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**Book Reviews**


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**Leaver, C.J. (ed.): Genome Organization and Expression in Plants. NATO Advanced Study Institutes Series vol. A 29.**

New York, London: Plenum Press 1980. 607 pp., 251 figs., 39 tabs. Hard bound \$ 59.50.

In July 1979 a ten day advanced studies institute course on plant molecular biology was held in Edinburgh. The lectures, given by forty-five invited speakers, have been published in the present volume and give a balanced review of the field. The enclosed papers contain not only the results of the authors' own recent research but also present perspectives for future advances. The material was arranged around the following topics: organization of the nuclear genome, cloning and analysis of plant DNA, transcription of the nuclear genome, nuclear genome expression, regulation of genome expression, genetic regulation of cereal and legume seed storage proteins, organization and expression of the chloroplast genome, assembly of chloroplast proteins, mitochondrial genome organization and expression in higher plants, molecular biology of nitrogen fixation, Ti-plasmid of *Agrobacterium tumefaciens*, viral genome organization and expression and controlling elements in maize: viroids. The participants from some twenty-eight countries were presented with excellent up-to-date insights in the latest techniques available in molecular biology and genetic engineering in higher plants. Each chapter is rounded off by an extensive bibliography. It is obvious that the molecular biology of angiosperms is interesting to a large number of highly qualified young investigators. This is encouraging, even more so as these specialists demonstrate an increasing interest for applied problems. One can therefore expect in the near future even more impressive progress in the previously neglected field of molecular plant breeding. This volume is surely of interest to plant breeders who may want to have a fresh look on future possibilities. H.F. Linskens, Nijmegen

**Ewens, W.J.: Mathematical Population Genetics, Vol. 9.**

Berlin, Heidelberg, New York: Springer 1979. 325 pp., 4 figs., 17 tabs. Hard bound DM 59,—.

The analysing of allele and genotype frequency changes and their effect on performance and fitness of populations provides an important basis for understanding evolutionary processes in plants and animals, including man-controlled breeding procedures. With 'Mathematical Population Genetics' W.J. Ewens presents a remarkably inspiring summary of the most important mathematical approaches to problems in population genetics. Although profound mathematical knowledge is required to fully comprehend the presented methods, geneticists and biologists without such a qualification will be able to extract general information on to which the application of mathematical methods permits the modelling and evaluation of population's behaviour. This is only

due to the author presenting his information in a more than suitable manner. Owing to a strong historical accentuation, the author imparts excitement; he includes some controversial contributions made by various research workers during the development of a uniform system of approaches. In doing so he always tries to reveal the limitations of a method. In addition to classical procedures Ewens considers new models, i.e. discrete stochastic models and such basing on diffusion theory. He analyses two-locus and multi-locus systems. Particularly interesting are models for alleles without selective advantage. 'Mathematical Population Genetics' may be warmly recommended to geneticists, breeders of outbreeding crops and biomathematicians. W. Wandelt, Quedlinburg

**Spitters, C.J.T.: Competition and its Consequences for Selection in Barley Breeding.**

Wageningen: Centre for Agricultural Publishing and Documentation 1979. 268 pp., 48 figs., 58 tabs. Soft bound f 45,—.

In the field of quantitative genetics, models and methods for the analysing of environmental variation and non-additive genetic variation have been known for a long time, and their application allows for the determination of the influence of the above-mentioned factors on the response to selection. However, it has been difficult to estimate quantitatively the specific effect of competition between different genotypes on the response to selection. Spitters' book (doctoral thesis) can be acknowledged as an essential contribution to the solution of this still largely neglected problem. Comprehensive studies are carried out using mathematical models developed exclusively for this purpose. At the same time data for several model parameters are obtained from experiments with monocultures and mixtures of barley varieties. By means of variety mixtures, heterogeneous breeding populations with different genotypes are simulated. The competitive effect is discussed on various levels in order to consider differing situations in the breeding process. The section on unselected bulk propagation pays attention to the different rate of reproduction of homozygotes and heterozygotes, to the influence of natural selection and to changes in the composition of line mixtures when grown over several years. The chapter on single plant selection deals with the influence of competition and spacing to the response of selection. Furthermore, attention is paid to competition bias in yield testing of progenies in row plots. The results obtained permit the derivation of methods which reduce bias from competition and environmental variation. The book is recommended not only to breeders and geneticists working on self-pollinating crops but also to those engaged in the breeding of multiline varieties. To comprehend the contents, knowledge in mathematical statistics and selection theory is desirable. H. Peterka, Quedlinburg