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NOTES ON OTHER ACTUARIAL JOURNALS

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BELGIUM

Bulletin de l'Association Royale des Actuaires Belges, No. 57, 1954

BAPTIST, J. *Détermination d'une aléatoire par ses moments*, pp. 9–15. An expository account of the use of characteristic functions in distribution theory. Touches on the moment problem and on the question whether the imaginary i is needed in the index of the exponential factor of the characteristic function.

CONSAEL, R. *Quelques réflexions sur les principes et les bases techniques du projet de loi no. 236 sur la pension des travailleurs indépendants*, pp. 17–25. Discusses the decision to extend social security to the 850,000 self-employed in Belgium. The mean annual contribution is calculated to be 2511 fr. The law envisages payment of 1812 fr. annually.

MOOR, J. DE. *Loi du 29 décembre 1953 relative à la pension de vieillesse des ouvriers*, pp. 27–36. National old-age pensions for Belgian workers are supported by (i) a 'normal' employee-employer contribution of 5·5 % of pay (3·1 milliards of francs), (ii) a supplementary contribution of 3·5 % and (iii) a rising state subvention levelling off at 2 milliards in 1973. After 1998 there will be an annual deficit of 2·7 milliards of francs. The author discusses alternative financing procedures and criticizes the official views that the workers are being liberally treated and that the government dare not grant a pension depending on the cost of living.

FRANCKX, E. *Convergence faible des variables vectorielles bornées*, pp. 37–55. An exposition of the n-dimensional analogue of the weak law of large numbers. Illustrates its use on the multinomial frequency distribution.

HIERNAUX, W. *L'Assurance Maladie-Invalidité: Quelques aspects financiers et techniques*, pp. 57–61. Compulsory sickness insurance was introduced in Belgium by the law of 28 December 1944, and covers sickness indemnity, medical and surgical treatment and hospitalization for employees and their families. A brief description of the main features of the scheme.

CONSAEL, R. *Sur certaines équations fonctionnelles de la théorie des processus markoviens*, pp. 63–7. Derives an integro-differential equation for the expected value of a specified function $\psi(x)$, where $x \equiv x(t)$ is a stochastically definite random process. Extends the procedure to a function $\psi(x_1, x_2)$ analogously defined.

HIERNAUX, W. *Tables de morbidité—Expérience 1948–1951*, pp. 79–98. The experience relates to 2 million lives subject to national sickness insurance. The sex-specific rates, in days per member per annum, were calculated for workmen, employees, and miners separately and then each set was graduated by a different method. Adjustments to bring in non-working days and the waiting period (3 days) were introduced to derive the 'real' sickness rates.

FRANCE

Bulletin Trimestriel de l'Institut des Actuaires Français, No. 207, June 1954

JÉQUIER, C. *De l'histoire de l'assurance sur la vie en Suisse*, pp. 89–107. An expanded version of a previous article in the Portuguese *Boletim* (see *J.I.A.* 80, 412).

VANLAER, G. *Méthodes et tables pour le calcul avec* 15 *chiffres du taux d'intérêt d'une annuité certaine*, pp. 109–42. Given n and A in the equation $a_{\overline{n}|} = $ A the problem is to find i to 15 significant figures. The methods proposed are based on a formula published in 1874 by Achard which has been developed to produce a rapidly convergent series for

$$\frac{1}{2}\left(\frac{a_{\overline{n}|}}{n} + \frac{a_{\overline{n}|}+1}{n+1}\right).$$

Extensive tables are given based on a specially calculated table of $1 - e^{-x}$ to 16 decimals with $x = 1\cdot00\ (\cdot01)\ 2\cdot50$. This table is consistently in error in the last place—by as much as 40 in the vicinity of $x = 1\cdot60$.

PORTUGAL

Boletim do Instituto dos Actuários Portugueses, Vol. 9, 1954

LAH, I. *A new kind of numbers and its application in the actuarial mathematics*, pp. 7–15. The 'new numbers' $\mathscr{S}_n^j$ are defined by

$$x(x+1)\ldots(x+n-1) \equiv (x+n-1)^{(n)} \equiv \sum_{j=1}^{n}(-1)^n\mathscr{S}_n^j x^{(j)}.$$

Their relationship with the author's new function M_n of 1951 (see *J.I.A.* 78, 140) is expressed by

$$M_n = \sum_{j=1}^{n}\mathscr{S}_n^j v^j \frac{d^j a_x}{dv^j}.$$

NOVA, A. C. *Os progressos da medicina e os seguros em caso de vida*, pp. 17–26. The author examines numerically the effect on a pension system of a major advance in medicine (e.g. the discovery of a complete cure for cancer). With improvements in p_x of 3 % for ages between 35 and 60, 4 % between 60 and 70 and 5 % between 70 and 80, there is a 10 % increase in the average annual premium required for a 50 % pension at age 65.

MIRANDA, A. DA C. *Grandezas actuariais em cadeia acíclica*, pp. 27–33. An individual may pass from community i to community j ($i<j$) or he may die in i; regression is supposed to be impossible. A general relation is established to connect the total survivorship at time t with the survivors in each of the communities 1, 2, ... n.

CASTRO, G. DE. *Nota sobre as distribuições limites das estatísticas ordenadas*, pp. 35–40. Proves a number of elementary results needed in the theory of extreme values associated with the name of Gumbel.

GUEST, R. C. *Insurance supervision*, pp. 337–49. Presidential address reviewing the history and present status of government supervision of insurance in Canada and the United States.

PHILLIPS, J. T. *Some considerations in the development of an individual accident and sickness program* (with discussion), pp. 350–412. 'If we are to inculcate a conception of sound insurance principles in the public mind, we have to educate the public away from expecting coverage for the first dollar of claim cost...and toward recognizing the need for insurance against the less frequent but more substantial accident and sickness costs.'

GREVILLE, T. N. E. and VAUGHAN, H. *Polynomial interpolation in terms of symbolic operators* (with discussion), pp. 413–87. A compendium of rules deriving and analyzing interpolation formulas of the type

$$v_x = \sum_{r=-\infty}^{\infty} L(x-r)u_r \quad (-\infty < x < \infty),$$

where the u's are assumed given and the L's are coefficients.

MYERS, R. J. *The first United States Government Actuary and his successors* (with discussion), pp. 488–505. Ezekiel B. Elliot was appointed Government Actuary on 1 July 1881. The post has not been filled since 1950 but there are now 36 responsible actuarial positions in Government service of which six are held by Fellows of the Society.

GREEN, E. A. *Concentration of risk and the catastrophic accident hazard* (with discussion), pp. 506–17. The annual probability of an accidental death that occurs as part of a catastrophe in which five or more lives are lost is $7\frac{1}{2}$ per million exposed throughout the U.S. But concentrations of risk occur and the John Hancock Mutual Life Insurance Co. has effected a re-insurance contract with Lloyds to cover 90 % of \$5 million of (industrial, group or ordinary branch) loss in excess of the first \$$\frac{1}{2}$ million arising in any catastrophic accident not due to war.

This number also contains (1) the discussion of the papers printed on pp. 6–177 of this volume (*see J.I.A.* **81**, 69), (2) a digest of a panel discussion on the 1954 Internal Revenue Code, and (3) a digest of informal discussions on Underwriting, Accident & Sickness, and General (optimum allocation of a welfare premium between benefit types, annuity and extended term insurance dividends, and contingency reserves on mortgage loans).