The Actuary
The Newsletter of the Society of Actuaries

VOLUME 15, No. 1 JANUARY, 1981

1979 AGENT TERMINATION TABLES

by Joseph R. Brzezinski

LIMRA has just conducted an informal study of agent terminations, collecting information (for all causes combined) (a) by both contract and calendar years for full-time career agents hired during the past 15 years, and (b) by calendar years in attained age groupings for agents hired more than 15 years ago. The 74 contributing companies were sent summary results during 1980.

Since then, effort has been devoted to smoothing the observed results and creating agent service tables by contract year. This smoothing was done graphically. The early termination rates are accurately reproduced, but rates for later contract years had to be smoothed more heavily, primarily to remove apparently aberrant heaping of terminations in the 11th to 14th years attributed to industry compensation and management practices.

Distributions of agents by age at hire were supplemented by the following assumptions:

- 1965-1970 Basic Ultimate Mortality
- 6-month Disability, 1971 Modification to 1964 Commissioners Disability Table
- Various assumptions about agent retirement.

Five multiple-decrement service tables, being called the *Brzezinski* 1979 *Agent Termination Tables* were produced. One of these was for agents of multiple-line companies, one for combination companies, the other three show the experience of companies not in those special categories, divided into three performance segments. Each of these segments reflects the experience of, as closely as possible, the same number of entrant agents.

Information useful to actuaries for creating their own tables for valuing

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IN PRAISE OF COMMUTATION FUNCTIONS

Let me be your servant:
Though I look old, yet I am strong and lusty.
As You Like It, II, iii

Ed. Note: In FIASCO, our London sister-journal, we read that Mr. Gary Chamberlin, an Institute member, had written a paper, The Proficient Instrument, *showing "how the Pension Funds actuary can add a new dimension to his choice of actuarial bases." Mr. Chamberlin kindly sent us a copy of his paper, which was first presented to the Institute of Actuaries Students' Society on November 18th, 1980. We undertake no more than to introduce its theme here, and will gladly send the text to the first reader who expresses enthusiasm for reviewing it more thoroughly.*

The paper's full title is: THE PROFICIENT INSTRUMENT: A New Appraisal of the Commutation Function in the Context of Pension Fund Work. The commutation function, says its author, is part of the actuary's basic equipment, guiding and assisting him in many of his calculations. As a whole, these functions form a powerful algebraic system for producing approximations to integrals. The computer has led many actuaries to disclaim the commutation functions which have served them so long and so well. But both the commutation function and the computer are mathematical instruments and can be made to work together well, performing their separate and complementary functions.

The author's way of highlighting the commutation function's continuing usefulness is to focus attention on the "N-Year Discontinuance Valuation." Says he,

> "In such a valuation, by contrast to the more usual Aggregate method, it is assumed that the fund will be voluntarily wound up after the passage of the given period of

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PROPOSAL FOR A NEW CONSUMER INDEX

by Barnet N. Berin and Lloyd S. Kaye

Ed. Note: These are excerpts from a complete article in THE MERCER BULLETIN, Nov. 1980. *You may request the full text from Mr. Berin at his* Year Book *address.*

We're Doing It Wrongly

We "overmeasure." Changes in the Consumer Price Index and other economic indicators influence business and investment policies and have a psychological effect on the marketplace as well as on consumer confidence. These statistics are converted into equivalent annual rates of return, assuming 12 successive months of the *same* experience and interpretative articles are written. Such commentary leads to news conferences, further interpretation, and the introduction of counter statistics indicating that the unfavorable trend may have been reversed. Quietly, months later, the statistics may be revised to correct an error (or) an abberration that, if known earlier, would have led to different conclusions.

(And) we measure the wrong statistics as a rate of inflation and stubbornly persist in doing so. The CPI concept of tracking a defined list of goods (with housing handled in an unusual fashion) made sense during World War I when checkbooks were less prevalent and credit cards non-existent.

What We Should Start Doing

To de-emphasize this concentration on a single month, we should introduce 12-month moving averages, (making) the latest month's experience a beacon only if supported by the trend of several preceding months.

Now it is possible, indeed necessary, to develop an exact CPI for an individual or a group. With a carefully chosen

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The Actuary

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Published monthly (except July and August) by the SOCIETY OF ACTUARIES, 208 S. LaSalle St., Chicago, Illinois, 60604, Robin B. Leckie, President, Kenneth T. Clark, Secretary, Robert J. Johansen, Treasurer, Robert E. Hunstad, Director of Publications. Non-member subscriptions: students, $4.50; others, $5.50.

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

EDITORIAL

SALUTE TO BOOK LOVERS

IN our issue last October we offered to send some mid-19th century volumes of the *Journal of the Institute of Actuaries* to a responder willing to pay the shipping cost. These were your Editor's personal property, and our interest was in finding a good home for them. We confess to having feared that nobody would apply.

But there indeed are book lovers among our members. From many readers within and even outside this continent, the requests have rolled in. We now announce that the winner of the necessary drawing is Samuel Eckler of Don Mills, Ontario, and we express our sympathy to all the other applicants.

Admittedly we haven't yet shipped these books to Mr. Eckler. On the lame excuse that the Christmas season is the wrong time to send a valuable parcel, we still have them, and are browsing through them for the last time. Let us start our 1981 editorials in light vein by reporting a few of the pieces that struck our fancy.

Who would care to know what were the first two questions on the very first examination paper for actuarial candidates, on June 10th, 1850? They were these:

1. Show how a decimal quantity can be expressed in the form of a vulgar fraction.
2. Find the fractional value of the recurring decimal .27272727.

A calculation made in 1682 by one Sir William Petty on the number of the quick and the dead at the Resurrection was reported; but this was as a curiosity only, it being suggested that actuaries might use it "as sauce to a dry discourse." Sir. William's arithmetic, which took in such elements as the number of "quick" our earth can feed, the number who had died up to the time of the calculation (worked out separately for before and since The Flood), and how much room for graves exists in Ireland, caused him to sum up thus: "From all which it is plain how madly they were mistaken who did so petulantly vilify what the Holy Scriptures have delivered."

There are some references to statues that forbade life insurance, these mainly promulgated in the 17th century. A French writer of those days said this:

> "Man is beyond price. The life of man is not an object of trade, and it is odious for his death to become matter for mercantile speculation. . . . These kinds of wager are of sad augury, and may occasion crimes. Such assurances are therefore absolutely void."

* * * * *

On another bookish topic: Several readers have reported being thwarted in their efforts to latch onto a copy of Peter G. Moore's *Reason By Numbers*, reviewed in that same October 1980 issue. We believe we have solved this problem—if you are one of these you should soon receive your copy. Anybody else interested, please write to us at our masthead address.

E.J.M.

LETTERS

Case For Taking Futurists Seriously

Sir:

In contrast to our centuries-old profession, futurism as presently practiced has been around for but a quarter-century. Yet its activities and jargon now appear regularly—more so than even the word "actuary"—in Sunday newspaper supplements and popular magazines. And the U.S. Congress has established a regular forum where its members may hear futurists and discuss with them the need for legislation to adjust to or to forestall emerging trends.

Futurism concerns itself with a whole spectrum of possible (alternative) futures. Its practitioners ask, and pose answers to, such questions as: What is the future of technology, economics, inflation, religion, civilization, health, longevity, even the human race? How will such futures evolve? Which current trends seem to lead in the direction that we welcome? Which don't?

Futurism wrestles with such questions in somewhat the same manner as does actuarial science — objectively, dispassionately (usually), by applying techniques that are familiar to actuaries, and some that (to our possible detriment) aren't.

Much of the futurist's perspective would seem not uncomfortable to most actuaries. But the futurist may arrive at orderly awareness of this perspective more quickly than does the typical actuary. And there are some differences in approach. Futurists look for signs of discontinuity while actuaries prefer a world of gradualness. Futurists become accustomed to dealing with uncertainty; actuaries cling to expected values, and pay little heed to ranges.

Maybe our attitudes and viewpoints need to square with those of futurists as we find ourselves faced with unforeseen weaknesses in our traditional products, and as pressures from consumerists, regulators and competitors strain our systems and bring into question the most entrenched practices of our institutions.

A few insurance companies have futurists already. ACLI's TAP Program, built upon findings of roughly 100 monitors from the management ranks of our companies, is a futuristic effort. How many actuaries keep abreast of that Program?

(*Continued on page* 4)

FINANCIAL HAZARDS OF THE CASH VALUE LIFE INSURANCE BUSINESS

Ed. Note: This a a capsule of what may be called "the Angle/Bladen theme." John C. Angle spoke at Hartford in April 1980 (see the Record for that meeting, pp. 188-193). His investment colleague, Ashby Bladen, addressed our Annual Meeting in Montreal last October. Their observations were about mutual life insurance in the United States. The speakers' words are not quoted precisely here, but we believe the message is faithful to the originals. Our readers' views are earnestly solicited.

The historically successful design of policies with guaranteed cash and loan values implicitly assumes stability in the general price level and in interest rates. Can traditional practices and products be sufficiently modified so we can cope with economic instability? Answer: Only partially, not satisfactorily, and at the cost of exposing ourselves to large, ultimately unacceptable, risks.

What Is Happening Around Us

Interest rates have repeatedly soared far outside the familiar 3% to 6% range, and have precipitated a series of intensifying liquidity crises for life companies.

After inflation and taxes, companies are producing substantial real losses for the savers who own us, and are becoming the most exposed of all financial institutions.

If government bailouts of faltering private companies, soaring government deficits, and rapid growth of illegal businesses, and tax evasions by legitimate businesses, all continue, we may end up with hyperinflation and the destruction of accumulated wealth, in which case there isn't much the companies can do that will benefit our customers. But that result is still highly unlikely; a deflationary crash is far more probable.

The prevailing economic conditions, the life company tax structure and today's competitive climate are spawning life insurance contracts that implicitly assume that those conditions will continue indefinitely. By reducing premiums, adopting modified reserve systems, introducing modern mortality tables, raising the reserve interest rate, and lowering our ratios of surplus to liabilities, we are dangerously reducing our corporate safety margin. Thus we are becoming progressively less conservative just when the risk of serious economic trouble is rapidly rising. And at the same time state insolvency laws are adding to our risk by subjecting us to liabilities of unpredictable size that are beyond our control.

What We Had Better Do

We must vociferously point out the disasters that loom if we don't have financially responsible elected leaders determined to end the inflation.

We must understand that we no longer have any reasonable basis for making any assumptions whatever about the range within which interest rates will fluctuate.

Financing the squeeze by issuing commercial paper is just about the most dangerous thing a life company can do.

Have the Society investigate the explicite margins needed for the risks we face, and see that our provisions for these risks appear in our balance sheets as designated contingency reserves, as our Committee on Valuation and Related Problems recommended in 1979.

Recognizing the possibility that interest rates may again slide into a long-term decline, steer away from making long-term reserve interest guarantees of 4½% or higher.

Consider introducing, as stock life companies have done, non-guaranteed flexible premiums that would vary inversely in some proportion to the return on long-term government bonds.

The Moral Of All This

A satisfactory future depends upon restoring stability, not upon trying to learn how to cope with instability.

Suffering as we are from "institutional rigidity," tinkering with our ailment by altering only the valuation interest rate will not enable us to survive in an era of short-term 20% interest rates, 100% marginal tax rates, policy loan borrowings in excess of cash flow, or an unprecedented long-term interest rate.

E.J.M.

REQUESTING AN EXPRESSION OF INTEREST IN FORMING A HEALTH INSURANCE SECTION WITHIN THE SOCIETY

The twelve undersigned wish to establish a Health Insurance Section under the Society's new arrangement for this form of unit. Any member, whether interested in group or individual health insurance, may join. To obtain permission to proceed, we must show that there is sufficiently widespread member interest.

We believe that such a Section will be of great benefit to actuaries serving this field, as well as to regulators, the industry and the public. The Section's purpose would be to enter into and sustain the following activities:

1. *Meetings and Seminars.* Section members would assume responsibility for, or assist with, planning and conducting sessions on our topics.
2. *Education and Literature.* We would promote actuarial education and prepare literature.
3. *Research.* We would define and conduct actuarial research.
4. *Other Activities.* The Section's broad purpose would be to serve all needs of actuaries in our individual and group fields, consistent with Society objectives and as approved by the Board. We would engage in such additional activities as are agreed will fulfill this purpose, subject to the general rules for Sections.

If you have an interest in becoming a member of the Health Insurance Section, simply complete the postcard enclosed with this issue of *The Actuary* and mail it to the Society Office (DO IT NOW!). If you have questions, phone or write any of the undersigned petitioners. Our addresses and phone numbers are in the *Year Book.*

Noel J. Abkemeier	Charles Habeck	Charles W. Kraushaar, Jr.
E. Paul Barnhart	Ben J. Helphand	Francis T. O'Grady
Kiran Desai	William L. Hezzelwood	Robert Shapland
Alan N. Ferguson	Spencer Koppel	Peter M. Thexton

□

Letters

(*Continued from page 2*)

Can we, today's actuaries, continuously renew our vision and attitudes, our knowledge and techniques, to respond effectively to emerging trends and discontinuities? Or are futurists better equipped to do this? Are they the actuaries of the future?

A. Anthony Autin, Jr.

* * * *

Acceptances By The New York Times

Sir:

To your hint (September editorial) that Ray M. Peterson's was not the only letter from a Society member to the Times, I respond, "Yes, it isn't". That newspaper has printed two from me, one on Social Security, the other "The Actuarial Implications of the Jumbo Jet."

Ardian C. Gill

Ed. Note: And we saw one recently from our own Samuel Tucker.

* * * *

May His Tribe Increase

Sir:

When your October issue arrived, it was revealed that my copies for June and September had failed to reach me. As my set of copies of *The Actuary* is complete from the first issue (March 1967) I would like to receive replacing copies of the missing issues.

John A. Oates

Ed. Note: We'd be interested in knowing how many other faithful readers have complete sets.

* * * *

A Teutonic Mouthful

Sir:

If Dr. Eichorn were alive today, he might disavow Charles Jacoby's assumption (October issue) that his "second-rate mind of an actuary" comment was levelled at our professional forebears.

Germany is, I believe, the one country in the world in which the word *actuary* still retains its original Roman meaning of *clerk*. If memory and spelling-capacity serve me correctly, the German word for one of us is

Lebensversicherungsmatimatekswiss-enschafftler.

Ernest R. Vogt

* * * *

Covering the Canines

Sir:

I had a long talk with Daffy, a feline member of my family, about Dog Life Insurance (November issue). Daffy thought it ridiculous to have monetary death benefits for those dependent on a dog's income. Dog's income? Absurd! Dogs can't even provide their own food.

Daffy, though, looks favorably on cat insurance, with a death benefit graded down with each of a cat's nine deaths. But how, she wonders, would the actuary construct appropriate mortality tables? And how would the underwriter determine which lifetime an applicant cat was experiencing?

These theoretical and practical problems might make the product expensive. I pointed out to Daffy that many cats (herself included) cost only about $5.00 so most people wouldn't buy insurance. She left the room muttering about human stupidity in assigning financial values.

Charles E. Chittenden

* * * *

Sir:

The optional feature that provides a substitute dog as a life insurance benefit has, I believe, exciting possibilities elsewhere. Have any companies yet applied a similar provision to their surviving-spouse coverages?

Jacob Poleyeff

* * * *

Sir:

I was born too soon? Years ago I turned down an invitation to provide actuarial services for a proposed Blue Shield-type medical care program for domestic pets, although my competence extends into the *conventional* group insurance field. But I did suggest that the enterprise be named "Dr. Doolittle Insurance."

David R. Kass

* * * *

Con and Pro on Cancer Insurance

Sir:

As one who was responsible (in the sense of initiating the process) for bans on cancer insurance in New Hampshire and Massachusetts, I'd like to comment on Paul Barnhart's defense of this form of dread disease coverage (November issue).

He gave three reasons why it is "today's whipping boy"—incomplete coverage, low loss ratios, scare tactics. In my work I relied on two of these; low loss ratios are subject to regulatory correction (in theory, at least) under the "benefits reasonable in relation to premiums" language of most statutes.

(1) *Incomplete Coverage.* When asked why I want to ban cancer insurance, I find it useful to ask the questioner why his company doesn't sell multiple sclerosis insurance, muscular dystrophy insurance etc. This makes my point: cancer insurance is a kind of *reductio ad absurdum.* Most cancer insurance is tied to hospitalization, and only about one in fifteen hospital discharges carries a cancer diagnosis. Mr. Barnhart's analogy to auto insurance covering only red cars would be sharper if expressed as the futility of buying one's car part-by-part from the dealer.

(2) *Scare Tactics.* It is insufficient to say that scare tactics are used to sell other products. The question is whether they appeal *unduly* to fear of the Big C.; indeed, the very description of the coverage as *dread* disease insurance supports this contention. And a look at the sales literature is revealing. The question of undue appeal to fear is analogous to that of whether insurance pricing by class is simply discriminating or unfairly discriminatory.

That cancer insurance has shown low loss ratios is certainly a reason why it has come under fire. Some comments on this point:

(i) Mr. Barnhart argued that premiums may become deficient as loss ratios rise by duration. But isn't cancer insurance generally guaranteed renewable, meaning that premiums can be raised by class? If so, there is a "heads the company wins, tails the policyholders don't win" quality to this argument.

(ii) The steep curve of cancer incidence by age suggests need for non-forfeiture values when level premiums are charged.

(iii) Use of a realistic interest rate (7%, say) may lower anticipated loss ratios figured without interest by as much as ten percentage points.

(iv) A major share of the business of a leading company in this field is quasi-group marketed by employer payroll deduction techniques. The largest policy-

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Letters

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holder group, according to evidence at a Massachusetts hearing, was employees in their twenties. I estimate the anticipated loss ratios for this group at under 5%, due in large part to very high lapse rates.

(v) Mr. Barnhart can't be serious when he suggests that regulatory bodies ought to look with favor on 30% to 40% loss ratios.

James H. Hunt

* * * *

Sir:

Three cheers for Mr. Barnhart's plaudits of Cancer Insurance!

I suspect that experience will prove the premiums, reserves, and loss ratios of many insurers to be seriously understated for at least two reasons: (a) failure to recognize increasing cancer incidence rates prevalent for several decades, and (b) failure to provide for dramatic cost increases associated with advancing age.

A severely increasing pattern of incurred loss ratios is already evident in many companies. Perhaps insurers are placing great reliance on their contractual right to increase future premiums. Or are purchasers being given an even better deal than insurers are willing to recognize?

It is unfortunate that this potentially valuable product has received such negative publicity. Few A. & H. products require that so little of the premium dollar be expended for underwriting and claims administration. Economical marketing techniques are also possible and widely utilized. Policy benefits can be readily ascertained and fill a real need.

One cannot ignore, however, findings such as those in a recent report by ABT Associates, Inc. From 45 case histories they concluded "that cancer insurance will pay at most 29% of the cost of cancer for the first three years of the disease," compared to 71-92% coverage under typical group comprehensive plans.

If insurers wish to silence their critics they will need to broaden coverage substantially. Or else—probably a fruitless endeavor—educate the public to, and justify, the limited nature of the benefits.

Lee A. Zinzow

* * * *

Chequered Exam Career

Sir:

May I change my entry in the current sweepstakes for the actuarial hall of fame.

I hereby withdraw my claim to be the only Fellow who has not heretofore submitted such a claim. Instead, I claim to be the only Fellow who passed Part 4 (or something called Part 4) three times (1938, 1939, 1946), twice "cum laude."

For the sake of whatever respect my students in Life Contingencies may have for me, I shall not enter a claim based on the number of times I failed an examination (by whatever number) in that subject.

Z. I. Mosesson

* * * *

Bare Facts

Sir:

Perhaps an account in lighter vein of events at a couple of employee meetings will help to counterbalance the heavy discussions of private pension problems and alleged ailments in your recent issues.

My partner had the unusual experience of addressing an employee meeting about their profit-sharing plan in which perhaps three-quarters of those present were nude.

This occurred at shift-change time in an underground anthracite mine. One shift had surfaced and was ready to enter the showers, while the other shift was changing into mining garb. At the close of the customary detailed presentation, the crowd was asked if there were any questions. There was one: "Can we shower now?"

Another memorable case was installing a pension plan for a group of 50 rabbis at an employee meeting held in the sanctuary of a synagogue. The actuary-employee dialogue was conducted in English, Yiddish and Hebrew with multiple simultaneous translations going on throughout the room. The Summary Plan Description was subjected to searching analysis by the employees to discover hidden meanings, if any.

I have reason to believe that it would be worth your while to solicit stories by other pension actuaries interested in topping these.

Conrad M. Siegel

Ed. Note: Topping is cordially invited.

ACTUARIES SHOULD TAKE A STAND

by Robert J. Myers

Ed. Note: Mr. Myers sent us this article on November 29th, 1980.

As explained in Norman Solomon's paper, *TSA* XV, 167, so-called windfall appropriations are required annually to finance dual benefits to which certain railroad workers became eligible under the Railroad Retirement Act in consequence of pre-1975 employment that entitled them to both Railroad Retirement and Social Security benefits. The 1974 Railroad Retirement Act prescribed that these appropriations be determined by the Railroad Retirement Board and then re-valued at each triennial actuarial valuation of the Railroad Retirement Fund.

The appropriations recommended by the Board's Chief Actuary have been as follows:

Originally Determined (1974)	$250 million
After 13th Valuation (1976)	350 million
For Fiscal Year 1979	363 million
After 14th Valuation (1979)	500 million

The first three annual appropriations were made in the amount originally determined. But since then the Office of Management and Budget (OMB) has stepped in and arbitrarily reduced the revised appropriations shown above: from $350 million to $250 million; from $363 million to $313 million; and from $500 million to $350 million.

This is a serious case of bureaucrats ignoring specific provisions of law, and making policy with the tacit consent of, or possibly without the knowledge of, the Administration officials to whom they report.

The actuarial profession should take a strong stand against this by-passing of actuarial determinations. It is just such actions as this that have caused many public employee retirement systems to become inadequately funded because the advice of the actuary was ignored. □

TELEPHONE

The New York Office of *The Actuary* has a new telephone number. Please call . . .

(212) 708-2467

THE PRESIDENT AND PRIVATE PENSION POLICY

by Barbara J. Eversberg

The first interim report of the President's Commission on Pension Policy, released in May 1980, contains several recommendations similar to reforms strongly urged upon actuaries three years ago (Record, Vol. 3, No. 4, p. 902) by Karen Ferguson, Director of the Pension Rights Center, Washington, D.C.

Similarities can be seen in views on the issues of (1) Mandatory Pension Coverage, (2) Vesting, and (3) Survivor Protection.

One of Ms. Ferguson's suggestions was for mandatory employer-sponsored Individual Retirement Accounts; some minimum amount would be withheld from an employee's pay and placed in an IRA. The President's Commission decided that serious consideration should be given to establishing a minimum advance-funded pension system, which might be either a tier of Social Security or a universal employee pension system with a central portability clearing house. Ferguson called for at least 5-year vesting, and the Commission believes that, as a general principle, non-vested periods shoud be shortened. Ferguson wanted vested benefits to be completely non-forfeitable when a participant dies leaving a surviving spouse; the Commission recommended that all survivors of employees who die before retirement with a vested benefit should receive either a survivor benefit under the pension plan or a life insurance benefit.

The Commission's final report is scheduled to be released in February 1981. The fate of its recommendations is markedly uncertain since the "President" in the "President's Commission" is not the same as the President who will receive their report. If incoming President Reagan holds true to his campaign assertions that "the best government is the least government," the above-mentioned reforms might have rough waves to ride.

There are arguments against these reforms which segments of the public would list under headings such as "individual choice," "individual responsibility," "no free lunch," or "trade-offs." As a sample of such possible counter-arguments:

(1) Employers enter into deferred compensation as a means of retaining workers in their employ. Those employees (and only those, some would say) who can "hack it" with the same employer for at least ten years have earned their pensions by not having exercised their freedom to:

- move to a place with a pleasanter climate
- work for a more understanding boss
- be nearer to their parents
- be farther away from their parents
- seek higher compensation or a more rewarding job experience

And when persons or families make the decision that the breadwinner(s) will change employment, it becomes their personal responsibility to weigh personal or financial advantages against the loss of non-vested pension benefits.

(2) Employees who are unmarried, or whose spouses are not dependent, might prefer some other additional benefit rather than increased survivor benefits under their pension plans. Although objections to somebody apparently "getting something for nothing" are rare, undoubtedly objections would be heard if the general public became aware of the costs of some of these proposed pension reforms and of the alternative uses to which these monies could be put.

(3) To some, the argument that pensions must be mandatory because some people cannot or will not otherwise provide for their own retirement falls into the same unpalatable category as proposals for mandatory employer-sponsored safe driving clinics or dental check-ups, or bonuses for employees who stop smoking. Any of these may be labelled "unnecessary interferences with personal life-styles."

Other recommendations in the Commission's Report, however, appear more in harmony with the oft-cited principles of individual choice and responsibility. These include the recommendation that:

a. Tax treatments of employee and employer contributions to pension plans, and of earnings thereon be the same;

b. A tax credit for people with low and moderate incomes, to encourage employee pension contributions and individual savings for retirement, be considered; and

c. Tax treatment of savings earmarked for retirement be the same as that of pension contributions.

These recommendations, although not placing any new restrictions on employers and employees, would reduce government revenues. The incoming President has repeatedly expressed his belief that government revenues can be cut back. Even those of us who like these recommendations because they might benefit us personally have a right to know and a responsibility to find out what price we will pay if they are effected. The questions we must ask about pension reforms are these:

1. What will this "improvement" cost?
2. What else might be had for the same price?

Even when these questions are answered, decisions will still be difficult because we may disagree on which purchases should be made and whether the price is right. □

CALL FOR PAPERS

The 16th Actuarial Research Conference sponsored by our Committee on Research will be held at University of Manitoba, Winnipeg, August 27-29, 1981. Its main theme will be: "Computers: The State of the Art and Its Implications for The Actuarial Profession."

Emphasis will be on new lines of thinking and recent developments (hardware and software) of interest to academics, actuaries in life, casualty and consulting fields, computing scientists and statisticians. The theme is broad enough to include such topics as numerical analysis and simulation.

If you might contribute a paper, write to the conference coordinator, Prof. H. J. Boom, Dept. of Actuarial & Business Mathematics, University of Manitoba, Winnipeg, Man. R3T 2N2, Canada. Contributors will be asked to submit abstracts before July 1, 1981.

Deaths

Paul V. Montgomery, F.S.A. 1913*
Edward J. Mullen, A.S.A. 1948
Elizabeth W. Wilson, A.S.A. 1924

*Mr. Montgomery was the Society Fellow of longest service. An appreciation of his record in our profession will appear in our next issue. □

Commutation Functions

(*Continued from page* 1)

years. . . . By having at his finger tips N-year as well as aggregate-type functions, the actuary will add a further dimension to his possible choice of valuation basis. The dimension may be thought of as his 'horizon' on those future events which affect the payment of benefit. . . ."

The approach itself is described thus:

"In forwarding the aim, the paper uses a novel method for the analysis of commutation functions, and the construction of new ones. There are several elements to this, for example the use of special abbreviated formulae to bring out underlying mathematical structure, and the introduction of two new notational forms relating to difference and ratio. But the most striking feature is the formal diagrams which are brought in to show the nature of the M and R functions, and which are of great assistance in the derivation of many of the N-year formulae. Also, there is the step of taking normal retirement benefits as a separate category, which has not apparently been developed in previous treatments of the subject. . . .

"These devolopments in notation and exposition are intended in large part as a way of loosening the hold of the commutation function theory in its current state. By adopting a new approach, one may come to see that a great deal more is possible with the functions than may have been supposed. Also, one may see that in order to make progress in actuarial mathematics, it is not necessary to discard all that has gone before, nor indeed desirable."

The computer's role in all this is described thus:

"(The) computer must be given a method by which it is to produce the results. Hence it may come to be, more frequently than imagined, that the commutation functions will in a sense reappear within the machine itself as the written program takes effect.

"The point is that the mathematical series have still to be summed—and the method of greatest power and adaptability may very well be to combine the subtle algebra of the commutation function with the virtuosity of calculation inherent in the computer. But even in this, one should be aware that the algebra must be given first place, since it is the instrument of control; while the computer will follow in obedience where the algebra leads. *At all costs, the danger is to be avoided whereby the actuary may come to depend on a convenient software package to such a degree that he effectively hands over his conception of and execution of the calculations to a computer programmer or systems analyst.*" (emphasis added).

The author develops his ideas through seven descriptive chapters and then a summing-up. Even a casual reader will, we think, notice that Mr. Chamberlin has found personal delight in his vision of what commutation functions can do when used imaginatively to reval the finer points of pension fund analysis and to bring the actuary closer to being monarch of what he performs. In answer to our question about the applicability of his approach to pension fund analysis on this side of the Atlantic, the author said, "I believe that 'The Proficient Instrument' would be of interest to actuaries in Canada and the United States, particularly in view of the wide variety of funding methods which are in use."□

Consumer Index

(*Continued from page* 1)

national sample, individuals in the study would agree to use either a check or a credit card for all purchases in excess of $10. Cancelled checks and credit card slips would furnish verification of expenditures which then would be slotted into categories such as food, clothing, utilities, etc. For either an individual or a group, these monthly totals would produce an exact consumer index. Month-to-month ratios would reveal percentage changes in amount actually spent on basic items and, in aggregate, changes in monthly living costs. In a stable economy, these ratios would be fairly constant.

By utilizing sampling techniques, a regular analysis of actual costs (with cancelled checks and credit card receipts as indications of expenditures) could be extended to a region or the nation. Groups excluded can be assumed to follow a similar purchasing pattern, but this should be checked periodically.

The Point of This Two-Part Plan

In addition to a smoothing device, what is needed is a sampling technique which will result in a vital index of living *costs*, rather than a measure of *price* increases. We need to develop an approach which will reveal, on a 12-month moving average, how people and families have been spending their money.

Common sense and personal experience indicate that as prices of certain goods and services rise dramatically, shifts in expenditures occur almost automatically. Less steak, more chicken; less expensive vacations, etc. The CPI attempts to recognize these shifts by changing its components. However, CPI market basket changes occur slowly; the current selection of goods and services (compiled in 1977 and effective in January 1978) is based on consumer surveys conducted in 1972-73. Today's market basket reflects out-of-date buying patterns. The compilation of the CPI also ignores the availability of discounted merchandise; price data are collected at regular store outlets. What should be measured are consumers' real expenditures.

Critics of an approach which monitors costs might argue that what is happening is a reduction in living standards; a family that, for example, changes its eating patterns is not living as well as previously. The difference focuses properly on the problem. By measuring actual living cost expenditures, and noting shifts in emphasis attuned to changes in the economy, we get a better indication of how serious an issue inflation is for any individual or family.

By approaching the issue from the perspective of expenditure rather than price, we measure living costs realistically. This is particularly necessary when one considers the effect of living cost fluctuation on Social Security payments, on collectively bargained COLA clauses and on plan sponsors under pressure to index pensions.

This difference in process is vital if we are to take corrective action and avoid conflicts between age and economic groups. A retiree index (for example)

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Consumer Index

(*Continued from page* 7)

should reflect an altogether different pattern of home purchases, transportation costs, tax payments, etc.

Implications in Forecasting

Many otherwise thoughtful studies routinely project rates of inflation into the future without considering the ramifications. Many governmental agencies and private institutions project inflation rates in excess of 10% for periods of 20 or 30 years or more. But what does this mean? Can our society remain as it is today if we have double-digit inflation far into the future? If salaries and expenses and the price of bread and clothing move at this rate, what about other costs? What about the financially weak industries? What about the cost of doing business? What about lending institutions? What about the role of government? A far better projection technique is to identify a plausible *range* of possibilities, and project not one answer, but a range of possible answers. This will, of course, require some interpretation but that would be a salutory consequence of the exercise.

Let's Get To It

We have fallen into a habit of measurement that should be discussed, debated and corrected. We measure badly and yet draw conclusions from these measurements that affect everyone. The degree of economic change experienced recently, and likely to continue for some time, warrants a new look at how we measure and how the results are interpreted and used. The Bureau of Labor Statistics should be given the resources necessary to develop a new consumer index based on what people actually spend and not on a "typical" market basket of goods and services. □

Council of Professional Associations on Federal Statistics

We announce with pleasure that our own Robert J. Johansen has accepted the post of Secretary of the Executive Committee of COPAFS. The Council represents 12 professional associations, including the Society of Actuaries. It was organized to help increase the associations' involvement and that of their members in federal statistical affairs.

THIS MONTH'S QUERY FOR ACTUARIES

This is the first, in a probably irregular series, of questions that we'll put to our readers. All that we seek are brief, by no means comprehensive, responses. These will be assembled into an article, giving credit to those whose contributions have been used.

Query: *The Harvard Medical School Health Letter* has come out with a piece of advice to its readers entitled, WHO SHOULD I HAVE FOR MY DOCTOR?. Its test categories are: Background, Keeping Up, Reputation, Accessibility, Practice Patterns Relationship To You, Demeanor — closing with thoughts on parting company from a physician who is judged not to have met minimum standards.

Please send us, to our masthead address, an idea (or two or three) that you consider suitable for inclusion in an advisory essay to members of the public on WHOM SHOULD I HAVE FOR MY ACTUARY?

1979 Agent Termination Tables

(*Continued from page* 1)

non-vested benefits is available by writing to the author at LIMRA, Box 208, Hartford, CT 06141.

The table herewith summarizes our new tables and compares them with the *McConney-Guest Modified*, (*TASA* XLIII, 307), and *Equitable* 1949-1960, (*TSA* XV, 458), tables. Although giving a general picture of the range and patterns of agent termination experience in the industry today, our values should not be interpreted as "industry averages," and cannot be applied safely to any single company without adequate consideration of that company's own experience.

Comparison of Agent Termination Rates

			Brzezinski 1979 Tables				
			Ord. Cos., not Mult.—Line				
Contract Year	*McConney-Guest Mod.*	*Equitable 1949-60*	*Best*	*Middle*	*Worst*	*Multiple Line Cos.*	*Combination Cos.*
1	.430	.476	.450	.635	.700	.240	.600
2	.370	.376	.400	.442	.565	.170	.490
3	.285	.296	.300	.315	.385	.105	.360
4	.225	.237	.210	.242	.310	.060	.280
5	.185	.187	.150	.190	.250	.040	.225
6	.152	.147	.130	.155	.200	.037	.185
7	.130	.117	.110	.125	.175	.032	.150
8	.115	.097	.095	.116	.150	.027	.125
9	.100	.088	.087	.108	.130	.023	.100
10	.086	.078	.079	.100	.125	.020	.094
15	.032	.045	.050	.070	.100	.009	.070
20	.025	.023	.042	.042	.079	.015	.042
25	.025*	.011*	.045	.045	.081	.023	.045
30	.037*	.016*	.051	.051	.110	.032	.051
40	.085*	.039*	.113	.113	.313	.092	.113
50	.183*	.101*	.220	.220	.442	.218	.220

* Deaths only.