



# The Actuary

The Newsletter of the Society of Actuaries

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## FURTHER PERSPECTIVES ABOUT LONGEVITY

by Arthur Pedoe

Actuaries have been indebted to the Statistical Bureau of the Metropolitan Life for studies in vital statistics associated with the names of Dublin, Lew and Spiegelman and a recent study by Quint and Cody is in this tradition. It is headed *Preeminence and Mortality* and was presented to the Annual Meeting of the American Public Health Association last November. Jules V. Quint is Research Associate of the Company and retires next May after over 40 years in the Statistical Bureau.

The first sentence of the paper starts a train of thought: "It has been recognized since the early 1800's that there were wide differences in mortality by social class." I have a reference to a work by F. Corbaux in 1833: *On the natural and mathematical laws concerning population, vitality and mortality* which I understand deals with the mortality rates of different socioeconomic groups but on what statistics it is based I do not know. The first study known to actuaries is that by Dr. William Farr, Honorary Fellow of the Institute of Actuaries, and was made in 1851 as part of the work of the Registrar General's Office in England.

It does not require much prescience to recognize that education, standard of living, occupation and attitude towards healthy living determine the mortality of men and their families; these are all associated with the phrase "Social Class."

Some of the early life insurance companies were organized to take advantage of this. Andrew Webster has drawn my attention to J.I.A. 26.306 referring to an early prospectus of the *University Life* founded in 1825 which stated that of the

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## GUIDELINES FOR PAPERS FOR THE TRANSACTIONS

by Josephine W. Beers

Chairman, Committee on Papers

Are you satisfied with the scope and the quality of the papers appearing in the *Transactions*?

If your answer is "yes," you need not read further; if it is "no," what are you going to do about it?

The Committee on Papers is charged with evaluating the papers submitted. We can do nothing about papers which are needed but which have not been written. Individual members might be asked to share their knowledge of particular subjects, but we believe that our Committee should not do the asking. It would be difficult for us to judge a paper fairly if we knew the identity of the author.

The Society members who, from time to time, have served on the Committee on Papers have expressed deep concern over both the gaps in our literature and the quality of the papers submitted. Various analyses have been made without, however, providing any suggestions for filling the gaps or improving the quality.

It may not surprise the members to learn that a very small percentage of our members, roughly 1%, submit papers. Even allowing for pressure of other duties, the percentage might well be a little higher.

The Committee is open to complaints from the members—we have had lots of complaints and few suggestions. Many of the complaints relate to the papers which are accepted and published, in particular to the large number of highly technical papers. The Committee has

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## WASHINGTON STATE REGULATION: GOVERNING REPLACEMENTS

by F. E. Huston

Chief Actuary,

Washington Insurance Department

This discussion of the cost comparison formula is prompted by the following key observations in Stuart Robertson's excellent article in the November 1968 issue of *The Actuary*.

"Quite independently from the question of what interest rate the policyholder could earn, a case could be made for a 5% annual rate on the grounds that it is the rate specified in most policies for policy loan interest. The use of a 5% rate in the regulation's formula produces, except for the approximations noted (\*), precisely the policyowner's cost for the insurance as it would be if he were to maintain a full policy loan. This is a cost figure that has meaning to the owner, and it is arrived at without subjective consideration such as the rate of interest that an investor might reasonably earn."

(\*Possible minor refinements have offsetting effects, particularly since they apply also to the "proposed replacement." See final footnotes for details.)

The following interest bases are briefly discussed below in relation to replacement regulations: (1) The above "full policy loan" basis, (2) the bases used in this department's regulation, and (3) the "rate of interest that an investor might reasonably earn."

### I. Full Policy Loan Basis

This basis, which gives the cost of the "decreasing term" element of the policy, was adopted by this department in September 1967 for a specific temporary purpose. A footnote required the net unit costs (after federal income tax) based on illustrative tax brackets of

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# The Actuary

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 articles, criticisms, and discussions in this publication.

## EDITORIAL

MR. BABBITT's letter in this issue complements the request of the Committee on Papers set forth in Miss Beer's article. The letter may be asking for what many actuaries might regard as esoteric information interesting to and understood by only the initiated. This is taking a limited view of Research which should encompass more than the area of highly specialized mathematics. It is not given to everybody to have either the knowledge or the machines to do simulation, for example. We might point out that there are still areas of actuarial practice crying out for more information and more research. How much do we know about withdrawal rates and their effect on either a life insurance company or a pension fund? Is there a better basic pattern than Linton's A and B rates which were promulgated many years ago?

"Separate Accounts" has introduced a new look into the life insurance business and just as we are getting accustomed to the new (and not necessarily improved) appearance our attention is diverted to equity-oriented products. The individual policyholder, as opposed to the member of a group, may well acquire the benefit of separate accounts sooner or later. The new technique points out that capital gains may during certain periods be more important than interest earnings. On that assumption is the contribution method with its fixed, almost rigid, bases the most satisfactory and the most equitable method of distributing earnings to participating policyholders?

These are not the only subjects that might tempt some of the members to respond to Miss Beer's plea for papers. We would wish to support her plea and even to enlarge the excellent guidelines she has laid down by quoting from a talk on Research given many years ago by Sir William Palin Elderton. He said

"... remember that a small experience accurately obtained may teach you more than a big experience—which is just big.

"No one expects, or rather no one can reasonably expect, a piece of original work . . . to be so written that a student in the early stages of his actuarial career can skim the cream in a single reading; but that is no reason why a writer should not set out his work so as to make it clear to any diligent, well-informed reader. The more original the idea the more difficult it is to express and many a good worker has spoilt his chance of winning a sympathetic hearing by carelessness or obscurity. . . . Generally speaking obscurity is due either to an inability to write English or an inability to see a reader's reaction to the written word."

A.C.W.

## LETTERS

### Research Papers

Sir:

A paper by Professor Daniel Teichroew, Chairman of the Department of Industrial Engineering at the University of Michigan, published in the August 1968, *Newsletter* of SIGBDP (the Association for Computing Machinery Special Interest Group on Business Data Processing) raised several points that may be of interest to actuaries.

Although the title of Professor Teichroew's paper is *ACM's Role in Business Data Processing*, it would seem to apply equally to the Society's role in insurance data processing. For those unfamiliar with the ACM I should probably point out that, in this context, "data processing" is not meant to distinguish a field of endeavor from the "scientific" use of computers. This ancient (in terms of computers) schism should have disappeared when we stopped talking about EAM's and multiplying punches.

Professor Teichroew's paper is cast in a question and answer format. The following seems to be of general applicability. The key word of the question is, of course, "more," as an adjective—not as an adverb.

*"Why are there not more worthwhile and appropriate papers being prepared?"*

"There are some indications that worthwhile work is being done which is not adequately reported through professional publications. The reasons for this include the following:

(a) The traditions, attitudes and incentives in industry discourage publications. The attitude in many firms (often implicit but sometimes explicit) is that anyone who takes the time to prepare a paper for publication is not doing what he is paid to do. Frequently the material, if it describes a successful application, is regarded as proprietary and publication is prohibited.

(b) Much of the work resulting in new techniques and methodologies is carried out by consulting organizations which receive their revenue from sales of services including computer programs. These firms naturally wish to release only enough information to attract customers but not enough to simplify the task of the competition. Any original

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## Letters

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Contributions they make are therefore disseminated by word of mouth rather than by formal publication.

"(c) Many of the individuals who work in the business data processing field do not have the background, experience and tradition for the preparation of scholarly papers which meet publication standards of professional journals.

"(d) Some of the fundamental problems in business data processing are 'behavioral' rather than mathematical or scientific. It is much harder to describe, in a scientifically acceptable form, why a particular type of data processing operation did or did not convince 'uninformed' or 'antagonistic' managers than why one method of solving a system of linear inequalities is better than another.

"It is also evident that there is not as much research in business data processing as there is in other areas of computer science. The subject has been less interesting to university faculty than subjects such as programming languages, automata theory, etc. There has also been much less government support. This again militates against publications, because knowledge obtained through government sponsored projects must be placed in the public domain."

### Where to Report?

Certainly there is no intent here to ignore the excellent papers that are being published. But it is just as certain that the indications of worthwhile but inadequately reported work exist.

Just where such work should be reported in the case of the Society would seem to be a valid question. I suspect that most people working in the area of simulation, for example, don't feel inclined to devote the time needed to prepare a formal paper for the *Transactions*. Additionally, such a paper would almost have to be project-oriented rather than general and therefore inappropriate for the *Transactions*. Alternatively, a truly revealing discussion of such a project would probably be too long for *The Actuary*.

Perhaps workshops such as the one in Washington on financial projections are

the only place. (I'm indebted to Frank Pendleton for excellent notes on that discussion.) We might additionally consider something on the order of CAST (COMMON Announcements from the Secretary-Treasurer—COMMON being IBM's users group for the small computers) wherein letters are simply reproduced and distributed to the membership. In the case of the Society, such a mailing list might include only those members who request inclusion.

As examples of the lack of publication we might note that conferences were recently held by the Society at Yale and Duke Universities dealing with this area of our work. The proceedings of these conferences were not, however, published. The same is true of the workshop mentioned above although the reasons for not reporting on workshops are important to the success of the workshop concept. IBM has also held two symposia on *Operations Research in the Insurance Industry*. The proceedings of these symposia were published, but their distribution seems to have been fairly limited.

Two further quotes from Professor Teichroew's final paragraphs might be a good way to close this letter.

*"What, if anything, can be done to change the attitude of industry toward publication?"*

"It seems reasonable to argue that some method of diffusing knowledge and techniques throughout industry (better than those now in use, e.g., meetings of managers in a relaxed atmosphere such as a country club or the migration of system analysts and programmers) is needed and would be helpful to industry.

*"Is there a need for tutorial papers, tutorial sessions at meetings or special meetings? If so, how can these be initiated?"*

"There appears to be a two-fold need. Many individuals are entering the business data processing field from other areas within the firm and do not have the background necessary to keep up with new developments in computer science such as, for example, list processing. On the other hand, scientifically oriented individuals need basic training in the role of the information processing system in the organization."

Here, again, we should avoid a hang-up on "information processing system" in any narrow sense. The words cover just about anything we do or can imagine, from getting out the payroll to the most sophisticated projection to determine how we might vary our commission scale to improve profit emergence.

S. E. Babbitt

*Editor's Note: Mr. Babbitt's interesting letter has been reviewed by E. A. Lew, Chairman of the Society's Committee on Research. Mr. Lew points out that reports on the Research conferences at Michigan and Yale have been made available, admittedly in limited quantities, and that the proceedings of the Conference at Duke University will also be available (The Actuary, January 1969). The Committee on Research is definitely interested in the type of publication Mr. Babbitt outlines. To this end they are in touch with the Institute of Actuaries and the Swedish Actuarial Society with the idea of publishing an international journal since a great deal of work in this special field is being done in Europe. In the United States there is available The Interpreter, the Journal of the Insurance Accounting and Statistical Association dealing mainly with data processing problems. The address of this publication is P. O. Box 139, Kansas City, Missouri, 64141.*

\* \* \* \*

### The Cost of Insurance

Sir:

Your January editorial on the question of the cost of a life insurance policy paints a rosy picture of the insurance industry, which, I fear, bears scant likeness to the reality. It is all very well to invoke the cooperative aspect of the life insurance contract, but the policyholders as a group, far from comprising a great commonwealth, are in fact powerless in the affairs of their insurance company. Insurance-company management is the only power; it appoints its own board of directors, and far sooner considers the welfare of its agents than that of its policyholders.

A recent paper in the *Transactions* well characterized the motivation of life insurance pricing as a conspiracy of management and agency against the policyholder. Pension actuaries in and

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## Washington Regulation

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20% and 40% (i.e. net loan interest rates of 4% and 3% respectively). Replacement proposals coming to our attention indicate relatively high tax brackets, and mainly replacements of participating permanent policies by nonpar reducing term insurance.

The formula is expressed as follows where P' is the annual premium (less dividend, if any), CV' and CV'' are the cash values for the preceding and current policy years respectively, AMT RISK is the face amount less CV'', and .05 is the loan interest rate. (This formula is used also in the "regulation" except for the specified interest basis.)

$$\frac{P' + .05 CV'' - (CV'' - CV')}{\text{AMT RISK}} = \frac{P' + CV' - .95 CV''}{\text{AMT RISK}}$$

**SUMMARY FOR POLICYHOLDER** may be expressed as follows where P', CV' and CV'' are \$20, \$80 and \$100 respectively.

1. Net cost to maintain a full policy loan, \$5.00.
2. Net death benefit it provides for the year, \$900.00.
3. Unit cost per \$1,000 death benefit (1) ÷ (2), \$5.55.
4. Unit cost after tax (40% tax bracket), \$3.33.

Thus, the advantages of this basis are (1) its simplicity, (2) its practical meaning to the policyholder, (3) it is determined without subjective consideration such as the interest rate that an investor might reasonably earn, and (4) since it gives practically the precise cost of the decreasing term element of the policy, an "indoctrinated mutual funds" policyowner may intelligently decide whether to retain the policy on that basis, or to replace it by the proposed reducing term policy. However, for interest to be tax deductible on relatively large policies, it may be necessary to limit the amount of loan during the early policy years. (See IRS regulation on tax deductibility of policy loan interest.)

In a possible typical case, a successful doctor replaces four substantial life policies by a "reducing term to age 65"

policy so as to invest "the difference" in mutual funds through a dually licensed agent who may continue to serve the affluent policyholder in such dual capacity.

### II. Regulation Interest Bases.

The unit cost in the regulation is based on the interest rate specified in the policy for nonforfeiture values plus (for participating policies) the excess interest rate included in the dividend. As such excess interest rate is not readily available, the regulation specifies the use of 4% for all participating policies, as it was the average rate obtainable from the 1967 Annual Statements on file with this department (i.e. use .96 in the above formula for all participating policies).

A footnote on the cost comparison form states that said interest on cash values is not currently taxable to the policyholder (i.e. for illustrative tax bracket of 30% and 50% the above 4% rate for participating policies is equivalent to taxable interest rates of 5.7% and 8% respectively).

The regulation was adopted because of the recent increase in replacements due to the increase in dually licensed agents, the increased public interest in mutual funds and equity programs, and the need for a method of meaningful comparisons between life insurance policies.

After months of consideration and exchange of information, the regulation as adopted was generally acceptable to both dually licensed agents and life only agents. As stated in the **ORDER FOR REGULATION**: The regulation is not directed against ever replacing a life insurance policy, nor would it be in public interest for the legislature or this administrative agency to *restrict unfairly* the free exchange of such competitive forces.

### III. Interest Rate an Investor Might Reasonably Earn with Comparable Safety.

This method is advocated by Dr. J. M. Belth of Indiana University in his excellent book *The Retail Price Structure in American Life Insurance*. It is an effective method under normal conditions when the interest rate to be used is selected by the person making the cost calculation, in the light of his own purposes.

This basis was not used in the regulation because (1) for "permanent to term" replacements, the interest rate affects the cost of only the existing policy under the abnormal condition of being replaced, (2) it therefore seemed impossible that this department could specify an interest rate that would not "restrict unfairly" the competitive position of either policy, and (3) quite independently from such subjective considerations, the interest rate on high grade tax-exempt bonds (which such affluent policyholder could purchase) currently exceeds 4.5%, compared to 4% specified in the regulation for participating policies. Said regulation basis may be considered, for this purpose, as an adaptation of the full policy loan method based on the scant 20% tax bracket.

If the regulation had been adopted a few years ago, subsequent net unit cost calculations would have been (1) unfavorably affected under the above basis due to increased interest rates on tax exempt bonds, and (2) favorably affected under the full policy loan basis due to increased federal income tax rates. Such changes have no effect on cost figures for decreasing term to age 65 insurance.

In contrast, under the "full policy loan" basis the policyholder may decide to retain the policy on that basis in lieu of replacing it by the proposed reducing term policy. The "regulation" method is effective by showing the unit cost based on the nontaxable 4% interest rate being generally earned on cash values of participating policies, which is equivalent to taxable interest rates of 5.7% and 8% based on 30% and 50% tax brackets respectively. Such important information is not disclosed under the third basis (the policy generally indicates only 2.5% interest on cash values). Thus, for this purpose, such basis would further "restrict unfairly" the cost competitive position of the existing policy.

*Footnotes to opening comments.* Principal technical refinements which, for this objective purpose, are not included in the formula; (1) dividends are not discounted to the first of the policy year, and (2) interest calculations are made on the fund at the end of the policy year rather than at the beginning of the year. Such combined corrections in representative unit costs

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## Washington Regulation

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of an "existing" whole life policy issued in 1968 at age 35 and a decreasing term to age 65 policy to be "proposed" in the 5th policy year are practically offsetting (with an approximate net annual difference of only 5¢).

Regarding several other items that have been questioned; (1) terminal dividends do not increase policy loan values and therefore should not be treated as cash values for this purpose, and (2) all expense, in effect, "are allocable to the net amount of risk" also in the full policy loan basis.

The regulation includes NOTICE TO POLICYHOLDER-IMPORTANT CONSIDERATIONS (other than cost). Such other considerations are included "for the policyholder's protection before effecting replacement of existing insurance with new insurance," and "This notice to you is for your protection and is required by Regulation No.R-68-1 of the Washington Insurance Commissioner." □

## Guidelines for Papers

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found from experience that these highly technical papers are generally the most carefully prepared and we should remember that the activities of the Society members are tending to become more specialized.

Many papers submitted are rejected because of quality rather than subject. In the hope that more authors may be encouraged, the Committee submits the following guides to acceptability.

(1) *The subject should be of continuing interest to a reasonable number of actuaries.* We have declined a few papers which were well prepared, but either of only temporary interest (and more suited to informal discussion) or in a field too remote from actuarial pursuits.

(2) *The title and introductory statements should clearly define the purpose of the paper.* All of us specialists can appreciate an indication, at the beginning of the paper, whether this is a paper we want to study, skim over, or pass by.

(3) *The balance of the paper should*

*be written with the stated purpose in mind.* Too many authors do not take the time to organize their thoughts into a logical order. It will often be easier for the author to make his thesis clear to others if he will make an outline in advance . . . and follow it faithfully. Rambling and interesting but irrelevant thoughts can leave his readers more confused than enlightened.

(4) *Each point to be made should be expressed precisely, and as simply as possible.* Symbols which are not in common use should be precisely defined. The thoughts should be expressed in a logical order. Most actuaries do not have the time or the inclination to struggle to discover what the author is trying to say. If the subject is outside the field of knowledge of most actuaries and not expressible in common language, it may be worthwhile to give enough background to the theory to make the paper comprehensible to the band of actuaries who are almost well enough versed to understand the language.

Whether writing in special terms or common English, the author should prove his conclusions, usually prior to stating them. Unsupported statements will not convince many actuaries.

(5) *Illustrations should appear reasonably realistic.* Unrealistic examples tend to make readers suspect that the theory might not work for the majority of cases in real life.

(6) *The paper should be carefully checked for accuracy.* Typographical errors impose a burden on our Committee and on our Editor. Accuracy of formulas and of stated conclusions are of supreme importance because of the measure of authority which, rightly or wrongly, attaches to a paper published in the *Transactions*.

There are probably a number of our members who could make very valuable contributions to our literature but lack the time to produce well-prepared papers, or who find it difficult to express themselves in language which would be easily understood by more than a few others. In conclusion, I would urge such members to consider enlisting friends or associates to assist them, either as ghost writers or as co-writers, so that our membership need not be deprived of the fruits of their experience. □

## Letters

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out of insurance companies know, for example, that the funding of pension plans with individual insurance policies is inimical to the sponsor's best interests (except in an infinitesimal percentage of cases); yet insurance companies seldom dare take the initiative in advising policyholders to switch to the vastly less expensive group or self-insured vehicles; they continue to support the agents' bonanza.

The amount of contingency reserves held by the larger companies is determined in arbitrary ways not related to the policyholder's interest in lower premiums. If the larger companies were to run a simulation experiment to determine the amount of contingency reserves actually needed for, say, 99% chance of survival, I doubt that they would need as much surplus as they carry (and this after loading every liability heavily for contingencies beforehand). If such contingency funds were held in a common pool for all insurance companies, the aggregate of all companies' surplus could be reduced still further.

It is an affront to the intelligence of your readers to imply that the prospective policyholder should not ask the cost of insurance, but should trust his insurance company to look after his interests. He knows better: all companies have similar claim experience, but there are great differences in efficiency and the willingness of managements to share with him the fruits of such efficiency. It is the attempt to measure this willingness that concerns the insurance buyer. He wants to protect his survivors against the risk of mortality, but how can he, at the same time, protect his premium dollar against the very real risk of disappearing forever into contingency reserves, or commissions? This is the question. And we actuaries should help the consumer to define his question precisely—then find the answer; inasmuch as we may be the only ones who can unravel the complicated provisions of policies and compare monetary values with prices, this is our moral obligation.

I resent, moreover, the persistent attempts of certain elements to erode the dignity of the actuarial profession by making the Society into a lobbying or-

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**Longevity***(Continued from page 1)*

1,000 members of the University Club only 38 had died in three years which indicated "the profits likely to result from assuring the lives of members of the Universities." It was Charles Babbage, known to actuaries for his invention (1822) of an early calculating machine, called a "Difference Engine," who pointed out that on the assumption of the average age of 35, as the prospectus assumed, the 38 deaths were higher than would have been obtained had the mortality followed six of the existing mortality tables; the Carlisle Table would have given 31.3 deaths. This comparison of expected deaths based on a single average age is one of the errors perpetuated in the field of vital statistics.

**Study of Fellows**

In T.A.S.A. 39 (1938) John R. Larus gave a mortality study of Fellows of the Actuarial Society of America. There were only 120 deaths. A grouping by age attained using four U. S. white male population tables corresponding to the exposure of the Fellows in four periods from 1889 to 1937 gave the following results.

Attained Age	Actual Deaths	Actual/Expected
-49	15	40%
50-59	22	77
60-69	26	65
70-79	41	125
80-	16	101

In TSA XV and previously in TSA XII I gave the ratios of actual to expected deaths by social class from official investigations in England and the U.S.A. (white lives); the comparison being with the general population mortality tables. The period was 1949-53 for the former and 1950 for the latter.

*England and Wales*

I Professional and highest ranks of business	86%
II Managerial, owners of businesses, farmers, accountants	92
III Skilled occupations, clerks and salesmen	101
IV Partly skilled and agricultural workers	104
V Unskilled and labourers	118

*U.S.A.*

1. Professional	82%
2. Technical and managerial	84
3. Clerical, sales and skilled workers	96
4. Semiskilled	97
5. Laborers except farm and mine	120
<hr/>	
Agricultural workers	83

It is clear there are wide differences between the mortality of the professional (and business executive) and the unskilled labourer as one would expect. A cautionary note was outlined in TSA XII that statistical investigations of this kind, where we attempt to correlate figures from the census and death certificates, have their pitfalls: the apparent mortality of the higher social classes is exaggerated, which would increase the ratio of actual to expected for their class. The reverse would apply to the lower social classes. In fact the actual differences are greater than indicated in the previous table.

On the other hand the whole trend of social legislation is to increase standards of living and improve working conditions so that socioeconomic differences and hence the mortality differences they engender should decrease. However a reference in Quint and Cody's paper that such differences have been eliminated in Amsterdam, remembering that Holland has one of the lowest death rates in the world, arouses one's skepticism.

*Who's Who in America*

Quint and Cody made a 12 year follow-up for the years 1950 to 1961 of some 6,000 distinguished professional and business men in *Who's Who in America* (one sixth of all men named) and worked out the ratios of actual to expected mortality for a number of professions and occupational groups using as the base the general U. S. white male population mortality tables for the same period. The overall ratios were as follows.

Ages		Ages	
45-49	58%	65-69	68%
50-54	53	70-74	75
55-59	56	75-84	73
60-64	61	85-	75
Ages 45 and over 70%			

Note the lowest ratios in the 50-59 age groups. They state that "this contradicts

the belief in some quarters that the mercilessness with which men may drive themselves during their 40's to outstanding positions in their careers is reflected in broken health when they are in their 50's." But these distinguished men are the cream of our civilization and must be considered as outstanding in health and virility to have got to the top of their professions and fields of activity.

Below are shown the ratios of actual to expected deaths of these *Who's Who in America* men subdivided by profession using as mortality base the general U. S. white male population table as used above. The numbers exposed are also given.

Profession etc.	Number	Actual/Expected
Business Executives	1,249	71%
Professors & College Heads	1,204	62
Lawyers and Judges	540	73
Men of Letters and Journalists	434	90
Clergy and Church Officials	345	62
Physicians and Surgeons	341	78
Scientists	337	55
Whole Sample	5,800	70

Ratios are also given in the paper of actual to expected deaths based on Guralnick's 1950 study of occupational mortality in the U. S. population. We are aware of the low mortality of the clergy as the above table indicates but when it is stated that at ages 45-64 the outstanding clergy in Quint and Cody's study record a mortality of 56% of that for all white clergy in the U. S. in 1950, presumably base on Guralnick's Study, my statement re the pitfalls in this type of work is stressed.

*Men of Genius*

Let us go further up the scale and deal with men of the highest achievement—the genius or near genius. The following observations are from an essay by Lord (Russell) Brain, F.R.S., the eminent neurologist. "The belief that there is a correlation between genius and mental disease is very old. . . . Insanity and genius tend to excite a somewhat similar emotional reaction because they seem to be the result of mental processes which the ordinary man does not share."

The form of insanity which is most closely related to genius is *cyclothymia*

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## RETIREMENT INCOME PLANS TOPIC OF DES MOINES MEETING

by T. A. Hinchliff

Lloyd A. Wooldridge of the Bankers Life agency in Des Moines was guest speaker at the December 1968 meeting of the Actuaries' Club of Des Moines. Mr. Wooldridge, formerly a Trust Officer with a large Des Moines bank, spoke about retirement income plans. His remarks focused on three issues: (1) pension vs. profit sharing; (2) insured vs. uninsured; and (3) individual vs. group.

Mr. Wooldridge suggested the primary advantage of the pension over the profit sharing arrangement was that the pension provided for a definite benefit. He tempered his preference for the pension approach by explaining that the suitability of the pension or the profit sharing method for a given group depended upon the nature of the employees making up the group. The natural candidate for a profit sharing plan was in his estimation a young, dynamic, salaried group with an average age in the early thirties.

The profit sharing approach has been advocated as having the advantages of increasing employee incentive and reducing turnover, but Mr. Wooldridge questioned whether these advantages materialized. The requirement of full vesting of benefits after 10 years of service on profit sharing plans has tended to promote turnover. Also, employee misconceptions of why their allocations differ from year to year or why the value of their funds may decrease due to market fluctuations have in many instances created adverse sentiment among employees.

In resolving the issue of "insured vs. uninsured" plans, Mr. Wooldridge discussed two key measures of a plan, namely, administrative expense and investment return. Drawing on his experience as a Trust Officer, he enumerated several unique problems banks have in managing investment accounts.

One problem arises in exercising central control over a great volume of individual trust accounts involving differing investment objectives. A second problem is the "red tape" involving approval of investment recommendations. A third problem results from the influence the commercial department of the bank may

bring on investment decisions in order to maintain good relations with current and prospective clients.

Attracting and holding good people is another problem of the department. Here the difficulty stems from the fact that historically trust departments have not been extremely profitable. This in part results from the practice of charging bank fees which do not reflect the costs of investment management. The last problem mentioned by Mr. Wooldridge was that bank and management people must devote too much time to non-trust duties.

He conceded that the purely investment costs might be less for a bank, but contended that the costs the client must pay for document drafting, employee communication material, and actuarial work more than offset this cost advantage. By comparison, the administrative expenses in the insurance company are coordinated under a single operation with the resultant lower overall cost to the client under the insured plan.

Mr. Wooldridge asserted that insurance companies can offer a higher investment yield on fixed dollar investments primarily because of the "direct placement" method of making investments. He also said that insurance companies are doing better than banks in the equity field since bankers are generally more conservative in this area.

Concerning the issue of "individual vs. group" Mr. Wooldridge said the individual approach is more flexible but also more expensive. He sees a trend toward more and more group since employers are quite cost conscious.

In the discussion that followed Mr. Wooldridge's remarks, it was pointed out that little reliance should be placed on simple comparisons of investment yield rates between banks and insurance companies because the methods of valuing assets in banks and insurance companies are different. In addition, the contention was made that the best yield rate in the first three or four years does not indicate the best long run rate.

In answer to a question, Mr. Wooldridge asserted that profit sharing plans definitely need a lifetime payout mechanism if the retirement funds are sufficient to provide reasonable incomes. It was his contention that most retirees want annuities. □

## ACTUARIAL MEETINGS

- Mar. 4, 1969, Actuaries Club of Philadelphia.
- Mar. 13, 1969, Baltimore Actuaries Club.
- Mar. 19, 1969, Actuaries Club of Des Moines.
- Mar. 27, 1969, Actuaries Club of Hartford.
- Apr. 10, 1969, Baltimore Actuaries Club.

## Longevity

(Continued from page 6)

denoting a temperament characterized by alternating moods of elation and depression. Noted cyclothymes were James Boswell, George Fox, the founder of Quakerism, Goethe, Robert Mayer who discovered the law of conservation of energy, Dr. Johnson and Dickens. Isaac Newton at the age of 50 suffered from a mental disorder characterized by depression and delusions.

In Quint and Cody's study "Men of Letters" (authors, writers, critics and historians) gave a relative mortality ratio to the whole group of 122%. Lord Brain commented that "all creative writers are nervous." He took the 150 poets represented in the Oxford Book of English Verse born between 1700 and 1862 and noted that their average age at death was 70 and concluded that their longevity did not differ significantly from that of the general population.

Let us conclude with a tribute to men of genius who have enjoyed longevity. Verdi composed his opera Falstaff at the age of 80. Edison took out his 1033rd patent at age 81. Oliver Wendell Holmes, Jr. was still active on the U. S. Supreme Court at age 90. Titian painted his final masterpiece "Christ Crowned with Thorns" in his 95th year. □

## Bulk Copies of the Actuary

We have received several requests for individual numbers of *The Actuary*. These can be obtained from the Society's office at a cost of 35 cents per copy.

Companies and consulting firms wishing to purchase copies in bulk for distribution to prospective actuarial students may obtain these at \$20 per 100 copies of a single issue. Any interested party should get in touch with the Society's office.

## Letters

*(Continued from page 5)*

ganization for special-interest groups. My fears in this regard are apparently shared by others, if the membership's recent rejection of the proposed amendment to the constitution (which would have allowed public expressions of opinion) is any evidence. The erosion I speak of is helped along considerably by aloof and self-serving editorials such as yours ("... asking about the price of insurance and giving no heed to the value of insurance." Indeed, sir!).

If we would have the public take us as professionals, let us be leaders, and servants of the common weal, not mere hirelings. But if we would be hirelings, let us at least grant our colleagues the courtesy of not tarring them with the same brush in our newsletter.

Arthur W. Anderson

\* \* \* \*

Sir:

I read with much interest your editorial in the January 1969 issue of *The Actuary* and I certainly agree with it. If the individual purchaser tries to analyze the cost of the various policies available today with the idea of purchasing the "best buy" he will not only become hopelessly bogged down in trying to make comparisons but it would probably take so long to complete his research that he would be a death claim before purchasing his insurance.

There are so many factors completely beyond the control of the purchaser that what may seem like the "best buy" at the time of purchase may prove otherwise at the time of claim. The important thing is to purchase a policy which will reasonably meet the needs of the purchaser at a cost he can afford to pay.

It seems to me this can best be done by picking an insurance agent in whom the prospect has confidence. He will represent a company in which he has confidence and the purchase is completed on a reasonable basis while the purchaser is still insurable. A few cents or a few dollars difference in cost over a considerable period of years is not nearly as important as having the protection when it is needed.

Some of the comparisons get very complicated and very difficult for the

## RESEARCH-READING LISTS

The Committee on Research has just brought up to date selected reading lists on the following topics:

- *Bayesian Statistics*
- *Multivariate Analysis*
- *Operations Research*
- *Simulation*
- *Systems Analysis*
- *Theories of Mortality*
- *Theory of Risk*

Copies of these bibliographies are available on request to the office of the Society or to the Committee on Research (D. G. Halmstad, Secretary, 1 Madison Avenue, New York, N. Y. 10010). These reading lists may be of particular interest to those who intend to take part in the concurrent sessions on (1) use of computer models and simulation and (2) operations research, which are on the program of the spring 1969 meetings of the Society. □

agent and prospect to understand. The problem of twisting or substitution should be handled by company and insurance department control of the agent and not by a mathematical formula.

An agent in whom the purchaser can have confidence does not necessarily mean one with long experience in the business. Confidence can be assured by educational requirements for the agent and proper control of the field force by the company. Furthermore, confidence in the company does not necessarily mean the exclusion of the recently organized company. After all, the well established companies were at one time recently organized. However, the tremendous influx of new companies recently and the mergers and reorganizations make this question of company confidence an important one.

Philip C. Irwin

\* \* \* \*

Sir:

I thought your editorial in the January issue was most provoking; i.e., well-written, stimulating, and wrong. You cite Oscar Wilde, who said that a cynic is one who knows the price of everything and the value of nothing. I pay you back in the same coin. It was also Wilde who said that truth is never pure and rarely simple. Which is worse: to be cynical or to be simplistic?

No responsible person (a category which includes the State of Washington Insurance Department, the senior Senator from Michigan, and Joseph M. Belth) has denied that "... a partner in the [insurance] fund has no means of knowing, nor can anyone tell him, what the cost of the insurance will be. The true cost can be found only when a claim arises and that may be on one member tomorrow and on another several decades hence." But surely that cost with respect to any one person depends in part on the premium-dividend-cash value structure of the contract. I dare say that for many buyers of insurance (i.e., those who live past the term or beyond the surrender of the policy), the cost depends *entirely* on the premium-dividend-cash value structure.

Therefore, is not some attention to this aspect of cost at least pardonable? The technical difficulties are admittedly considerable, but in view of those difficulties is it not desirable that responsible persons in the life insurance business give attention to the matter, as indeed they are?

As Oscar Wilde also said, "Do not shoot the pianist, he is doing his best."

Kenneth T. Clai

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## Federal Income Tax Effect

Sir:

John C. Fraser makes a most lucid explanation in his article "Federal Income Tax Effect of Reserve Interest Rate Under Phase 1" (*The Actuary*, November 1968). It is true that in his text he brings out that, "To the extent that Company B feels it needs more surplus than Company A because of its higher reserve valuation interest assumption, it will have to pay more tax than shown in the illustration. . ."

The inference seems to be that this would be the unusual situation. It would seem to me that the more normal case would be for Company B to have a larger dollar amount of surplus than Company A, though not necessarily to the extent which would make the assets of the two companies identical. In the latter case the taxes of the two companies would also be identical.

John W. Lincoln

A bibliography on the Consumer Price Index prepared by Dr. Lazare Teper (*The Actuary*, January, 1969) is available from the Society's office.