The Actuary

The Newsletter of the Society of Actuaries

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NEW YORK STATE BILL PROPOSES MANDATORY HEALTH INSURANCE

Legislation of interest to all actuaries was introduced in the New York legislature on February 22, 1967. Its provisions would compel employers to provide health insurance benefits for their employees. This represents an extension of the principle of mandatory health coverage in an important state.

Historically in the United States, aside from Social Security, mandatory coverages have generally been limited to matters clearly within the province of the employment relationship, such as Workmen's Compensation and Unemployment Insurance. Mandatory short term disability programs are effective only in New York, New Jersey, Rhode Island and California.

In many other countries employers are required by law to provide a wide range of employee benefits, either through private means or through a government agency. These legislated benefits frequently include pensions, health insurance, disability, vacations, and mandatory holidays.

The New York Act bases employee coverage on the parallel New York State Disability Benefits Law. In addition to those covered under that Law, government employees would be covered under the proposed bill.

The sponsors of the program estimate that 5.5 million workers will be covered by the program, of whom 2.4 million will not be affected because their present coverage is already more than adequate to meet the requirements of the bill. Of the balance only 400,000 will be covered for the first time.

The sponsors of the bill further estimate that the new program will increase the employer cost for Health Insurance

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FROM THE PRESIDENT OF THE SOCIETY

The story is told of a college president who posted a sign on the bulletin board announcing a new tradition which would take effect on the following Monday. I have equal confidence that "*The Actuary*," which makes its very first appearance today, will come to be regarded in the years ahead as one of the great traditions of our Society.

As President of the Society of Actuaries, I salute all those who have been responsible for the creation of "*The Actuary*." Brevity requires that I name but a few of the many. Ralph Edwards is one, for he had the initiative to transform an idea into a realization with his "The Actuarial Record." Floyd Beasley and Jack Moorhead are two others as they chaired study committees whose reports commanded the confidence of the Board. Andy Webster, Mort Spiegelman and Jack Cumming deserve a particularly loud salute as they have evinced the faith and dedication necessary to serve as the first Editorial Board.

There is something romantic about a paper, or periodical, and always something exciting about its beginning. "*The Actuary*" will provide a means for timely and frequent discussion of matters of interest to actuaries that cannot be served by such tomes as the "Transactions." One of man's deepest instincts is the need to communicate, and actuaries are only human — though this is sometimes disputed. "The time has come," as the Walrus said,

"To talk of many things
— Of shoes — and ships and
sealing wax
— Of cabbages and kings."

In recommending publication to the Society's Board of Governors, Mr. Moorhead's committee said, "While it is clear that a journal of the size we are recommending cannot take care of the array of news items, announcements and communications that need to be conveyed throughout our profession, we believe that the best beginning, is a modest beginning, and that the appropriate compliment to the Editor is to give him as free a hand as possible to build upon a well but not too precisely planned foundation." The Board has given the Editor this free hand and I do not know any more than any other member what he has in mind. My only hope is that some editorial philosophy will emerge which will give to "*The Actuary*" a significance that the mere conveyance of news items would not have.

As to the "well but not too precisely planned foundation," I think that Cardinal Newman would have agreed. His lines in "Lead, Kindly Light" come to mind —

"I do not ask to see the distant scene,
One step enough for me."

—Harold R. Lawson

YOUNG ACTUARIES PARTICIPATE IN PANEL DISCUSSION

At the fall meeting of the Society the younger actuaries had an opportunity to express their views during the forum "The Future of the Actuarial Profession as it Appears to the Young Actuaries."

Many of the younger members suggested that the course of study should include training directed toward work with modern data processing equipment. Other fields of study mentioned are operations research, market research and management science.

It was also suggested that the Society make available a program of advanced training for members who have already completed the examinations.

The forum is printed in full in the Transactions. Further discussion in these columns is invited.

The Actuary

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The Society is not responsible for statements made or opinions expressed in the articles, criticisms, and discussions in this publication.

EDITORIAL

We introduce herewith the first issue of *The Actuary*, the newsletter of the Society.

Our purpose is to bring to our readers actuarial and allied professional news while such news is fresh, to draw attention to items of general or particular interest to actuaries, and to help bring the members of the Society in closer touch with Society affairs.

A large, and growing larger, membership presents problems of communication not solved completely by meetings, important though these are. Because of the numbers in attendance, meetings acquire formality, rigidity, and sometimes frigidity. *The Actuary* will, we hope, provide the necessary antidote.

To the best of our ability, our columns will contain material of general interest, remembering that there are many facets to the actuarial profession. We might have invented a Latin motto - - -

"*Actuarius sum et nihil actuarium a me alienum puto*"
(I am an actuary and anything affecting actuaries interests me)

Since we do not have the resources of a news agency, we must rely upon our readers to keep the Editors well informed. The Actuarial Clubs throughout the United States and Canada have been invited to contribute news of their meetings, including digests of papers presented. We would be glad to receive from our readers original articles for possible publication.

Letters to the Editor will be more than welcome. Such letters may cover current topics, items discussed at Society meetings and, indeed, any items that the author would like brought to the notice of his colleagues.

In particular, the Editors extend this invitation for comments and contributions to members of our sister organizations — The Casualty Actuarial Society, the Conference of Actuaries in Public Practice, and the Fraternal Actuarial Association. Perhaps our colleagues overseas would also favor us with their thoughts on occasion. We are not limited to four pages — given enough material we will expand.

Finally, we are glad to acknowledge our debt to Ralph Edwards, whose initiative in starting *The Actuarial Record* brought home to the Society and to the Editors the need for a publication such as this. He has been especially helpful in our efforts to launch this new publication.

To All Our Readers, Greetings. —A.C.W.

FROM CANADA

At the February meeting of the Canadian Institute of Actuaries, one of the topics discussed was the 1966 amendment to the Old Age Security Act and whether any changes in the Canada and Quebec Pension Plans were desirable. Since the progress of Social Security in Canada has followed a different path from that in the United States, an outline of the benefits now available may be helpful.

The Old Age Security Act provided originally a monthly benefit of $40 to all Canadians age 70 or over. This benefit has been increased to $75 per month and the qualifying age is gradually being lowered to reach age 65 in 1970. The 1966 amendment will add $30 per month to all beneficiaries with no appreciable other income. These "social welfare" benefits are supported by income taxes.

The Canada and Quebec Pension Plans are similar and are wage-related pension plans supported by contributions from the employee and the employer. As a practical matter they omit casual and migratory workers, etc. The contribution from an employee is 1.8% of the excess of the yearly income (up to $5,000) over $600, and an equal amount is contributed by the employer.

The pension commencing at age 65 will be 25% of the average earnings since age 18, subject to certain adjustments for variations in annual income and not counting any year for more than $5,000. The full pension, however, does not go into effect until 1976. The retiree in 1967 will get 1/10th of the pension income; the retiree in 1968 gets 2/10ths, and so on until 1976 when retirees get the full pension.

There have been criticisms of the plans, of the delay in paying the full pension, of the exclusion of individuals already retired or disabled, and of the apparent inequities between low paid and high paid employees. Some of these criticisms may be justified, but the proponents of Social Security are not always clear about the distinction between plans for pensions and plans for social welfare.

EDUCATION AND EXAMINATION COMMITTEE REPORT

by Julius Vogel

The rapid increase in enrollment in the early 1960's for the early examinations is showing up in the registration for the Fellowship examinations. To handle the larger enrollments for the later examinations, the Education and Examination Committee has introduced new procedures.

Multiple choice questions, which now take up the entire examination sessions for Parts 1, 2, and 3, have been added to several hours of Parts 5 through 8. Detailed statistical analysis of the results of the multiple choice questions by Educational Testing Service leads the Education and Examination Committee to believe that, on each Part, these questions can separate the well prepared from the poorly prepared students.

Many ingenious forms of multiple choice questions have been devised in an effort to have the questions test understanding rather than mere memorizing.

Another innovation which has been found effective in handling the larger number of papers is centralized grading of the essay questions on Parts 4 through 8. In operation, the Committee members usually complete the first reading before the centralized grading session begins. The second and third readings take place in a three or four day session attended by all the members of the Part Committee involved.

The session begins on a Thursday about three weeks after the examination is held and lasts through Saturday or Sunday. In addition to shortening the time devoted to grading the papers, the centralized grading procedure enables the Committee members to become better acquainted and, of course, it allows grading differences to be resolved quite readily. The results become available much sooner after the examinations than would otherwise be possible and, because of this, last year it was possible to publish the results for Parts 4 and 5 together with those for Parts 1, 2, and 3.

The students' records are being put on tape which will have great advantages in making analyses of the results of the Society's examination program.

Although this brief account has been concerned so far exclusively with examination matters, the Education and Examination Committee believes its main function is education and not examination. The syllabus has to be kept up to date but, at the same time, it must be recognized that there are practical limits to the volume of study material that can be included. Further, the Education and Examination Committee, with the Advisory Committee, must continually keep in mind whether the necessarily limited syllabus embraces the most important techniques that the actuary of the future should have available to him.

ACCOUNTING FOR PENSIONS

A special form is being prepared to comply with Opinion No. 8 of the American Institute of Certified Public Accountants. The form is for auditors to use when requesting necessary information from actuaries with respect to pension plans. This is one of the developments in the continuing review of accounting for pension costs revealed during a meeting of the American Pension Conference on Tuesday, March 7.

The main discussion was in the form of a dialogue between Mr. Frederick P. Sloat, a Fellow of the Society of Actuaries, and Mr. Ernest Hicks, a Certified Public Accountant. Both are associated with large national accounting firms. Mr. Hicks is the author of Research Study Number 8 "Accounting for the Cost of Pension Plans." (See TSA XVII, 575).

Although not explicitly discussed during the meeting, the question of the relative responsibility of the actuarial and accounting professions underlay many of the remarks of the two speakers. Mr. Hicks acknowledged that accountants will have to rely more fully on the actuaries for judgments within the area of pension cost determination. Mr. Sloat pointed out the necessity that actuaries learn to work closely with accountants because of the areas in which the professional competence of the two groups overlap.

The problems of materiality received considerable attention in a discussion by Mr. Hicks, but no concrete guidelines were given to guide actuaries or accountants in this area. The question of materiality is one of judgment that will have to be made separately for each individual situation.

N. Y. HEALTH BILL

(Continued from page 1)

benefits by $145 million from the present $610 million to an estimated $755 million.

The bill would require that health insurance plans provide at least the following basic benefits for covered employees and their dependents:

— Semi-private hospital accommodations for a period of 31 days.

— Customary hospital services such as X-ray, operation room, oxygen, drugs and blood.

— Maternity and obstetrical benefits up to $200.

— In-hospital medical-surgical benefits with the patient paying the first $50 of cost and 20% of the additional cost.

Premiums would be divided equally between employer and employee, but in no event would the employee's contribution exceed 2% of his salary. Employers may pay the entire cost of the coverage if they so elect. Any group of fewer than 250 employees would be rated on a community basis.

As is true with the present Disability Benefits Law, other benefits may be provided in lieu of the required benefits if they are equivalent to the legislated benefits. Furthermore, coverage would not be required for persons who are eligible for Medicare, although an employee's eligibility for Medicaid would not affect his coverage under the mandatory program.

The insurance would be written by private insurance companies with provision for self insurance and for coverage through employer or employee benefit plans and health centers. Various aspects of the program would be supervised by the Workmen's Compensation Board, the Department of Health, and the Insurance Department.

Food For Thought

By 1975, the population of the United States and its outlying areas will total between 227 and 229 millions; by the year 2000, this will reach between 301 and 323 millions, according to the Office of the Actuary. It is also estimated that the population at ages 65 and over will come within 22.0 and 22.3 millions by 1975 and within 29.6 and 31.8 millions by 2000.

RISK THEORY: AN INTERESTING APPLICATION

Techniques learned through study for the actuarial examinations frequently find unexpected applications. Mr. Burton D. Jay found the risk theory part of the actuarial syllabus rather esoteric when he first encountered it. In fact Mr. Jay admits having only a hazy recollection of the term linear algebra from an undergraduate course and "for all I know a Markov chain is a device to keep Russian convicts from escaping."

In the following article Mr. Jay describes how United Benefit Life was able to benefit from his study of risk theory.

As an example of the power of a relatively simple tool explained in the "risk theory" study note of the Society's syllabus, I will explain how we applied the Monte Carlo method to solve a problem proposed by our Agency Department. The solution of this problem by classical mathematical procedures, if at all possible, would have been exceedingly complex.

A fascinating sales contest had been conceived called GIBINGO. United's Guaranteed Insurability supplement is referred to as the "GIB" or Guaranteed Issue Benefit. And, the contest was a form of the game bingo; hence the name.

The rules were to be as follows: for every GIB sold, a letter B, I, N, G or O was to be randomly awarded according to the last digit of the policy number. Sales were to be divided into policies below $10,000 face amount and those above.

When the salesman had collected one set of all five letters in either size group, he had a BINGO and was to be awarded $50 for the smaller size group or $100 for the $10,000 and over size group. Whenever a new policy was issued as the result of an election of a Guaranteed Insurability option, the salesman was to be given a "wild card" or letter which could be used as any letter needed to help complete a BINGO.

The questions asked by the Sales Department were simple. What is the contest likely to cost and what are the chances of a salesman getting a BINGO if he sells five, six, seven etc. GIBs?

We were able to arrive at only a partial solution to the second question by applying a multinomial distribution to the five variables representing the number of each of the five letters awarded for a total of N sales. The calculations grew very burdensome as N increased beyond eight sales or so. The Monte Carlo method was then applied to give complete answers to both questions.

In round numbers, the cost was found to be $10,800 with a standard deviation of just under $2,000. Appealing to the central limit theorem, which states that the distribution of means around their mean will follow a normal curve, one could make the statement that if our assumed distribution of sales proved to be accurate, the probability is .95 that the cost will run from $6,800 to $14,800. This is not a strikingly narrow range, but nevertheless it gives some insight as to the probable magnitude of the cost.

As a postscript, it might be pointed out that the contest was cancelled before our cost solutions were made available because it appeared that with any reasonable volume of sales the prizes would be too small to provide any real incentive. For example, for the salesmen making 10 sales (only .6% of salesmen are expected to hit or exceed this level in a 5 month period if sales are assumed double those in the distribution) the expected number of bingos is .5341 by the Monte Carlo method so that he will earn only $100 x .5341 or $53.41 prizes on the average.

Nevertheless, we learned much, and we had a great deal of fun following the method through. The knowledge acquired, when coupled with several additional refinements that could be made, will be useful in solving future problems which will arise from time to time.

MEETINGS:

ACTUARIES CLUB OF PHILADELPHIA

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