging the ages at death among advertising personnel. In order to avoid a wave of depression engulfing the advertising profession, the Chairman of the Society's Public Relations Committee undertook to correct their conclusions. Here's his letter to *Ad Age*.

Dear Sir:

May an actuary offer a note of good cheer to those admen who may have read your Feb. 3 article with its gloomy statistics and conclusions regarding mortality trends among their members?

It is also true that the average age at death of blacksmiths is higher than that of astronauts; and that the average age at death in St. Petersburg, Fla., is quite high. However, the conclusion is not that blacksmithing is conducive to longevity or that St. Petersburg is a healthy place to live. The explanation is simply that the average living blacksmith is rather old, as is the St. Petersburg resident. People in all walks of life have a greater chance of dying at age 70 than at age 40.

Conclusions taken simply from records of death are meaningless unless you compare these against the number of people in each age group who were exposed to the chance of death. For example, age at death among admen is determined by the age composition of

the group—the younger the members in this profession, the younger their average age at death will be. There is nothing to suggest that a 40-year-old adman will improve his prospects by becoming a newspaper executive or a physician.

Two hundred years ago some pensions in England were priced from records of death and the losses from the errors of this method were staggering. We have learned to figure a little better since then.

Finally, studies of 300 deaths in two adjoining years do not often reveal trends; they usually reveal chance fluctuations.

Best wishes for good health and longevity to your readers.

Herbert J. Boothroyd

Actuarial Career Seminar

(Continued from page 1)

hours. Coffee breaks and lunch hours give the students a chance to talk informally with individuals now employed in the actuarial profession. Time is also provided at the close of the session for questions and comments.

Based on the response proved through critique sheets returned by the seminar participants over the past several years, our objective of providing useful information seems to have been met. The participants tell us that these seminars provide a useful background of understanding so that an actuarial career may be intelligently compared with others.

Further information can be obtained from the author.

Leapin' Lizards

(Continued from page 1)

principles of this paragraph." Some actuaries feel that this means one should develop an equivalent uniform amount in the method shown above for the Leapin' Lizard and thus get lower minimum reserves as well as lower non-forfeiture values. My own opinion is that "a method consistent with the principles of this paragraph" would produce consistent reserves for Leapin' Lizard and the twenty-year endowment.

I feel that reserves for a policy of this type should be not less than those for a policy with the same death benefits payable during the premium-paying period and maturing for the cash value available at the end of the premium-paying period. This would appear to be "consistent with the principles" of the valuation law and consistent with the intent of the non-forfeiture law.

Orphan Annie Life is not the only company currently issuing state-approved policies in which increased death benefits after the premium-paying period are used to justify smaller cash values and reserves than would be required under a comparable policy which endowed for its cash value at the end of the premium paying period.