J. GRANDELL: *Mixed Poisson Processes.* Chapman & Hall, London, 1997, 260 pages, ISBN 0 412 78700 8.

Mixed Poisson distributions and processes can loosely be regarded as Poisson distributions or processes with random intensity parameters. The distributions of these parameters are called *structure distributions*. It is surprising that such a simple construction has a lot of applications and serves as a source for further generalizations. By author's words, "the present book can be looked upon as a detailed survey, and contains no essential new results". One can agree with these modest words only on the understanding that the author gave a deep insight in the topic and related fields, provided many examples and counter-examples, historical remarks, and a comprehensive bibliography resulting in an excellent book.

In order to feel a flavour of the book, let us briefly consider its contents. Chapter 1 informally introduces readers into the subject. It contains relevant references and comments about the history of the problem. The mixed Poisson distribution is accurately defined in Chapter 2. Its various properties (e.g., the infinite divisibility) and relationships with other distributions are examined. Chapter 3 contains a mathematical background: point and Markov processes, martingales. In Chapter 4, the mixed Poisson processs is introduced, its basic properties are established, and relevant examples are given. As the author indicates, this chapter "is, to a great extent, a slightly (this adjective seems not to be adequate – *V.K.*) modernized summary of Lundberg's work" [*On random processes and their application to sickness and accident statistics*, 1940]. Various random processes such as infinitely divisible, Hoffman, Yule, birth, Pólya, and others are considered in the light of their relations to mixed Poisson processes. Chapter 5 is of special theoretical and applied interest. It is devoted to Cox, Gauss-Poisson, and mixed renewal processes regarded as important generalizations of mixed Poisson processes that can be viewed as approximations of a wide class of point processes. The emphasis is placed on constructive definitions of these processes. In particular, the author considers the *thinning* allowing to characterize the Cox and Gauss-Poisson processes. Various characterizations of mixed Poisson processes are given in Chapter 6. They are stated within sets of birth, stationary point, and general point processes. Chapter 7 deals with certain aging properties of the structure distributions. These properties are used in Chapter 8 for bounds, asymptotic formulae, and recursive evaluation of mixed Poisson distributions. The last Chapter 9 is devoted to applications to risk business with the emphasis on ruin probabilities, where contribution of the author is outstanding. Readers can also find there other interesting topics, e.g., associated with subexponential distributions.

This compact book is well-balanced as it combines rigorous mathematical treatments with informal discussions. It brings together many facts published in journals and other issues and contains a comprehensive bibliography on the subject and related topics. Certainly, it will serve as a valuable source of facts and inspiration for actuaries, applied mathematicians, students, and researchers.

VLADIMIR KALASHNIKOV