ERROR IN AGE.

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By way of introduction, I make the following extract from Walford's Insurance Cyclopædia:

"It has not infrequently happened that in filling up proposal forms for life insurance, as also for the purchase of annuities, errors have been made in the statement of age. In all such cases the interests of the association are affected, injuriously or otherwise. If, however, upon discovery of the error, the fact be communicated to the office, and the evidence shows that the error was unintentional, it is customary to allow the matter to be rectified by a cash adjustment in an equitable manner. But where a fraudulent intent is manifested, it is not unreasonable to expect the office to stand upon its legal rights."

It will be observed that the author of the above extract does not define any particular basis upon which the adjustment referred to should be made, nor is it altogether clear that he had in mind only cases of error in age discovered during the lifetime of the insured, or whether the "customary cash adjustment" was meant to apply to all cases of error in age, whether discovered before or after death.

So far as the practice of the different companies is concerned, there cannot be said to be entire uniformity in this connection. In the majority of cases, however, the basis of adjustment can, I think, be grouped under the following heads: 1st. The difference in premiums at age stated and the actual age, together with interest thereon, to be accounted for. 2nd. Payment of such proportion of the amount insured as the premium paid bears to the premium proper at the actual age. 3rd. A combination of the first and second methods, dependent mainly upon whether the adjustment is effected before or after death.

As regards any adjustment made during the lifetime of the insured, it will, I think, be pretty generally admitted that it is not a matter of much moment whether the difference in premium and interest thereon is collected from the insured or is repaid him by the company; or whether the amount insured is decreased or increased, as the circumstances may require. But that the same latitude is allowable in cases of adjustment after death certainly cannot be admitted to be equally clear.

Some years ago the question whether, in cases of unintentional understatement of age, the adjustment after death should be made on the basis of collecting the aggregate difference of premiums with interest, or whether such proportion of the sum insured as the premium paid bore to the premium proper at the correct age of the insured should be paid instead, was discussed at considerable length in some of the insurance journals, some writers contending that the former basis of adjustment was the proper one, while others favored the latter basis.

In 1889, legislation bearing on the question was enacted by the Legislature of the Province of Ontario (52 Vic., c. 32), and re-enacted in 1892.

(Here follows extract from the Insurance Companies Act, 55 Vic., c. 39).

Having thus amply defined the premises, I will now proceed to demonstrate the practical effect of an adjustment after death, made first, on the basis of difference in premium with interest being accounted for, and second, on the basis of a *pro rata* amount of insurance being paid.

For the purposes of this inquiry I will take as examples insurances on the Natural Premium, Whole Life and 20-Year Endowment plans, and as, in practice, probably ninety per cent. or over of the cases of error in age consist of understatements, I will, for the present, confine myself to cases of this kind.

It will, I presume, be admitted that for purposes of illustration it is immaterial which of the several standard mortality tables is used, nor does the rate of interest signify so long as uniformity is observed throughout. As a matter of convenience, then, I have selected the Combined Experience Table of mortality and 4 per cent. interest. I will assume that the amount insured in each instance is $1,000, the number of insurants being the number indicated by the mortality table as living at age 35, viz., 82,581, of whom 767 will die the first year.

Basis No. 1.

(ACCOUNTING FOR DIFFERENCE IN PREMIUMS).

Example No. 1. Natural Premium Plan; age represented as 34, net premium $8.75; actual age 35, proper premium $8.93. Error, one year.

Living (82,581 × $8.75) + 4% interest for one year		$751,487 10
Dying, 767 × $1,000 (representing gross claims)	$767,000 00	
Less difference in premiums (18 × 767) + 4% interest for one year	143 58	
		766,856 42
Net claims in excess of available receipts first year		$15,369 32

Example No. 2. Whole Life Plan; age represented as 33, net premium $18.62: actual age 35, proper premium $19.87. Error, two years.

Living (82,581 × $18.62) + 4% interest for one year		$1,599,164 55
Dying, 767 × $1,000 (gross claims)	$767,000 00	
Less difference in prems. ($1.25 × 767) × 4% interest	997 10	
	$766,002 90	
Reserve at end of first year, 81,814 × $10.54	862,319 56	
		1,628,322 46
Net claims and reserve in excess of available receipts, first year		$29,157 91

Example No. 3. Twenty-year Endowment Plan; age represented as 32, net premium $38.25; actual age 35, proper premium $38.80. Error, three years.

Living (82,581 × $38.25) + 4% interest for one year		$3,285,072 18
Dying, 767 × $1,000 (gross claims)	$767,000 00	
Less difference in prems. (.55 × 767) + 4% interest	438 72	
	$766,561 28	
Reserve at end of first year, 81,814 × $31.30	2,560,778 20	
		3,327,339 48
Net claims and reserve in excess of available receipts, first year		$42,267 30

In each of the foregoing examples there is, after accounting for the full difference in premiums, with interest thereon, of the policies having become claims, a considerable discrepancy between the available receipts and the charges to be met. To enable the matter to be met in full would require the accounting for not only of the difference in premiums, with interest, of the 767 policies which have become claims, but of the 81,814 existing policies as well. As, however, the ages of the living would not as yet be proven, there would be no means of knowing whether or not they were older than as represented, and therefore no practical means of enforcing payment in the meantime; and as many policies would either lapse, expire or be surrendered, in which event proof of age would in all likelihood never be furnished, the shortage in respect of all such would in any event prove a loss.

Basis No. 2.

(PAYING PRO RATA AMOUNT INSURED).

Example No. 1. Natural Premium Plan; age represented as 34, net premium $8.75; actual age 35, proper premium, $8.93. Error, one year.

Living (82,581 × $8.75) + 4% interest for one year	$ 751,487 10
Dying, 767 × ($1,000 × $8.75 ÷ $8.93), representing net claims	751,539 75
Net claims in excess of available receipts, first year	$52 65

Example No. 2. Whole Life Plan; age represented as 33, net premium $18.62; actual age 35, proper premium $19.87. Error, two years.

Living (82,581 × $18.62) + 4% interest for one year,		$1,599,164 55
Dying, 767 × ($1,000 × $18.62 ÷ $19.87), net claims	$718,748 87	
Reserve at end of first year, 81,814 × $10.54	862,319 56	
		1,581,068 43
Available receipts in excess of net claims and reserve, first year		$ 18,096 12

Example No 3. Twenty-year Endowment Plan; age represented as 32, net premium $38.25; actual age 35, proper premium $38 80.

Living (82,581 × $38.25) + 4% interest for 1 year		$3,285,072 18
Dying, 767 × ($1,000 × $38.25 ÷ $38.80), net claims	$756,127 57	
Reserve at end of first year, 81,814 × $31.30	2,560,778 20	
		$3,316,905 77
Net claims and reserve in excess of available receipts, first year		$31,833 59

In the case of Example No. 1 on Basis No. 2, the result is apparently quite satisfactory. The small excess of claims over receipts is merely the result of dealing with imperfect numbers, the net premiums being respectively $8.74555, etc., and $8.93062, etc., instead of $8.75 and $8.93.

In the case of Nos. 2 and 3, the large surplus in the case of Example No. 2, and the even larger deficiency in the case of Example No. 3, certainly cannot be accounted for in like manner as in the case of Example No. 1, and prove conclusively that if Basis No. 1 is impracticable, Basis No. 2, except in the case of policies on the Natural Premium Plan, is equally so. Besides this, the latter method is also inequitable as between various classes of policies, too much being deducted in some instances and an insufficient amount in others.

Having demonstrated briefly that the methods of adjustment referred to do not give satisfactory results, I will now submit for your consideration a substitute basis which will, I think, be found to be not only equitable as between policies on different plans, but also more practicable than Bases Nos. 1 and 2.

I would ask you to refer again to Basis No. 2, Example No. 1, and note that the relative premiums at the respective ages simply constitute the relative contributions in advance to the mortality losses of the year. If, in place of the relative premiums, we substitute the relative contributions to the mortality losses as at the end of the year, we do not necessarily alter their relationship to each other nor to the amount at risk; and we have a basis of adjustment equally as applicable to policies involving the element of Reserve as to policies on the Natural Premium Plan.

Instead, then, of paying such proportion of the amount insured as the premium at the stated age bears to the premium at the correct age, I would pay the terminal reserve at the credit of the policy for year of death and such proportion of the amount at risk as the probability of dying at the then supposed age of the insured bears to the probability of dying at the then correct age of the insured; or, if you prefer the expression, pay the terminal reserve at the credit of the policy, together with such proportion of the amount at risk as the tabular contributions to the mortality losses of the year at the supposed age of the insured bears to the proper contribution at the correct age of the insured, the amount at risk being, of course, the amount insured under the policy less the terminal reserve at credit of same when becoming a claim.

—Tailor (meeting friend on the street)—I thought you said you'd mail me that $5 bill you owe me? Creditor—I did mean to, but when I went to the post-office to mail it I found that placard on the walls, "Post no bills."—*Des Moines Argonaut.*

—In their interchanges of humorous wisdom the American papers often say good things. One of them, the Troy *Press*, said the other day, "The successful merchant is known by the advertisements he keeps in the newspapers," to which statement an echo is made by the Lockport *Sun* thus: "And by the newspapers he keeps his advertisements in."