

## NOTES ON FOREIGN ACTUARIAL JOURNALS

BY SIR WILLIAM ELDERTON, K.B.E., PH.D.(OSLO), F.I.A., F.F.A.,  
AND H. L. SEAL, B.Sc., PH.D., F.F.A.

## AMERICA

*Transactions of the Society of Actuaries*, Vol. II, Part 3, November 1950

McCONNEY, E. M. *Address of the President*, pp. 177-183. On the theme of 'A mind to work'.

MYERS, R. J. *New Zealand Social Insurance System*, pp. 184-227. A review of the cash and medical service benefits provided under New Zealand's social insurance system. Summary statistics of operation during the years 1941-47 are provided.

WALSH, J. E. *On the large sample distribution of mortality rates based on statistically independent lives*, pp. 228-234. If  $q'$  is the observed mortality rate and  $q$  is the mean of  $n$  true rates, so that  $q = \sum_1^n q_i/n$ , the criterion  $(q' - q)/\{q'(1 - q')/n\}^{1/2}$  is approximately normally distributed about zero with unit s.d. This theorem, essentially due to Poisson, is stated and proved.

NIESSEN, A. M. *Projections—how to make them and how to use them*, pp. 235-278. Advice on the preparation and presentation of estimates of emerging costs in pension fund work.

FASSEL, E. G. and NOBACK, J. C. *The progressive annuity mortality table—A Gompertz adaptation of the Annuity Table for 1949 (with projection)*, pp. 279-321. A Gompertz re-graduation of the Jenkins-Lew Annuity Table for 1949 (Projection B)—see *J.I.A.* LXXVI, 168. If the calendar year mortality improves continuously at a uniform rate, the calculation of annuity values is considerably simplified on a Gompertz assumption (see D. C. Fraser in *J.I.A.* LV, 160). Standard (year of birth 1900) Gompertz commutation columns ( $c = 1.11$ , females de-rated 4 years) are calculated at 2% and  $2\frac{1}{2}$ % and may be of value outside the U.S.A.

BLAGDEN, H. E. *Actuarial note: A new mortality basis for group annuities*, pp. 322-330. The table, based on the group annuity experience of the Prudential of America, includes a margin for future improvement in mortality. The curve of  $q_x$  follows the Jenkins-Lew Annuity Table for 1949 (without Projection) up to age 60, is higher until age 76 and progressively lower thereafter.

There are also further discussions on papers presented at the Spring Meetings, pp. 331-434, Digest of Forum on Interest and Investments, pp. 435-445, Digests of informal discussions, etc., Reports of the Committee on Mortality under Ordinary Insurances and Annuities including 1946-49 basic tables, pp. 494-512, and two other short Reports.

## GERMANY

A new German insurance journal commenced publication in 1948 and continues to appear in separate parts at irregular intervals. Its title is: *Zeit- und Forschungsfragen der Versicherungswirtschaft* (Weissenberg, Bavaria), and it contains a number of articles developing actuarial techniques. The following are mentioned as of especial interest:

*Heft 1 (1948)*

SCHONWIESE, R. *Neue Grundlagen zur Waisenrenten-Versicherung*, pp. 9-57.

A useful discussion of the calculation of annuities to orphans (one and both parents dead, separately) by the 'collective method' with detailed numerical illustrations based on German population data.

*Heft 3 (1948)*

FRIEDE, G. *Zum Zinsfussproblem bei der Leibrente*, pp. 51-61. Lever's method of obtaining  $\ddot{a}_{x:\overline{n}|}$  at interest rate  $i$  from the corresponding tabular values at  $i_0$  and  $i_1$  depends on the relation  $\ddot{a}_{x:\overline{n}|} = \ddot{a}_{\overline{t}|}$ , where  $t$  is a function of  $i$ . Friede starts from the equality  $\ddot{a}_{x:\overline{n}|}$  at interest  $i = \ddot{a}_{\overline{t}|}$  at interest  $j$ , and determines  $j$  as a function of  $i$ . The results appear to be an improvement on 'Lever' with no more labour in application. A few comments are made on the possible improvement obtainable by writing  $\ddot{a}_{x:\overline{n}|}$  at interest  $i = \ddot{a}_{\overline{t'}|}$  at interest  $j'$ ,  $t'$  being chosen appropriately and  $j'$  being a function of  $i$ , but it is not noticed that a simple and satisfactory result should be obtained from  $\ddot{a}_{x:\overline{n}|}$  at interest  $i = \ddot{a}_{\overline{t''}|}$  at interest  $j''$ .

*Heft 4 (1949)*

HEUBECK, G. *Die näherungsweise Bestimmung von Invaliditätsprämien*, pp. 67-72.

If  $P_{x \overline{65-x}|}^{ai}$  represents the annual premium for a unit disability annuity payable until age 65 based on a standard set of disability rates  $i_x$ , a good approximation to the corresponding premium based on a different set of disability rates  $i'_x$  is

$$P_{x \overline{65-x}|}^a \frac{\sum_{z=x}^{64} P_{z \overline{65-z}|}^{ai}}{\sum_{z=x}^{64} P_{z \overline{65-z}|}^{a'}} \bigg/ \sum_{z=x}^{64} \frac{i_z}{i'_z} P_{z \overline{65-z}|}^{ai}.$$

## HOLLAND

*Het Verzekerings-Archief*, Vol. xxviii, No. 4

BRANS, J. A. T. M. and CAMPAGNE, C. *La financement de l'assurance sociale*, pp. 293-356. A detailed mathematical and numerical analysis of possible methods of government and employee financing of an old-age pension system under which a subsistence annuity is granted to all individuals on attaining age 65 and a further 1% is added for each year of plan membership. This is followed by a discussion of the social and economic aspects of such a scheme and of its application to Holland. (A summary of this paper was presented to the XIIIth International Congress, Scheveningen.)

BUSCH-PETERSEN, C. A. *Disability-insurance in Denmark*, pp. 357-364. A summary of the familiar formulae used in supplementary disability contracts.

SCHELTEMA, C. *Benelux-dag der Vereniging voor Verzekeringswetenschap*, pp. 365-401. A report of the meeting of the Dutch Insurance Society held on 11 February 1950 to discuss coordination of insurance problems in the Benelux countries.

WIT, G. W. DE. *Vergelijking der verschillende toekomststerftetafels voor Nederland*, pp. 402-408. Compares forecasts of Dutch mortality rates in 1975 made by Moll, Goldziher, Smid and the author himself.

GROOTENBOER, B. *Enige nieuwe gezichtspunten ten aanzien van de reserveberekening voor de gemengde verzekering volgens Lidstone*, pp. 409-424. The 'new points of view' on Lidstone's Z-method are:

(i) Reserves based on mean ages calculated separately for sums assured and net premiums lie between those based, respectively, on sums assured and net premiums only (N. E. Andersen);

(ii) The mean age need not be calculated for each year of maturity separately and can be replaced by a single mean age without loss of accuracy (N. E. Andersen);

(ii) By entering four constants on each valuation card grouping may be avoided altogether (Bjoraa).

LEEuw, A. DE. *Een andere afleiding van de netto-koopsommen voor de verzekeringen bij overlijden*, pp. 425-432. Effects a number of transformations of standard life contingency functions by writing  $_{m-1}q_x = {}_{m-1}p_x - {}_mp_x$ .

WIT, G. W. DE. *Sterfte naar doodsoorzaken*, pp. 433-476. Prepares graduated mortality tables for 14 groups of causes of death based on the Dutch population data of 1936-40. Considers the trend of deaths due to the 11 main causes of death in Holland since 1920.

## SCANDINAVIA

*Nordisk Försäkringstidskrift*, Vol. xxxi, Part 2, April 1951

A. KUUSI, in an article on Experience from Index Methods in Life Insurance, describes methods that have been tried in Finland to overcome the difficulty that assurance may lose much of its value in consequence of inflation. Variations in the sum assured are arranged for limited periods on the basis of index numbers.

F. LUNDBERG, in an article on Safety loading in life insurance, discusses possible ways of meeting increasing expenses for administration, etc.