



The Actuary

The Newsletter of the Society of Actuaries

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COMMITTEE ON CONTINUING EDUCATION

by C. L. Trowbridge

The Committee on Continuing Education is finding its assignment to be challenging, and somewhat elusive. There is agreement on certain basic principles:

1. The rapidly changing environment in which actuaries find themselves requires that education continue throughout the actuarial career.
2. The educational needs of Society members cannot be completely met by the existing Educational and Examination system, though this system is effective for qualification purposes.
3. Continuing education, like the program leading to the FSA designation, must rely largely on individual initiative and self-directed learning.
4. The Society's role in continuing education is to uncover the existing educational opportunities, to develop new sources of education and to bring both to the attention of the membership.

The subject areas in which continuing education is most needed and will be most effective have still to be agreed upon.

The Committee has established four subcommittees, each with a specific assignment, as follows:

Subcommittee 1 —

- a. To identify subject areas in which continuing education is particularly needed or desired.
- b. To recommend as to each an appropriate technique for continuing education.

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ACTUARIAL SCIENCE PROGRAM AT THE UNIVERSITY OF NEBRASKA

by Stephen G. Kellison

Since 1957 the University of Nebraska has offered a program in actuarial science, open to regularly enrolled University of Nebraska students, as well as to insurance company employees.

Actuarial courses are offered for all the subjects currently on Parts 1 through 5 of the Society of Actuaries' examinations and these actuarial courses constitute a separate department within the university structure. All students are encouraged to write each actuarial examination upon completion of the course work related to that examination.

The program is open to both undergraduate and graduate students. At the undergraduate level the student has a choice of enrolling in the College of Arts and Sciences or in the College of Business Administration. Although the total program will differ somewhat depending upon which college is selected, in either case the student will take a basic core of courses in mathematics, economics, business, English, and computer science, in addition to the actuarial courses. The balance of a student's program is devoted to obtaining as broad an education as possible in areas such as humanities and the social sciences.

At the graduate level the student can obtain a Master of Science degree in Actuarial Science. This degree requires 36 credit hours, which must include all the actuarial courses not previously taken. The remaining hours are taken in supporting areas—usually mathematics, economics, and business. There is considerable flexibility in the choice of these supporting courses, and the student is relatively free to take courses which best fit his interests.

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THE ACTUARY IN STOCKBROKING

by Alistair T. Grant, F.F.A., F.I.A.

Editor's Note: We are glad to welcome another overseas contributor to our columns. Mr. Grant transferred his actuarial affections from a life insurance company to a firm of London stockbrokers. The interesting field of which he writes is practically uninvaded by actuaries in the United States.

The following comments are written from the point of view of a British actuary belonging to a London stockbroking firm, and it should be stated at the outset that there are some points of difference between stockbroking in the U.S.A. and in Great Britain.

One important difference is that whereas in the United States there is a strong flow of young high grade business school graduates into financial and stock market fields of employment, in Britain graduate business schools of this type have been set up only in the last few years.

The United Kingdom has a sizable capital market and a large and well-established actuarial profession, and as the investing institutions grew in importance and professionalism it was only natural that stockbroking firms, like these institutions, should attract actuaries as well as accountants and economists. There are now about 47 Fellows and Associates of the Institute of Actuaries working in London stockbroking firms—my own firm has seven—against about 650 working in life assurance concerns in the U.K., and the flow of actuaries into stockbroking is continuing. These figures should be increased to allow for Fellows of the Faculty of Actuaries who are well represented on the London and provincial Stock Exchanges.

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The Actuary

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GUEST EDITORIAL

THE SOCIETY OF ACTUARIES serves the whole of the United States and Canada—not exclusively but in a very real sense. Some 47% of our Fellows have their principal place of business in what we define as the Northeast, 19% in the Central States, 10% in the South, 6% in the West, and 18% in Canada. It is also notable that 32% of our Fellows are not employed directly by old-line life insurance companies. Most of these are consultants, but others are employed by fraternal companies, brokers, governments, insurance departments, industry associations, universities, companies not typically employing actuaries, or are simply retired from active business.

There is general agreement that our Board of Governors should be truly representative of our membership, both as to place and type of employment. By and large we have been fairly successful in accomplishing this objective—in spite of our rapidly growing membership, our democratic elections, a natural and proper tendency on the part of the Fellows voting to recognize the merits of each candidate aside from his place and type of employment, and the inescapable fact that large plurality of Fellows is still in the life insurance business in the northeastern states. However, there are years when the composition of the Board is not as representative as we might wish.

The current year is a case in point. At the time of our last annual meeting, the concept of proportional representation suggested that we should try to have 5 Canadian members on the Board. There were 3 holdovers, leaving vacancies, in this sense, for 2. Six were nominated but none was elected. As a result, Canada is seriously under-represented at the present time. In a similar way the concept of proportional representation suggested that we should try to have 9 non-life insurance members on the Board. There were 4 holdovers, leaving vacancies, in this sense, for 5. Seven were nominated but only 2 were elected. Of the 6 now on the Board, only 2 are strictly representative of the several hundred consulting actuaries in our membership!

Space in *The Actuary* does not permit a full exploration of this subject at this time. Many suggestions have been made for altering our voting procedure to ensure the election of a more truly representative Board. However, many members are not completely satisfied that this should be a *sine qua non*, to the exclusion of all other considerations. In any case, until the Board acts on the matter, we must follow the traditional election procedure. The Nominating Committee this year will propose many more candidates than there will be vacancies to fill, but the Committee does appeal to all Fellows to cast their votes in such a way that no geographical area or type of employment is significantly under-represented, with due regard to the other criteria that govern their selection of the candidates they vote for.

Harold R. Lawson
 Chairman, 1969 Nominating Committee

LETTERS

The Establishment

Sir:

The April article "Statistics on 20 years of the Establishment" by Vice President Thomas P. Bowles, Jr., (1948) (Fellow) offered many facts on the Board of Governors.

The following additional material may assist those Fellows who, like myself, regard this matter as significant:

Year	Fellowship Obtained	Number of Fellows	Number on Board
1959-68		853	0
1956-58		157	2
Previous to 1956		760 (est.)	27
		1,770	29

Whatever conclusion one may reach as to the existence of an "Establishment," it does seem that representation on the Board of Governors is weighted historically.

John Kroeker

* * * *

Sir:

It is my hope that Tom Bowles' article in the April, 1969 issue of *The Actuary* stimulates further action toward opening the floodgates against the "Establishment" within the Society of Actuaries.

Like any other organization, business, or association of today, our Society must be liberally represented by the younger set of actuaries in all its committees and activities, rather than having them almost exclusively relegated to the Examination and Education Committee until their individual time has come to be admitted within the Establishment. Young people in all fields of endeavor are setting the pace and influencing decisions. This is primarily because they are tuned in with modern thinking, and the constantly changing economic and business character of our affluent world.

In recent years our Society has gradually been moving away from the traditional practices of basing Committee membership and other Society activities almost exclusively on seniority and experience. This can be illustrated by the panel discussion held several years ago entitled "The Future of the Actuarial Profession as it Appears to Younger Actuaries."

A further example of changing attitudes may be found in studying the table

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Letters

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below concerning the composition of the Public Relations Committee. If any committee needs younger actuaries among its members, it is that committee, for who else could better represent our Society in a positive, enthusiastic manner. Who else could better relate to high school and college students who are considering an actuarial career? Who else could better present a dynamic public image of our relatively little known Society to other professions, to legislative bodies, and to the public?

COMPOSITION OF PUBLIC RELATIONS COMMITTEE

Years of Attaining Fellowship	Number of Members	
	1968	1969
1959 - 1968	0	14
1931 - 1958	22	22
Total	22	36

In examining the above table, the increase of 14 members in 1969 over 1968 is due to the creation of two subcommittees in addition to the 22 member Public Relations Committee. It is also interesting to note that the 6 new members of the basic 22 member committee all attained Fellowship between 1956 and 1961. Hence the most recent Fellows of the 36 members in 1969 were placed on the subcommittees, and the basic committee still has no member who has attained Fellowship in the last 7 years.

Arthur B. Kagan

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Social Security's Expansion

Sir:

W. Rulon Williamson in a letter in the June issue set down some interesting historical facts about the early days of Social Security in the United States. By both the figures presented and the accompanying discussion, one can clearly gain the impression he believes the Social Security program has expanded greatly over the years, in a most undesirable manner.

In my opinion, there has been little relative expansion of the Social Security program as far as the general level of benefits is concerned, considering both the normal anticipated demographic changes and the economic circumstances. I believe there are influential forces at work which seek to expand greatly gov-

Anderson's Method—Yield on Investment

Sir:

During the past year numerous letters to *The Actuary* have discussed bizarre compound interest problems in which more than one rate of interest satisfies the fundamental equation of value. The following example is an illustration of this anomaly in a situation different from those discussed previously.

Consider the profit-testing of non-participating gross premiums by means of Anderson's yield on investment method (see Anderson, "Gross Premium Calculations and Profit Measurement for Nonparticipating Insurance", *TSA XI* p. 357). The following data are calculated:

(1) <i>Policy Year</i>	(2) <i>Book Profit</i>	(3) <i>Persistence Factor</i>	(4) <i>(2) x (3)</i>
1	-1.61	1.00	-1.61
2	2.22	.90	2.00
3	2.35	.85	2.00
4	2.50	.80	2.00
5	2.67	.75	2.00
6	-19.94	.70	-13.96
7	3.03	.66	2.00
8	3.23	.62	2.00
9	3.39	.59	2.00
10	3.57	.56	2.00

The yield rate is that rate of interest at which the present value of book profits is equal to zero. The fundamental equation of value is

$$1.61 + 13.96v^5 = 2(a_{\overline{9}|} + v^5)$$

It is easy to show that rates of 10% and 15% both satisfy the equation.

One might ask how such a pattern of book profits would emerge. Perhaps an enlightened agent foregoes his first year compensation for a huge persistency bonus if the policy is still in force at the end of five years.

Stephen C. Kellison

ernmental means of providing economic security at the expense of similar private means. (For more details on this matter, see my paper "Government and Pensions", which was presented at the Symposium on Private Pensions and the Public Interest, sponsored by the American Enterprise Institute for Public Policy Research in May 1969—copies available upon request to me.)

The various dollar figures showing great increases, are not really significant. For example, to compare benefit outgo in 1968 with that in 1937 (when only small refunds of contributions were payable) is not really meaningful.

Also, I question the significance of comparing actual benefit outgo and tax income in 1968 with what was estimated for 1968 back in 1935. This comparison is affected by such important factors as the depreciation in the value of the dollar, the broader coverage of the program to more employment categories,

and the addition of new types of benefit protection. What I believe is significant, to some extent, is that the ratio of the actual 1968 experience to 1968 estimates made in 1935 was about the same for both taxes and benefits.

Mr. Williamson mentions the famous 1935 estimate of a \$47 billion fund in 1980. It is interesting to note that, as of mid-1969, the balance in the OASI and DI Trust Funds combined was \$32 billion and that current estimates for the present program (if it is left unchanged) are that by mid-1971, the \$47 billion level will have been reached, some 9 years ahead of time! Of course, as I have indicated previously about dollar figures, this does not really prove anything, because of the many different, often counteracting, elements involved as between the actual experience and the original estimates.

Robert J. Myers

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SOCIAL SECURITY NOTES

Robert J. Myers, *Distribution of SMI Bills and Reimbursements by Type of Service*, Actuarial Note No. 54, pp. 2, Social Security Administration, Washington, July 1969.

This note examines data on numbers of bills and amounts of reimbursements under the Supplementary Medical Insurance program, by type of service, allocated by recording periods. Through December 31, 1968, 92.5% of the reimbursements were for physicians' bills, 1.5% for home health bills, 2.7% for outpatient hospital bills, .5% for independent laboratory bills, and 2.7% for all other bills. These percentages could be distorted somewhat due to the lack of available data on an accrual basis and the fact that the data does not include bills (or reimbursements) that went toward satisfying the deductible.

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Charles R. Owen, *The Farmington, West Virginia, Mine Disaster: An Actuarial Analysis of Survivor Benefits Payable*, Actuarial Note No. 53, pp. 4, Social Security Administration, Washington, June 1969.

This note presents an analysis of the benefits awarded to the survivors of the 78 men who lost their lives in the mine disaster near Farmington, W. Va. in November 1968. Assuming an interest rate of 4¼%, the present value of all estimated payments (including benefits which will be awarded to the widows in the future) amounts to \$1.9 million.

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Robert J. Myers and Margaret A. Lannen, *Comparison of Actual Experience under OAS-DHI System with Short-Range Cost Estimates*, Actuarial Note No. 52, pp. 3, Social Security Administration, Washington, June 1969.

This note compares actual experience for calendar year 1968 under the OAS-DHI system with the short-range cost estimates given in the 1968 Trustees Reports. The balance in each of the trust funds at the end of calendar years 1960-68 is compared with the estimate made at the beginning of each of the same years. The actual balances in the OASI and DI Trust Funds on December 31, 1968 were slightly higher than estimated. The balance in the SMI Trust Fund was about 25% higher than estimated due primarily to a greater lag in filing and adjudicating claims than anticipated.

Because the General Fund of the Treasury did not totally reimburse the HI Trust Fund during the calendar year

A SIMPLIFIED ILLUSTRATION OF LIDSTONE'S THEOREM

by Richard W. Z...

The following illustration of the validity of Lidstone's Theorem is different from that given in the Part 4 textbook *Life Contingencies* 2nd Ed., by C. Wallace Jordan, on pg. 119, and for some students may be simpler. This illustration is not tailor-made for Part 4 students because knowledge of the 3-factor dividend formula, first covered extensively on Part 7, is a prerequisite. However, a quick explanation of the gain from interest, gain from loading and gain from mortality elements of the 3-factor dividend formula will usually suffice for most Part 4 students.

Consider a participating insurance of uniform amount 1 with level annual premiums.

Let P = Net annual premium based on i and q
 $L = e$ = Level annual expense provision and expense, respectively, due or incurred at the beginning of each policy year. In this illustration they will always be considered level by duration and equal to each other.

GP = Gross premium
 $= P + L$ (i.e. the net premium plus loading)

${}_tD$ = t -th year dividend payable at the end of every year if the insured paid the premium for the t -th year at the beginning of that year.

i' = experience rate of interest

q' = experience rate of mortality

$(GP - v'_t D)$ = Net payment by policyholder at beginning of t -th year.

It can be shown (see page 24 *Distribution of Surplus* by Joseph B. Maclean) that the contribution to surplus at the end of the t -th policy year for the plan under discussion which will leave the terminal reserve unchanged is

$$({}_{t-1}V + P)(i' - i) + (L - e)(1 + i') + (q - q')(1 - v)$$

the familiar 3-factor contribution formula. Since $L=e$, the gain from loading will equal zero, but is included for completeness.

Let the company pay out the entire contribution to surplus as a dividend. Now if the dividend increases with duration, then the net payments of $(GP - v'_t D)$ made

by the policyholder will decrease. What we have in effect is a decreasing premium plan with decreasing net premiums of $(P - v'_t D)$ and a level amount of insurance.

Now consider a non-participating insurance of uniform amount 1 with level annual premiums.

Let P' = Net annual premium based on i' and q' .

$GP' = P' + L$ (i.e. the experience net premium plus loading)

Comparison of Reserves

Let us compare various reserves on the participating and non-participating contracts respectively. On the participating contract the reserve on the decreasing premium plan based on experience interest and mortality is always equal to the reserve on the participating level premium plan based on valuation interest and mortality because of the nature of the 3-factor dividends. On the non-participating level premium plan let the reserve be based on experience assumptions.

Now it should be obvious that if the benefits on two policies are the same, the reserves on the one with decreasing premiums will be higher than the reserves on the one with level premiums, if both are based on the same assumptions. An extreme example is the reserves on single premium Whole Life, compared to the reserves on annual premium Whole Life.

Since the experience par reserves have decreasing net premiums, these reserves will be greater than the non-par experience reserves. But the par experience reserves are equal to the par valuation reserves. Hence the non-par reserves on experience assumptions are lower than the par reserves on valuation assumptions if the 3-factor dividends increase with duration. The opposite will be true if the 3-factor dividends decrease with duration.

We can now generalize these results to say that the reserves on a level premium, level benefit plan based on i and q will be higher (lower) than those based on i' and q' if

$$({}_{t-1}V + P)(i' - i) + (q - q')(1 - v)$$

increases (decreases) with duration, which result is Lidstone's theorem and completes the example. □

Continuing Education

(Continued from page 1)

Subcommittee 2 —

- To investigate the best means of
- accomplishing a literature search as to each of the subject areas identified by Subcommittee 1.
 - developing an appropriate bibliography or reading list for each subject area.
 - identifying places where the literature is weak.

Subcommittee 3 —

- To investigate the best means of developing new literature to fill in the weak places (assuming that weak places can be identified through means recommended by Subcommittee 2.)

- To make a recommendation as to how we might make available to Society membership the Study Notes developed by the education side of E&E committee.

Subcommittee 4 —

- To investigate how other professions, with similar needs, have faced up to the matter of continuing education.
- To investigate the possibilities of continuing education through the resources of some educational institution(s).

The Committee hopes to have some recommendations to make to the Society's Fall Board of Governors meeting. Meantime the Chairman will be glad to hear from any members with their suggestions within or without the areas delineated above. □

for costs relating to uninsured persons, the actual experience under HI during calendar year 1968 could not be compared with the estimates (which assumed total reimbursement).

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Copies of these notes may be obtained gratis from Robert J. Myers, Chief Actuary, Social Security Administration, Washington, D. C. 20201. □

University of Nebraska

(Continued from page 1)

Booklets describing the actuarial profession and the University program are distributed to high schools and colleges in the state of Nebraska in an effort to inform students of opportunities in actuarial science. In addition, the Bankers Life Insurance Company of Nebraska

has instituted a scholarship program at the high school level which has proven successful (see John Fibiger's letter, *The Actuary*, September 1968.)

The enrollment in the actuarial courses in recent years has been encouraging as has been the examination record of the students. On the May 1969 examinations, there were 43 passes in Parts 1-4 by University of Nebraska students. Almost all these students are native Nebraskans. It is hoped that in the future more out-of-state students will be attracted into the program.

The actuarial program at Nebraska receives significant support from the Nebraska Actuaries Club and the insurance industry. Industry support is a key factor in the success and the continued growth of the program. □

PROGRAMMING LANGUAGE

by Manuel R. Cueto

The article "Developing an Actuarial Programming Language" by Russell J. Mueller (*The Actuary*, April) suggests that "a study should be undertaken to determine the feasibility of developing" such a language. In this connection, I feel it to be appropriate to draw attention to some practical considerations which should form part of such a study.

In his article, Mr. Mueller refers to "IBM's support of APL—a computer language for statisticians." This language was devised by Dr. Kenneth Iverson, who is presently with the Research Division of IBM. Nevertheless, IBM has made this program author-supported only and not of a type which is supported by the IBM Corporation as are such high-level languages as COBOL, FORTRAN and PL/I. Moreover, APL is really a "time-sharing" language and not just a language for statisticians.

The question of "support" is concerned with the problems of compilers for, and maintenance of, high-level languages. Because such languages are not completely computer-independent, it is necessary for each manufacturer of computing equipment, if such language is to be supported and made available to the user to provide "compiler programs" for their respective computers. A compiler program translates the instructions written in the high-level language of the source program into machine language.

With respect to the maintenance of such languages, it should be noted that in today's computer environment it is also necessary to obtain the support of each operating system whether an electronic installation uses a tape, disk or full operating system. Briefly, operating systems which are generally furnished by the manufacturer of equipment consist of a comprehensive set of service programs and high-level language translators under the supervisory control and coordination of an integrated set of control routines. Furthermore, each version or "release" of an operating system, which incorporates certain improvements and advances over prior versions, must also include support of the high-level language. It follows, therefore, that modifications and improvements have also to be made in high-level

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VALUATION OF COMMON STOCKS IN A NON-INSURED PENSION PLAN

by Charles C. McLeod

At a recent workshop of the Canadian Institute of Actuaries on pension plan investments, there was considerable discussion about adjusted book values of common stocks. The practice of valuing common stocks at market was discussed as being subject to too many fluctuations. These sentiments are echoed in the Society's Study Notes which describe in detail eight different methods of deriving adjusted book values.

What are we to do, however, if we do not know the book or cost value of the assets? This would be the case, for example, if units were bought in a mutual fund where dividends are invested in buying further units. When payments are being made into and out of the fund at random points during the year, it may be hard, if not impossible, to calculate what part of the assets represents dividend income and what part represents unrealized capital gains. This leads one to consider whether to use market value of assets in such a case, or to go one step further, to use market value in all cases even if the book value of the assets is known.

Let us distinguish at this stage between conservative valuation and undervaluation. Actuarial liabilities are usually valued conservatively. These liabilities relate to events in the future which we frequently cannot evaluate with any great accuracy. We therefore use a turnover scale, a valuation interest rate, etc., less than that which we expect. On the other hand we are usually certain of the value of the stocks in the portfolio. The prices are quoted daily and if we sold the portfolio, we know how much we would realize. (The only possible exception would be the sale of a block of shares so large that the size of the sale would depress the market value.) If the market value of our assets is \$100,000 and we choose to value them at \$80,000, this is not conservative valuation but *undervaluation*.

One reason given for undervaluing the assets is to allow for possible depreciation. This can be rebutted in a number of ways. First, if it is thought that the stocks will go down in value, then they should be sold. Second, the stocks were bought presumably in expectation of growth, so why should this growth

ACTUARIAL MEETINGS

- Oct. 7, Canadian Institute of Actuaries—Toronto
- Oct. 8, Nebraska Actuaries Club—Omaha
- Oct. 8, Actuaries Club of Indiana, Kentucky and Ohio—Columbus, Ohio
- Oct. 9, Baltimore Actuaries Club
- Oct. 14, Actuaries Club of New York, Joint Meeting—Tarrytown
- Oct. 16, 17, Actuarial Club of the Pacific States—Pebble Beach
- Oct. 24, Middle Atlantic Actuarial Club—Washington, D. C.
- Oct. 30, 31, Southeastern Actuaries Club, Louisville

(which has taken place) not be reflected in the valuation balance sheet? However, if one feels that the assets are not likely to go down in value but wishes to take precautions in case they do, one can hold an investment reserve liability equal to $x\%$ of the market value of assets. The value of x would vary with the possibility of loss. This could be done for each stock separately or for the portfolio as a whole.

It sometimes seems that many actuaries are apprehensive about common stock valuation in a pension plan and this may arise from historical actuarial background with life insurance companies. The situations however are different. If a life company's liabilities exceed the market value of its assets, then the company is insolvent. There is thus the tendency not to take a capital gain into account until the asset is sold and to use cost value until that time. With pension plans, the liabilities will frequently exceed the assets; for example a new plan providing past service benefits. If market values are depressed below cost value (assuming we know the latter), this will rarely mean that the plan must be terminated.

This short article has not considered the practical aspects in detail, nor the special problems which may occur—e.g., fixed-cost Taft-Hartley plans. Nevertheless, I hope it indicates that market value, or at least adjusted market value, of common stocks would give a better picture of the financial status of a pension plan than book or adjusted book (sometimes called "phony") values. □

Programming Language

(Continued from page 5)

language programs so that they may properly be accommodated in the new version, particularly where multiple variable task techniques are being employed as a matter of more efficient operations.

Of necessity, the following questions naturally occur:

(a) Who will write the compiler for the actuarial programming language and set forth and enforce the standards for the various compilers, which experience has shown to be absolutely essential?

(b) Who will provide the maintenance of such language?

(c) Will the manufacturers or actuaries undertake such responsibilities?

When we consider the different types by the same manufacturer — currently produced by various manufacturers and different computers produced by the same manufacturers — currently in use among insurance companies it becomes a formidable problem. We should not lose sight of the fact that the cost of developing a programming language and the associated compilers is very high in both time and money.

There has indeed been a trend toward a "multiplicity of these computing languages." However, it may be a serious mistake to interpret this as "increasing evidence of the case for deciding that an actuarial programming language is not only feasible but appropriate" as Mr. Mueller states. On the contrary, many professional persons and systems and programming personnel deplore this multiplicity of languages and feel we need fewer but better languages.

From a practical viewpoint, the actuaries should focus attention on the current compilers, FORTRAN and PL/I. This method would be more feasible, obtain quicker results, and achieve through the manufacturer the support of the functions, notations and symbols typical of our actuarial mathematics.

Following this, the next step for facilitating computer usage by and for actuaries could be the establishment of a central library of actuarial programs written in existing standard high-level languages such as FORTRAN and PL/I. In the long run it would be far better and less costly to follow this kind of approach than to construct a purely actuarial programming language and its associated compilers. □

Letters*(Continued from page 3)***Scholarship Grant**

Sir:

Last fall the Actuaries' Club of the Southwest resolved to sponsor a four year, \$600 per year, Scholarship Grant for study in Actuarial Science at the University of Texas at Austin. The program is patterned very closely after that of Banker's Life, Nebraska, and University of Nebraska which was described by John Fibiger in the September, 1968, issue of *The Actuary*.

In order to implement this program, the Club sent material to all high schools in Texas having an enrollment of 120 or more students. Forty applications were received, with 19 of the 40 applicants having SAT Math scores above 600. Nine finalists had SAT math scores above 650, with the highest being 719. The Award is based on mathematical aptitude; scholastic achievement; social, civic, church and extracurricular activity; personality and the need for financial assistance to further education.

The finalists interviewed were given tours through a life insurance company home office, luncheon, a copy of "The Handbook of Mathematics" appropriately inscribed, and a subscription to *The Actuary*. The program is intended to be a continuing one. As a result of our first year's experience, the Club plans to modify the mailing materials and broaden the mailing list.

The program is financed through contributions of Texas life insurance companies having members in the Actuaries' Club of the Southwest.

I will be happy to send additional information to anyone who is interested.

John D. Morrison

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Cost of Insurance

Sir:

Mr. J. M. Bragg states (see Letters, *The Actuary*, May) "other investigations and disclosures have not revolved around the ranking of the prices of competitors." In view of past legislative action with regard to "Truth in Lending" and "Truth in Packaging" this is an extraordinary assertion. Moreover, the concern is a continuing one, as is exemplified by the recent filing of bills in the Senate and House that would require

the price per ounce, pint, quart, pound or other unit to be printed on labels of packages containing foods, drugs, cosmetics and other household items.

It is cold comfort for us policyholders to be told that, in the case of a product as essential as insurance against catastrophic financial loss, the price is "fair" as long as it is less than its utility to us. Yet, without price competition, this is just what is implied by Mr. Bragg's definition of fairness (see his fourth last paragraph). Furthermore, as if to add insult to injury, he suggests (in his second last paragraph) that "a price which is fair to all parties is probably in the vicinity of the highest price which is considered fair by the buyer."

To argue that the vendor in a business transaction can, unrestrained by competition, unilaterally determine a "fair" price is cant. The greater the sophistication of the techniques used in determining prices to extract the last dollar of profit for the agent-company coalition, the greater is the prospect's need to protect *his* interests by obtaining quotations from different companies.

Peter L. J. Ryall

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Index for Transactions

Sir:

Along with many fellow actuaries, especially among those in the service of smaller employers, I rely heavily on information gleaned from papers and discussions in the *Transactions*.

The usefulness of the *Transactions* is, however, significantly reduced by the effort necessary in just locating therein pertinent information with respect to any one particular subject. The decennial index alleviates this problem somewhat but comes nowhere near eliminating it. Therefore, I would like to commend to the attention of members of the Society, and especially to the Board, the advisability of compiling and maintaining a current index for, say, the last 10 or 20 years' issues.

I hope that with the aid of the Society's expanded offices and the Executive Director in particular, such a project might not be beyond the realm of possibility. It would certainly enhance the usefulness of our *Transactions* as a professional tool.

Nicholas Bauer

* * * *

Urges Retirement Age Study

Sir:

In the issue of *Health* for the last quarter of 1968, published by the Health League of Canada, Dr. K. A. Baird wrote as follows:

"The problems of the aged have been added to during the last several decades by the fashion of compulsory retirement at a certain age. This has been surely one of the most stupid of the many stupid activities of industrialists and other employers. It may be merely an example of the naive notion that standardization equals efficiency. So everyone is assumed to become inefficient and relatively unproductive at a certain age rather than at a certain stage. * * * As the President of the American College of Physicians said last year, the present system of compulsory retirement from gainful employment solely on the basis of chronological age is completely unrealistic and should be abandoned. There are signs of a trend against it. Industrial physicians are helping to educate executives."

For over 10 years, I have been suggesting that pension actuaries should spend as much time considering (1) retirement age arrangements — as they spend considering (2) investment practices, (3) benefit levels, and (4) cost calculations.

Even a moderate increase in the ages of retirement will usually result in lower pension costs and/or more adequate pension benefits, together with greater wealth for our economies as a whole.

If actuaries do not take this area of Group Pensions seriously, who will? Management Consultants? Or the Accountants (yet again!)?

Is there even a single actuary in Canada and the United States who has ever discussed fully with any employer the importance of setting the normal retirement age at a level where it will do most to increase the retirement security of the employees, and also do most to maximize the profits of the employer?

Has a single actuary ever brought to bear "facts" and "demonstrations" on this matter, rather than simply going by the "appearances" and the "impressions" of others?

J. L. Clare

Stockbroking

(Continued from page 1)

Another distinctive feature of the London stock market, which has had a strong effect on actuarial recruitment, is the Government bond market. The United Kingdom has a good and uniquely varied Government bond market, with coupon rates varying from 2½% to 6¾%, and ranging in terms from a few weeks or months to undated securities. There is a good volume of switching activity in this market, which is worthwhile both from the viewpoint of institutions and stockbroking firms, and the actuary's understanding of short and long term rates of interest and familiarity with compound interest has been useful here. Many of the stockbroking firms now employing actuaries first recruited an actuary to handle this Government bond market, and many actuaries are still occupied in doing so.

However, many of the Stock Exchange actuaries are engaged in other markets, particularly in the equity market, and it would be wrong for me to concentrate comment on any one sector. I should therefore prefer to concentrate on some main general points which make the work of a stockbroking actuary different from that of an actuary engaged in more conventional life office work. First, the stockbroking actuary has an advisory rather than an executive function. Second, he has a fairly large number of clients. Third, he is in the investment business. Fourth, while the life office actuary operates within a "pyramid" type of corporate structure, the stockbroking actuary does not.

The Nature of the Advisory Role

The stockbroker is essentially selling knowledge, information and judgement, particularly judgement, and in principle selling judgement seems very similar to the decision-taking function exercised by investment managers, but the broker's advisory role strongly influences what he can do and how he does it. This is in essence because the broker has a communication problem completely different from the investment manager.

One aspect of this is that to persuade an investor to follow his recommendation, a broker has to use a considerable degree of overkill. He often has to demonstrate more knowledge of his subject than is really necessary as the basis

for the decision. In fact he is not selling his recommendation on that subject so much as establishing his own credibility as a knowledgeable adviser or as a more knowledgeable expert than other competitors. This is very different from the position of the consulting actuary, where the actuary's credentials as an expert are more obvious, and where there is less of the element of competitive comparison with other similar experts.

Despite the admitted fact that a broker gradually builds up a relationship of mutual respect and trust with a fund investment manager, at any one time the fund manager will deal with the broker who *at that time* is the most knowledgeable and expert. The broker's need to sell himself is, therefore, a continuing need, because of the momentary nature of the business. By contrast, the consulting actuary to a pension fund is normally the sole expert in his field advising that client, and the advice offered by a life office actuary within his office is *not constantly compared directly* with the judgement of life office actuaries of comparable standing in other offices.

The Multiplicity of Clients

The stockbroker has typically quite a large number of clients, and at any time it may be appropriate to communicate with any one of them (whether at the initiative of the broker or the client.) Indeed, events may make communication necessary with a number of clients virtually at the same time. This considerably changes the nature of the job on a day to day basis. For example the stockbroking actuary is much less able to say in the morning how he will spend his afternoon.

The Investment Business

The communication problem is heightened by the personal element entering into much investment work. For reasons of personal knowledge and maintaining security, it often happens that only a small number of stockbroking personnel will be fully briefed to deal with a particular problem. It is also common that the client who will place reliance on the judgement of one man in a stockbroking firm will not accept as a substitute the opinion of another man in that same firm. This unusually high degree of personal involvement is peculiar to the investment business and means that the

stockbroking actuary is not able to delegate work to the same extent as actuaries in other fields.

The Structure of the Firm

In the light of the above comments it will be appreciated that the pyramid form of corporate structure, which is appropriate to insurance companies, is not at all suitable for stockbroking firms. The partnership structure of the stockbroking firms allows considerable range and flexibility to a number of partners and executives in dealing with the very varied needs of the firms' clients. Effectively they operate as principals within a team structure, and it is easier to absorb an additional talented man within such a framework, with fewer problems of seniority and status arising. In his own attitudes, too, the stockbroking actuary is nearer to the entrepreneur than to the company executive. His job tends to be more varied than those of most life office actuaries, and allows scope for a great deal of initiative. He tends to set his own goals rather than have them designated by senior colleagues.

What the Actuary Can Offer

On the whole it is wrong to say that actuaries are suitable or unsuitable for stockbroking, or indeed other investment work. Some actuaries are, and some are not, and the same thing can be said for accountants and economists. In investment work, I believe that the man and his total experience are more important than the original training. However, for those who like investment work, an actuarial training is a definite advantage, partly because it gives one a grasp of basic financial principles, but more importantly because it produces an understanding of chance and risk. The Fellowship scroll of the Faculty of Actuaries in Scotland testifies that the recipient is versed in probabilities, and probably nothing better can be said of the professional investor unless it is that he understands improbabilities.

On the other side of the coin the investment world offers a rapidly expanding area which combines intellectual challenge and fascination with commercial opportunity. There is no optimum solution to the investment problem, but it is fun trying to get near to one at any one time, and in practical terms it is worth trying. □