The Actuary
The Newsletter of the Society of Actuaries
VOL. 20, No. 7 September, 1986

MORTALITY EXPERIENCE AMONG ACTUARIES

By Mohamed F. Amer

The February issue of *The Actuary* shows the number of survivors from those who became Fellows in the years 1920-1936. It occurred to me to try to construct an abridged mortality table from this scanty data. The number of persons exposed is 291, among whom there have been 184 deaths.

I did not use traditional age-related mortality, but rather tried to get rates by duration since attaining Fellowship.

1. From the numbers of survivors in 1949, by year of obtaining Fellowship, the crude l^c_n values can be obtained for n = 13 to 29 (where n is the years since Fellowship). From the survivors in 1986 l^c_n values for n = 50 to 66 can be found. The results are as follows:

n	l^c_n	Year of FSA	n	l^c_n
13	9474	1936	50	6316
14	9000	1935	51	6000
15	9333	1934	52	5333
16	9474	1933	53	6316
17	10000	1932	54	4118
18	10000	1931	55	4737
19	10000	1930	56	5000
20	9565	1929	57	3478
21	9333	1928	58	1333
22	8095	1927	59	1905
23	10000	1926	60	4167
24	9167	1925	61	1250
25	9286	1924	62	2857
26	10000	1923	63	1000
27	6667	1922	64	1111
28	7857	1921	65	1429
29	7500	1920	66	2500

2. Needing a reference table to graduate these l^c_n, and having experience from 1920 to 1986, I decided to use 1958 CSO males. The best fit was obtained by assuming fellowship at age 22.

The graduation formula is $l_n = 9238\ l'_{22+n} + 811.51$

where l_n is the graduated value of l^c_n

and l'_x is that of the reference table.

(Continued on page 3)

CURRENT PENSION ISSUES IN THE UNITED KINGDOM

By Alistair Neill

Pension actuaries across the Atlantic may be interested in two different issues of current concern in the UK.

Transfer Values

Actuaries have a new statutory involvement in transfer values arising from change in employment. The Social Security Act 1985 provides that transfer values must be calculated in accordance with regulations. The regulations specify no interest rates or mortality tables, but do say that the value must be calculated on a basis approved by an actuary and consistent with professional guidelines.

The Institute and the Faculty have issued guidelines on the calculation of transfer values in final salary plans. These state that the value should be the present value of the expected pension on a prospective basis (rather than a retrospective roll-up of contributions). As to interest, the guidelines say: "Such actuarial value should be assessed having regard to market rates of interest. One of the ways in which a market value assessment can be made is on the basis of market redemption yields on British Government obligations of appropriate duration and type, at the time of transfer, with an allowance for the investment of future investment receipts at such rates as the actuary considers reasonable." As great differences in the other parts of the actuarial basis (such as mortality) are unlikely, the main reason for differing values being quoted by different actuaries will be the assumptions as to the rates at which *future* money can be invested.

(Continued on page 3)

The Actuary

Editor ..... C. L. TROWBRIDGE
Associate Editors ..... DEBORAH ADLER POPPEL
DAVID S. WILLIAMS
JOSEPH W.S. YAU
Competition Editor ..... CHARLES G. GROESCHELL
Editor Emeritus ..... ANDREW C. WEBSTER

Correspondence should be addressed:
The Actuary
P.O. Box 19253
Seattle, WA 98109
Tel: (206) 281-9151

Published monthly (except July and August) by the SOCIETY OF ACTUARIES, 500 Park Boulevard, Itasca, IL 60143. Richard S. Robertson, President, Richard V. Minck, Secretary, Michael B. McGuinness, Treasurer, Anthony T. Spano, Director of Publications. Nonmember subscriptions: students, $5.50; others, $6.50.

The Society is not responsible for statements made or opinions expressed herein. All contributions are subject to editing. Submissions must be signed.

A PUBLICATIONS GAP?

Much of the recent effort within the Society's Publications Committee has been in the exploration of what has come to be called the "publications gap". A Task Force within the Committee believes that there is a considerable body of valuable editorial material, actual or potential, that goes unpublished because the several established Society publications — the *Transactions, Record, ARCH, The Actuary, Yearbook,* annual Committee reports, and the publications of the Sections — do not always provide an appropriate home. The Task Force seems to be especially concerned where timeliness and informality are important, but the material is too extensive for *The Actuary.*

In keeping with this premise the Task Force has recommended, and the Publications Committee has agreed, that a new publication should be instituted. Director of Publications Anthony Spano presented this recommendation at the May meeting of the Society's Board. At this same meeting Preston Bassett, the immediate past-president of the Society and the current president-elect of the Academy, suggested a new magazine-type publication, initially co-sponsored by the Society and the Academy, but eventually to represent the entire profession. The Society Board took no definitive action in May, though it later authorized a joint study of the Bassett proposal.

A modification of the Publications Committee recommendation was presented to the Executive Committee in late August. To avoid the proliferation of actuarial publications, and the considerable expense, effort, and delay of a new one, Mr. Spano proposed that *The Actuary* expand. Though *The Actuary* of the past has had no more than 8 pages published 10 times annually, these limitations are easily lifted. *The Actuary* is much more timely than the *Transactions* or the *Record,* and its style may be better suited to the additional material contemplated.

The Director of Publications' suggestion has appeal. *The Actuary* can expand easily, with little fanfare and not much risk of failure, especially as compared to launching a new publication; but the real advantage may lie in the opportunity afforded to test the existence of the publications gap.

The Actuary has great difficulty in finding any considerable body of material, already written or only imagined, that falls into the presumed gap. We look back upon unintentional 6-page issues, and upon beating the bushes to keep the quantity up. Perhaps the real problem is not a lack of publication opportunity for those actuaries willing and able to write, but rather that these persons are too few or submit too infrequently.

Until these matters may be resolved, by Board action or otherwise, *The Actuary* stands ready to publish articles or papers that in the past may have been considered too long, to expand its size or its publication frequency, and to help with the closure of any demonstrated publications gap. We hope that such expansion can and will take place.

We recognize the strong possibility, however, that the gap may prove to be a myth; and the pressing problem may be that of too little editorial material to meet the goals of the publications we already have.

C.L.T.

WORKDAY PROBLEMS

No new problems have so far been submitted for this embryo column devoted to matters that come up through everyday actuarial work. We have received an interesting discussion of the problem outlined in the May issue under the heading Loan Account Projection. We are pleased to publish the following, coming from Solomon Goldfinger and the New York Life.

****

At my company, considerable thought went into the problem described by Robert Likins of projecting loans on a closed block of business with a 5% policy loan rate. We did this as a component of the asset/liability model built for our individual lines of business.

The most important step in developing a formula that will work (and probably the one most often overlooked) is to dissect historical information of net increases in loans into its main components — (1) new loans less voluntary repayments, (2) loans cancelled b death and, (3) loan cancelled b surrender.

Assuming the experience of my company is not atypical of other companies, an attempt to correlate the combined effect of all 3 of these factors with interest rates will simply not work. The net increase in loans at my company for the last 3 or 4 years is considerably below our historical peak levels; this drop cannot be explained by any reduction in interest rates during most of this period. However, if one looks at the 3 components listed above, a different picture emerges: net increases in loans decreased over this period not because of any significant drop in new loan activity but because of sharply higher levels of loans cancelled by surrenders. The company might have reported a small increase in net loans for one of these years, but this might have been caused by several hundred million dollars of new loans, offset by several hundred million dollars of loans cancelled by surrender. An actuary concerned about cash flow should not necessarily derive much comfort from the fact that the n increase in loans is low.

Once the 3 main components of changes in loans are recognized, formulas to project each component

(Continued on page 3)

Workday Problems

(Continued from page 2)

separately are needed. The easiest is relating cancelled loans to death claims, since (presumably) this number is not much affected by voluntary actions by the policyholder. Developing factors for loans cancelled by surrender is a little more interesting. We found that the average loan on policies being surrendered was considerably higher than the average loan on all inforce policies. If this is found to be true of your company, this should be reflected in your model. In passing, this fact could have an important influence in understanding the effect of higher surrenders on profitability (especially if differences in policy loan activity are not recognized in dividends).

The next step is to correlate new loans net of voluntary repayments to interest rates. After testing various approaches, the one that worked for us was first, to express this amount as a percent of loan values available, and then to correlate the *change* in this percent to the *change* in interest rates (actually a moving average of interest rates).

This approach may sound more complicated than what the subject at first glance may deserve, but our formula has worked remarkably well over the last 3 years, where I suspect simpler approaches may not have held up as well. Perhaps more importantly, this approach provides further insight into the dynamics of loans, surrenders, dividends, and profitability. One final comment: Such things as dividend deposits and paid-up additions are often ignored in such model studies. The actuary should carefully evaluate whether, for his company, the impact of these items is significant. □

LIBRARY NEEDS

If anyone has a spare copy of the following book: *Concepts of Actuarial Soundness in Pension Plans* by Dorrance C. Bronson (published by Irwin for the Pension Research Council in the middle '50s), a donation to the SOA Library will be greatly appreciated.

Joan I. Chapa, Librarian

Mortality Experience Among Actuaries

(Continued from page 1)

3. The following is the resulting abridged life table for Fellows of the Society:

n	l_n
0	10000
5	9623
10	9532
15	9427
20	9286
25	9078
30	8766
35	8300
40	7624
45	6683
50	5455
55	4067
60	2714

4. The total expected deaths is 222 as compared to the actual 184, so this table includes a 17% margin. Can we conclude that Fellows of the Society experienced mortality (over the 1920 to 1986 period) approximately equal to 1958 CSO, but rated back at least 10 years? Surely the average age of obtaining Fellowship was no less than 30.

5. The data is very scanty and the approach is not traditional. Actuaries may differ as to the procedure. Nonetheless, these results may be of interest. □

Pension Issues in UK

(Continued from page 1)

Although the Government presumably thought they were ensuring an increase in transfer values (there having been media comment that transfer values were too low), the values in the future are likely to be less. In the past some actuaries used for transfer value purposes the same interest rates as for funding, say 8 to 9%; but they will now be using 10 to 11%.

Personal Pensions

The Conservative Government, as a part of their enthusiasm for privatisation, are headed for a system in which people are encouraged to opt-out of a part of the State pension. They could do this through a "personal pension" funded by the rebate of part of the State plan contributions.

Some of us are concerned that the public will not understand the risks they run in substituting their own retirement account (which buys a uni-sex annuity at retirement) for a pension based on earnings; but our Secretary of State for Social Services has made at least two visits to the United States and is very impressed by your IRAs.

We hear that much of the in-flow to your IRAs is going into deposit-type investments. These do not seem very suitable for pension fund savings, which surely should be invested in a wide range of securities with a considerable emphasis on equities. Perhaps American actuaries might like to offer advice. Is this enthusiasm for individual accounts reasonable — or is it misplaced? And what about uni-sex annuities? □

Addition to the Program Booklet

An open committee meeting of the Task Force on Mutual Life Insurance Company Conversion will be held at 8:30 A.M. on Tuesday, Oct. 7, as a part of the Society of Actuaries annual meeting in Chicago. At that meeting, the draft report of the Task Force will be discussed. Advance copies of the draft report may be obtained from Terry D. Garver, Task Force Chairman, at his *Yearbook* address.

DEATHS

L. Roy Baker	ASA 1930
Wray M. Bell	FSA 1931
Lloyd J. Brown	FSA 1941
Helen L. Clark	FSA 1927
John W. Coons	FSA 1957
Simon P. Dompierre	FSA 1971
Kenneth J. Duffy	FSA 1964
Lenard E. Goodfarb	FSA 1955
Walter J. Mays	ASA 1951
Fergus J. McDiarmid	FSA 1932
Edward Ruse	FSA 1937
Walter I. Wells	ASA 1932
David H. Young, Jr.	FSA 1960

It is the normal practice of *The Actuary* to list the names of members whose deaths have been reported to us since the previous issue; but we leave obituaries to the *Transactions*, and seldom comment beyond the simple listing.

We make an exception for this issue by noting that *five* of the members whose names appear above have been FSAs or ASAs for more than 50 years, and that Helen Clark, when she died at age 91, was the oldest female fellow. □

SYMPOSIUM PLANNED FOR VALUATION ACTUARY

The 1986 Symposium for the Valuation Actuary will be held on Oct. 23-24 at the Shoreham Hotel in Washington, D.C.

This year's symposium is jointly sponsored by the American Academy of Actuaries, the Canadian Institute of Actuaries, the Conference of Actuaries in Public Practice, and the Society of Actuaries.

The symposium will feature topics of interest to valuation actuaries in both the United States and Canada. The first day will be devoted to a general review of the current environment in which valuation actuaries operate. The second day, split into U.S. and Canadian sessions, will provide specific "how-to" demonstrations that will give the valuation actuary the tools to accomplish his task.

A brochure on the symposium has been mailed to all members. Additional information can be obtained by contacting the Continuing Education Department, Society of Actuaries. □

THE PROBLEM WITH OPTIONS

By David S. Williams

As part of the rapidly growing array of financial instruments, options of various sorts have been coming into use as portfolio management tools. This article does not refer to these, but rather to the implicit options that insurance companies have been dealing with for some years. The following table presents some of the more familiar types of such options:

The Options Balance Sheet

	Assets	**Liabilities**
Held By Insurer	Retractable Bonds Extendable Bonds Bonds with Warrants Floating Rate Preferreds at Higher-Of Yields	Policy Dividends
Granted By Insurer	Issuer Calls Sinking Fund Double-Up Option Mortgage Prepayments Forward Commitments (Implicit Put Options)	Policy Loans Cash Value Surrenders SPDA Cash-In Higher-Of Guarantees GIC Period Rate G'tees

The upper left-hand box features the kinds of investments that insurance companies can make, with associated options which they can exercise. Companies are likely to hold relatively few of them, since they are for the most part fairly recent innovations. Much more common are the options granted by the insurance company to the debtor, seen in the lower left-hand box.

The right-hand boxes contain options associated with insurance product liabilities, the last three in the lower box being found in conjunction with some of the newer products offered in the market.

This sheet is not well balanced, being weighted heavily in favor of options granted by the insurance company, on both the asset and the liability sides. Thus the company could find itself in a squeeze should interest rates move sharply in either direction. Since the value of options increases with the volatility of the financial environment (and the volatility has increased), insurers should be fully aware of the financial risks they are incurring as a result.

Coming to grips with the problem of options involves several approaches:

1. Improved asset-liability matching, wherein the options associated with both assets and liabilities are clearly identified and taken into account in cash flow matching, simulation analyses using different scenarios and immunization programs.

2. Careful evaluation and pricing of options included in various product designs, which involves estimating when and in what volume such options might be exercised.

3. Development of new ways to share risks with policyholders and issuers — e.g., granting fewer or more limited options, negotiating risk-limiting features with issuers.

The themes mentioned above are discussed in an article by Alfred Weinberger, vice-president of Salomon Brothers, Inc. and formerly with Sun Life Assurance Company of Canada. The article can be found in a book entitled "The Emerging Financial Industry", edited by Arnold Sametz, published in 1984 by D.C. Heath and

(Continued on page 5)

BOOK REVIEW

Employee Benefits by Burton T. Beam, Jr. and John J. McFadden, both of The American College, Bryn Mawr, Pa. Published in 1985 by Richard D. Irwin, Inc., 486 pages plus bibliography and index.

Reviewed by Willis B. Howard, Jr.

This book has one introductory chapter, then two chapters which cover the mechanics of OASDHI, Unemployment Insurance, Workers' Compensation and other government programs. The next eleven chapters describe the mechanics of group insurance. Then follow ten chapters on Qualified Retirement Plans, two chapters on all other employee benefits from executive compensation to free parking, and a final chapter on Employee Benefit Planning. The emphasis is on the means of providing employee benefits, rather than a philosophy of why employee beneifts are provided.

The treatment is thorough, with an orderly, logical, straightforward style. Each chapter gives an overview, then a broad outline, then the details of the outline. One senses that much of the information comes from secondary sources rather than from the authors' experience in the field. For example, on page 216 under the discussion of "Premium-Delay Arrangements", the authors state, "the insurance company still has a statutory obligation to maintain the claim reserve, and therefore, it must use assets other than the employer's premiums for this purpose. In most cases these assets come from the insurance company's surplus". One experienced in the language of life insurance accounting would state the concept some other way. What the authors mean is that since liabilities remain constant and assets decline, surplus is reduced.

The style is refreshingly free of insurance company jargon. One need not be steeped in insurance lingo to understand any of the book. However, one is startled to read the phrase "insurer's financial experts" used to describe what those of us in the business call "actuaries".

There are implicit philosophical assumptions behind some of the authors' conclusions. For example, in discussing the question, "Should the employer have a qualified plan?", the authors (probably unconsciously) introduce a socialist bias in referring to the effect on a company's income taxes. "In other words, a qualified plan represents a form of compensation, part of which is *paid by the federal government* rather than by the employer". (emphasis added) (page 265).

In discussing separate accounts, the authors state, "Separate accounts funding was developed to avoid co-mingling pension assets with all of the general assets of the insurance company, since an insurance company's general assets have traditionally been invested in long term, low return investment vehicles" (page 331). This sentence indicates less understanding of the investment process than the authors probably have; I know of no insurance company whose investment philosophy dictates low return investment vehicles.

In discussing pension plan funding, the authors make the usual layman's definition of an annuity, "The annuity purchase rate is based on the plan's retirement age, the life expectancy of the retiree, and the assumed investment return in the post-retirement period" (page 335). One would expect better things from professionals in the employee benefit field. Even if they are not actuaries themselves, they could have had sections such as this edited by an actuary. It is, as all actuaries have had drummed into their heads, not life expectancy that determines the annuity purchase rate, but mortality rates.

Relatively minor lapses such as this one prevent this book from being a more valuable source book for actuarial students. It may be, nevertheless, a useful reference book.

In commenting on Wellness Programs the authors state, "Recent studies have shown that the costs of establishing and maintaining many of these programs are more than offset by the lower amounts paid for medical expense, disability, and death benefits" (page 453). The authors do not cite the programs or the companies in which these programs have offset the costs of medical expenses. One is skeptical of such thinly supported broad general conclusions.

The final chapter, on employee benefit planning, offers sound advice: "Too often the proper design of an employee benefit plan is viewed as a one-time decision rather than as an evolving process. As times and organizations change, employers' answer to the questions raised in this chapter may also have to change. For this reason, these issues must be frequently restudied to determine whether a group benefit plan is continuing to meet its desired purpose" (page 461).

The authors review old and new ways to determine what types of benefits should be provided: "...the growing consensus seems to be that the traditional methods of determining the types and levels of benefits to offer have lost much of their effectiveness. These include basing benefits on the following factors: the employer's perception of the employees' needs; what competitors are doing; tax laws and regulations....

"In the last few years employers have increasingly taken a marketing research approach to employee benefit planning. The employees' preferences for benefits are determined similar to the way that consumers' demand for products are determined.

"Marketing research techniques must be used with caution. They can have a negative effect on employee morale unless the employer is committed to using their results in benefit decision making. Therefore this approach should not be undertaken unless the employer intends to base expenditures for benefits on satisfying what employees perceive as their needs. In addition, employees must be made aware that changes in an overall benefit program will be subject

(Continued on page 6)

The Problem with Options (Continued from page 4)

Company. It discusses many topics of interest to insurance companies, in particular the marketing of financial products and services. The life industry has traditionally been distributor-driven rather than consumer-driven, but the new players in the game will not be bound by the old rules. They will attract customers simply by knowing them better than the old players and by being more responsive to their needs. The winners will be those who understand their markets and consumers best, and who deliver good value on the basis of that understanding. □

EXAM SEMINARS

Georgia State University — October
Parts 2, 3, 4, 5, 7I(U.S.), and 7P(EA-2)
For more information, write or call Robert W. Batten at his *Yearbook* address.

University of Waterloo — Oct. 19-Nov. 2
Parts 4, 5, 7(except EA2), 8, and 9
For more information, write or call Frank Reynolds at his *Yearbook* address.

E & E IN THE INSTITUTE OF ACTUARIES

The Institute of Actuaries, which is to the United Kingdom (Scotland excepted) what the Society of Actuaries and the Casualty Actuarial Society are to North America, has just announced a major change in its examination arrangements. Society members may be interested in a general outline of the new Institute syllabus.

Subject 1	Probability and Statistics
2	Mathematics of Finance
3	Life and Other Contingencies
4	Economics and Accounts
5	Applied Statistics
6	Mortality and Other Actuarial Statistics
7	Institutional Investment
8	Life Assurance
9	General Insurance
10	Pension Funds

Each of the subjects 7 through 10 is tested at an ordinary level and at a specialist level. Candidates have to pass one subject at the specialist level and three at the ordinary level. □

Book Review

(Continued from page 5)

to financial constraints and possibly tradeoffs among benefits."

The book gives thorough treatment of the mechanics of group insurance, qualified retirement plans, social security benefits, and other employee benefits including executive benefits, vacation, holidays, etc., but the final chapter on planning may give the most valuable insight. The book would not, however, adequately replace *Employee Benefit Planning* by Rosenbloom and Holliman and the current Part 6 syllabus. □

LETTERS

Membership Growth

Sir:

Your analysis of Membership Growth (April issue) may be instructively supplemented by comparing the present totals of Fellows and Associates with those forecast for 1985 by Walter Klem's 1967 Committee On The Future Course Of The Society. That distinguished group, some of whose members will doubtless read this letter, offered its high and low estimates, as follows:

Number of Society Members In 1985

		Fellows	*Associates*	*Total*
1967 Estimate:	High	6,343	3,547	9,890
	Low	4,229	2,918	7,147
Actual		5,467	4,568	10,035

To conform with the Committee's definition, these figures for Actual take the Nov. 1985 exam results into account.

The Klem Committee's estimates of Fellows bracket the result with remarkable accuracy, but the number of Associates is much larger than they foresaw.

You point out that the proportion of Fellows declined last year. When the present Society came into being in 1949 that proportion was 60%, in 1966 it was 52%. So the present 55% is within historic limits.

Mr. Klem's Committee also estimated Annual Meeting Attendance up to 1985. Their High Estimate for last fall was 3,495, and their Low, 1,876. The number of Fellows and Associates at New Orleans last October was only 1,382, though at coffee break times it seemed more like 3,495.

E.J. Moorhead

****

Part 1 Exam Statistics

Sir:

Readers may be interested to know that the number of students beginning the actuarial examinations continues to set records. The number of students taking Part 1 for the past five years are as follows:

Year	*Number Taking Part 1*	*Number Passing Part 1*	*Number Receiving GRE Credit*
1981	3138	1225	55
1982	3451	1336	71
1983	3921	1512	60
1984	4166	1616	47
1985	5448	2122	84

Over 3,800 students signed up for the May 1986 exam, a 19% increase over the 3,204 students who did so for the May 1985 exam.

We have looked at data by exam center, to see if the increase is concentrated in any one region, but it is not. The increase in students appears in all areas of Canada and the U.S.

Of the students who pass Part 1, some will choose the C.A.S. route and others will choose another career. Still, it would seem that the SOA is about to see an increase in our rate of increase.

The previous record for Part 1 students was 1976, when 4,120 took the exam, 1,654 passed, and 344 received GRE credit.

Linden N. Cole

(Continued on page 7)

Letters (Continued from page 6)

Age at Death

Sir:

Mark Campbell's curve of Age at Death (June) fitted the Biblical ages beautifully, for 17 generations. It is hard to resist back-tracking through nine earlier generations to Adam (including the famous survivor, Methusaleh).

Consulting Genesis 5 and using the formula $Y = 120 + 830\,(1.407)^{-X}$, which fits the Campbell curve quite well, we have the following incredible array:

Age at Death of Adam and His Descendants

	Generation from Noah	*Biblical Age at Death*	*Calculated Age at Death*
Adam	−9	930	18,054
Seth	−8	912	12,866
Enosh	−7	905	9,180
Kenan	−6	910	6,559
Mahalalel	−5	895	4,697
Jared	−4	962	3,373
Enoch	−3	365	2,432
Methusaleh	−2	969	1,763
Lamech	−1	777	1,288
Noah	0	950	950

It seems as though the Bible authors observed a plateau for the first ten generations (Adam to Noah, inc.). Referring again to the so-called "omega" age for man mentioned in Genesis 6:3 (120 years), let us remember the next verse: "There were giants in the earth in those days, and also afterward, when the sons of God came in to the daughters of man, and they bore children to them." Hardly the sort of progeny to be limited by an actuarial formula.

Mark Campbell is invited to devise a formula that would fit all 26 generations (Adam to Moses, inc.). I find it so easy to refer insoluble problems to others.

Samuel L. Tucker

SS Trust Funds

Sir:

There has been little discussion in actuarial circles concerning the appropriateness of the large fund balances which are expected to accumulate in the OASI and DI Trust Funds. This matter should be of concern to actuaries. This letter is intended to stimulate some discussion.

The 1986 Report of the Trustees indicates that, based on the intermediate II-B assumptions, the estimated OASDI income exceeds costs by 2.12% of taxable payroll for the next 25 years, followed by average annual deficits of 0.89% and 2.56% for the following two 25-year sub-periods respectively. The Report shows that while these numbers differ under differing economic and demographic assumptions, under all four sets of assumptions, OASDI is overfinanced during the 1986 to 2010 period. Even under pessimistic assumptions Trust Fund balances will reach levels of approximately twice the annual outgo shortly after the turn of the century with Trust Fund ratios many times that under more optimistic assumptions. This phenomenon results from essentially level tax rates while the ratio of covered workers to beneficiaries exceeds three for one at present but will fall to two to one after the turn of the century as the so-called baby boom generation moves through their working years on into their retirement years.

I respectfully suggest that once the Trust Funds have recovered sufficiently as a result of the 1983 amendments to the Social Security Act to reach prudent contingency reserve levels, say 50 to 100% of annual outgo, tax rates should be adjusted to minimize expected future increases in Trust Fund ratios.

The Trust Funds which are invested in U.S. Government bonds are not in the same nature as private pension funds. The Trust Funds do not represent any real economic asset other than a commitment by the Federal Government to redeem the Bonds, presumably from general revenues, if and when that becomes necessary. Increases in the Trust Fund balances by the same token represent merely funds becoming available to the Federal Government to meet its current operating expenses. These basic facts are true whether the Social Security finances are considered part of the unified budget as they are at present, or whether they are treated as off-budget items as they will be in future years as provided in the 1983 Amendments. The consequences are that the large amounts in the somewhat fictional Trust Funds, which will accumulate over the next 25 years, obscure the fact that the program may be running at a substantial deficit when the baby boom generation retires.

There is also political danger in allowing the Trust Funds to accumulate as expected. Congress may be tempted, as they so frequently were in the 1950's and 1960's, to use the current overfinancing of the program to make benefit commitments, whose full cost will not materialize until well after the current period of overfinancing has run its course.

I wonder what my colleagues in the profession think about this matter.

Dwight K. Bartlett, III

(Continued on page 8)

A NEW LOOK FOR THE ANNUAL MEETING

The Society's 1986 Annual Meeting will have a new look! To expand its educational thrusts, the SOA is encouraging exhibits in conjunction with the meeting in Chicago, October 5-8.

Exhibitors will be featured from three markets: actuarial consultants, software, and reinsurance. A partial list of exhibitors, nearly 50 in all, appears in the program booklet.

A wine and cheese reception, at which the membership can meet the exhibitors, will be held on Sunday evening during registration. The meeting registration fee includes entry into the exhibit hall. □

Letters

(Continued from page 7)

FES/FEM White Paper

Sir:

The direction in which the FEM Committee is moving will, I believe, lead to a tremendous improvement in the examination structure and requirements for qualification as an FSA.

A key element in the proposals is the recognition that those subjects which have traditionally been the foundation and cornerstones of actuarial science must continue to be stressed. Beyond this, additional requirements for qualification would be demonstrated through mastery of any one or several different areas of actuarial specialization. I think this is how we must proceed if the examinations are to embrace the ever widening fields of endeavor coming within the perview of the actuary.

The new examination format would provide the necessary flexibility to enable the examinations to be kept abreast of ever changing conditions and needs. Lastly, I am confident that the high standards of competence which have always been the hallmark of our profession would not be compromised, but, even, might be enhanced.

Frank A. Weck

****

Sir:

My concern lies with the way that the FES proposal was adopted; i.e., by a resolution of the Board of Governors without ratification of the members of the Society. It is my understanding that the Board can similarly approve FEM without SOA membership approval.

In my opinion, FEM is a radical proposal which should be adopted only upon ratification by the members of the Society of Actuaries. I would prefer that the Board forego its right to unilaterally decide the FEM issue and present the proposal to the membership, if it ever comes to that. If it turns out that this issue will not be presented to Society members for formal ratification, then *The Actuary* or the Committee on Elections should state the position on FEM of nominees for the Board of Governors, so the membership might make an informed choice in the election of the Board.

John Nader

Questions for Actuaries

Sir:

Jim Hunt's letter (May) concerning the substitution of life insurance for survivor annuity options is a subject that I am seeing increasingly in my consulting practice. Working in a State Capital with a large number of retiring state employees and public school employees, I often am called upon to counsel individual employees who are making one of the largest financial decisions of their lifetimes — the choice of options under an extremely generous pension program. Lately, we have found a concerted effort to sell life insurance along the lines described by Mr. Hunt. His observations are correct and might be supplemented by the following:

1. Option factors, if imbedded in the law itself, tend to become distorted. For example, in the two major State plans the factors are based upon 4% interest. Intelligent self interest would lead a retiree to select an option which speeds up payments rather than one that delays them to later years. Thus, a Social Security notched option is better than a joint and 100% survivor pension.

2. An apples with apples comparison should involve survivor income life insurance on a non-participating basis, where the premium to buy the same survivor annuity is compared with the increase in initial annuity. What usually is quoted, however, is increasing whole life insurance where the death benefit is based on liberal projections of non-guaranteed interest rates. I usually find the initial amounts of life insurance are inadequate to purchase the survivor income annuity in the early years.

3. The spouse protection afforded under REA can easily be thwarted, with the spouse's consent, if the annuitant chooses a single-life pension with the intention of spending the increase in pension on life insurance, and then fails to pay a subsequent life insurance premium.

In conclusion, I rarely see an apples to apples comparison, but then why should this part of the life insurance sales effort be any different than any other aspect of that business?

Conrad M. Siegel

****

Exam Writing Techniques

Sir:

In the past, I have been highly critical of the Education and Examination Committee. Among other things, I have accused them of insensitivity to the needs and situation of a typical student.

I may have to reconsider my accusation. Volume XI, No. 3 of the *Record,* concerning the Quebec City Meeting, contains a fascinating and invaluable article, entitled *Techniques For Preparing For and Writing Exams.* It is a marvelous bit of work and I congratulate all those involved.

My only regret is that it was not available several years ago. If it had been, I might not still be struggling towards my Fellowship.

But regret is not criticism. A professional body that can produce this type of help for the student has much to be proud of.

Donald A. Blue

****

Math Oddities—June

The discussion of "The Fifth Power of an Integer", suggested by a letter from Jerrold Levy, ended by challenging readers to prove an extension of the original proposition to other powers. Three readers have sent in solid proofs of the extension, while another furnished a neat proof of the 5th power theorem.

While it is impractical to publish these letters, we can (and do) thank Jack Elkin, Pilot Gill, Harry Shissler, and Martin Snow for their efforts, and recognize them as "number-theory experts".

C.L.T.

****

Exam Memories—Errata

As noted in the June issue, *The Actuary* is now treating "Henry Unruh's problem" as a part of its past. We must, however, admit to two typos in our printing of Walter Shur's analysis. We do not seem to be able to handle the symbol *n* correctly. In one case we substituted *m,* and in another the word *no.* Our apologies to Mr. Shur, and to any readers whom we have confused.

C.L.T.