Some significance tests for identifying deviation risks of large industrial enterprises, by J. VAN KLINKEN, *Actuariële Studiën*, January 1961, 's Gravenhage.

In judging whether the accident risk of an enterprise deviates significantly from that of the class to which it belongs, some criterion has to be applied. In addition to the observed experience, the size of the enterprise should play a role in considering of such deviations. It is argued that judgement should be based on statistical significance tests and a few tests are given based on a probability scheme introduced by H. Bühlmann.

A method for inquiring whether the Gamma-distribution represents the frequency distribution of industrial accidents costs, by J. VAN KLINKEN. *Actuariële Studiën*, July 1961. 's Gravenhage.

The distribution of the total accident costs per year may be derived from the observed frequency distribution of the size of the individual accident claims. The form of this last distribution is determinative. What then are the conditions to be fulfilled for the distribution of total costs to be a Γ- distribution? Or, in other words, if $X = \sum_{i=1}^{k} a_i x_i$ and the x_i are Poisson variables, what are the conditions for Ex_i, $i = 1, \ldots K$ so that X has a Γ- distribution? In answering such questions the theory of distributions, which can be completely factorized, may be helpful. The question is important when the insurer, in order to calculate a safe premium, wishes to estimate the random variation in the total accident costs.

Un modèle pour apprecier le risque atomique, by C. CAMPAGNE. *Actuariële Studiën*, April 1961. 's Gravenhage.

With a view to judging and investigating the solvency standard required in the insurance of atomic plants, a probability scheme has been devised, the author pointing out in advance that such an approach has only a limited informative character. The assumed general risk distribution related to one plant consists of three components:

(a) a distribution representing the "normal" risks, given by

$$F(x) = \int_0^x k\, u^p (1 - u)^{ap} du$$

(b) two discrete functions of the alternative (binomial) type accounting for the occurrence of calamities.

The resulting distribution has peaks in the tail. In fitting this distribution the author starts with a 4 per mille net premium. The gross premium, 6 per mille, includes 1 per mille for covering random fluctuations and 1 per mille for expenses. By varying the assumptions, a few alternative models are constructed. It is argued that, in order to judge solvency, it is not quite sufficient to be informed only about the excess probabilities at different levels. In addition, at least some knowledge is needed regarding the mean and variance of the risk when it exceeds certain levels. The arguments are illustrated with extensive tables and diagrams.

In the second part consideration is given to the case where several plants are involved and when pooling is adopted. This requires analysis of the risk

distribution and the calculation of convolutions thereof. This part contains useful numerical information regarding the reserves the insurer should maintain.

Een eenvoudige brandverzekeringsstatistiek, by P. D. PESTMAN, *Het Verzekerings-Archief*, 1958, pp. 178-195, 's Gravenhage.

The fire insurer needs statistics which give him insight into the structure of the portfolio. The author gives a description of an existing simple system, based on punched cards, which has been designed to meet special demands for information required in connection with questions of stability and net retentions. The quotients

$$\frac{(1 - W_0)\,\bar{s}}{(1 - W_0)\,\bar{s}^2 - (1 - W_0)^2(\bar{s})^2} \approx \frac{\bar{s}}{\bar{s}^2}$$

where $(1 - W_0)$ is the fire risk (probability) and s the observed individual damage percentage, are introduced as retention factors per risk group. Special importance is attached to the variance $(1 - W_0)\,\bar{s}^2 - (1 - W_0)^2\,(\bar{s})^2$ and the expression $\sqrt{\frac{1}{n}\,W_0\,(1 - W_0)\bar{s}^2}$ in judging stability.

On some simple stochastic processes of special use in actuarial statistics, by J. VAN KLINKEN, *Verzekerings-Archief* 1958, Actuariëel Bijvoegsel 1958, pp. 107*-117*, 's Gravenhage.

Random processes where the intensities depend on time are particularly suited to describe in detail the developments in time of certain groups of insured persons or objects. An important case is that where two groups are involved with transitions in both directions. As an example may be considered disability insurance which involves groups of active and disabled insured and in which the transitions arise from falling ill and recovery. It is argued that in the general case in which all four intensities have positive values dependent on time, only numerical solutions are practicable. Some suggestions are made as regards calculation and attention is drawn to certain convenient approximations.

De kennis van de verzekeraar op het gebied van de kernenergie, by P. D. PESTMAN, *Het Verzekerings-Archief*, April 1959, 's Gravenhage.

Now that in the Netherlands a pool has been formed for the insurance of atomic risks, the participating insurers need information regarding the technical aspects of insuring these special risks. In this context a coordinated information service guided by Euratom will be very helpful. An extensive discussion is given on the proceedings of the Nuclear Energy Training Course for Insurance Personnel, sponsored by Nuclear Energy Reinsurance Pool and Nuclear Energy Property Insurance Association.

Steekproefmethoden en Verzekeringsbedrijf, by L. J. SMID. *Het Verzekerings-Archief*, April 1961, 's Gravenhage.

After introducing some statistical concepts and clarifying them for the general reader, the author discusses a number of applications of random sample theory in the field of insurance technique. Random sample technique was included in the subjects of the actuarial congresses held at Scheveningen