Book Reviews

Nomura, T., Ohsawa, N., Tamaoki, N., Fujiwara, K. (eds.): Proceedings of the Second International Workshop on Nude Mice. The Potentialities and Limitations of the Nude Mouse.
Stuttgart-New York: Fischer Verlag 1977. XIV, 600 pp., 221 figs., 109 tabs. Hard bound DM 128,–

The nude mutant in mice is first described in the literature in 1962. Since then a great deal of research has been done on this mutant. The first international workshop on nude mice was held in Denmark in 1973 and largely concerned itself with handling and pathology. Athymic nude mice are immunodeficient animals and they are of theoretical interest in oncological and immunological research. However, these characteristics also result in a low resistance to infections, diminishing their practical value. Only after they were bred in SPF or germ-free conditions could these mice become a practical tool in biomedical research. Since then, an enormous progress in production techniques has been made, particularly in Japan, where the second international workshop on nude mice was held. However, many problems about breeding, handling, genetics and pathology still remain.

The proceedings of the workshop show that the nude mouse is an important tool in different fields of biomedical research. The mouse is used to study host-parasite interactions with many kinds of parasites, viruses and bacteria. Most attention is paid to tumor transplantation and therapy of cancer. The editors provide an impressive list of human tumors transplanted into nude mice with the names of the researchers and their affiliations. Much attention is also paid to the immunological system itself. These proceedings show the important role mutant animals may have in biomedicine and therefore this book is not only valuable for immunologists, animal breeders and geneticists, but could also be of great use to biomedical research workers such as oncologists and pathologists.

P.H.W. van der Kroon, Nijmegen

Ratner, V.A.: Molekulargenetische Steuerungssysteme.
Berlin: Akademie-Verlag 1978. 308 pp., 105 figs. Hard bound DM 48,–

'Regulatory systems in molecular biology' has been translated from Russian by B. Molik and A. Weihe, and is edited by K. Bellmann. The book turns out to be primarily a detailed description of the various mechanisms of information transfer and the regulatory systems operative at the molecular level. It is, however, the author's purpose to consider the features of molecular biology from the viewpoint of cybernetics and to take a first step towards a general system theory of genetical information.

A number of topics are treated in great depth using a good deal of mathematics, such as the description of the genetical language in terms of mathematical linguistics (part 2) and the speculations on the evolution of the various informational principles and systems (part 5). The book would have been better if the author had confined himself to those topics for which he was able to write a thorough mathematical theory. Since he set out to be 'complete', he is condemned to describe a number of subjects rather superficially (part 1).

At the end of the book the editor has added a chapter on computer simulation of genetical systems at work.

The lay-out and the illustrations are very unattractive. The author certainly deserves better. The original text has been written some years before its translation. The extensive list of references is, therefore, somewhat outdated.

A.F. Croes, Nijmegen

Bukhari, A.I., Shapiro, J.A., Adhya, S.L. (eds.): DNA Insertion Elements, Plasmids, and Episomes.
Cold Spring Harbor Laboratory, USA 1977. 782 pp., 104 figs., 72 tabs. Hard bound $ 36,–

This volume contains the proceedings of a meeting which was held in the Cold Spring Harbor Laboratory in May 1976. As in the book about bacteriophage lambda one can observe that the editors have been once again successful with this new volume: it is bound to become a standard reference book, especially on IS sequences.

The six chapters deal with IS elements, transposons and plasmids, nonhomologous recombination and the lambda paradigm, eukaryotic systems and genetic rearrangement and techniques and applications.

Section VII covers in detail IS elements, bacterial plasmids, maps of different plasmids, temperate bacteriophages and restriction endonucleases and is enriched by extensive tables. The articles start with a proposal for the nomenclature of transposable elements in prokaryotes, which will be very helpful in further studies on this field. Chapter I contains the papers on the history, physiology and structure of IS mutations. The IS elements, inducing these changes of the genetic material, are often part of a more complex structure in plasmids and transposable antibiotic resistance factors which are subsequently described in Chapter II. Sections III and IV illustrate that the bacteriophages Mu and Lambda provide a special system for studying DNA insertions. This knowledge is, of course, a great stimulus for the research on eukaryotic systems, especially on maize, *Drosophila* and viruses, since the phenomenon of controlling elements in maize, which resembles prokaryotic insertion sequences, has been known for more than three decades. These systems and their relationship to IS Elements are extensively described in Chapter V. Each contribution gives a lot of information, even for the non-specialist, and is worth special attention. It is impressive to follow the speed of development of molecular biology, especially with the help of this volume. Only a few years ago nothing was known about IS sequences in organisms, whereas, today, it is possible to make them visible by electron microscopy (some 70 EM figures are represented). The last section contains papers illustrating the new technological tools which permit the discovery of DNA insertion elements. Extremely useful are the Appendices which contain a great amount of information on IS elements, plasmids and bacteriophages, including genetic and physical maps of all of these DNA structures.

In the Preface the editors write that 'This book is an experiment in publishing the proceedings of a meeting'. One can assume that this 'experiment', which focuses on what may well be the most important topic in genetics today, is a success.

H. Böhme, Gatersleben

Böhme, H., Müller-Stoll, W.R., Müntz, K., Rieger, R., Rieth, A., Sagromsky, H., Stubbe, H. (eds.): Die Kulturpflanze. Mitteilungen aus dem Zentralinstitut für Genetik und Kulturpflanzenforschung Gatersleben der Akademie der Wissenschaften der DDR, Bd. XXV.
Berlin: Akademie-Verlag 1977. 359 pp., 69 figs., 25 plates, 23 tabs. ca. 70,– DM

This newest publication from the Central Institute for Genetics and Plant Breeding of the GDR is again a reflection of the many diverse activities conducted under its roof. In addition to containing 15 original papers it reflects the life of this institute in 1976 by recording not only its publication and lecture activities but also

the meetings held there. The present volume also contains a cumulative index of the titles of the major articles from the 25 volumes published since the war, arranged according to alphabetical order of the authors' names.

The most volumous article reports on anatomical studies within the genera *Triticum* and *Aegilops*. One of the conclusions of this well-documented article, which is complete with a comprehensive list of references and many drawings and photographs, is that there are no real anatomical differences between wild and cultivated wheat species, except for the brittle ear rhachis. The morphological characters of the roots are treated in another article. In addition, one finds papers on *Eranthis hyemalis*, an amphidiploid hybrid of Hyosoyamus; a mathematical model of preferential pairing of barley chromosomes as well as on the suitability of barley pollen for anemophily. Two volumous travel reports on the collection of indigenous cultivated plants from the GDR and Poland demonstrate the wide-spread activities of the institute.

Physiological work is also done, however, at this, the most important plant breeding institute of the GDR: examining and reporting on the little evidence available on the measurement of absorption spectra in vivo, developing a computer program for the analysis of the MW of DNA from sedimentation profiles, examining the physiological importance of chlorphyll b and comparing the correlation between crude protein content and grain yield in corn. Their interest in the ecological aspects of the rise in productivity of tropical agriculture further demonstrates the world-wide interests of the scientific staff of the institute. Altogether it is a periodical well-worth reading.

The present volume is dedicated to professor Hans Stubbe on the occasion of his 70th birthday. H.F. Linskens, Nijmegen

Sokoloff, A.: The Biology of Tribolium. Vol. 3.
Oxford: Oxford University Press 1977. 612 pp., 39 figs., 77 tabs. Hard bound £ 25,–
This is the third and final volume in a series by this author devoted to the biology of *Tribolium*. Most of this third volume is devoted to genetics; although there are chapters on susceptibility and resistance to insecticides, on irradiation, on *Tribolium* as a hazard and a potential food source and on the detection of insect pests and the possibilities of control.

The stated goal of this series was to make readily available the widely scattered information on *Tribolium*. The price of this volume and the others in the series makes it questionable that this information will be readily available. However, the author has, in a praiseworthy fashion, succeeded in assembling, categorizing and summarizing a vast amount of literature. Much of this literature was from sources with restricted distribution such as the *Tribolium* Information Bulletin. Thus, in a limited way, the author has achieved his goal. Unfortunately, as is often true for literature reviews, the volume is already out of date. Although not specifically stated, the most recent citations appear to be in 1974 and there have been numerous pertinent publications since then.

In a monograph of this size, one expects to find a number of errors, and this volume is no exception. Most of these errors will be no more than mild irritants to the serious reader. For example, table 20.12 is separated from the text and placed in the middle of the references; it is not made clear whether the data in table 20.2 refer to pupa weight or adult weight, and no units are given. Personally, I was most disturbed by the apparent omission of commas when reporting data. This occurs in numerous places throughout the volume (e.g., in tables 20.10, 21.12, 23.3, 25.2; in the text on pages 238, 500, 573). There are some errors of a more serious nature also, such as on page 100 it is reported '... in four populations the frequency of the jet gene, at the end of 23 months, was 0.40, 0.33 and 0.28, respectively'. However, in total, there doesn't appear to be an excessive number of serious errors.

Anyone considering the use of *Tribolium* in research would find this book a useful reference. This same statement could be made for many geneticists whether working with *Tribolium* or not, particularly if they are working in the areas of population or quantitative genetics. Considering the price, I could not recommend they add this book to their private library. However, it should be considered as a useful addition to institutional libraries.
R.E. Goodwill, Lexington

Drijfhout, E.: Genetic Interaction between Phaseolus Vulgaris and Bean Common Mosaic Virus with Implication for Strain Identification and Breeding for Resistance.
Wageningen: Centre for Agricultural Publishing and Documentation 1978. 98 pp., 14 figs., 42 tabs. Soft bound Dfl 25,–
Bean Common Mosaic Virus (BCMV) is a very common disease of common bean (*Phaseolus vulgaris* L.) and causes severe damage to susceptible cultivars of this crop. The differences among different bean varieties in seed transmission indicate that the transmission is controlled by genetic factors. Up till now about 20 virus strains have been described, but identification was carried out under different conditions with several methods. The aim of the study described in this book was to obtain bean genotypes resistent to all virus strains.

To compare the different strains properly the author used a standard procedure for identification of the strains and tested a large number of cultivars with several strains. Eleven resistant groups were determined by the testing of about 450 bean cultivars with 8 to 10 strains. The problems of strain identification and resistance to virus cannot be studied separately because both are interdependent aspects of a hostpathogen relation and this makes the determination of resistance of common bean to BCMV very difficult indeed.

In an extensive study the author was able to classify the virus strains and isolates into 10 pathogenicity groups and subgroups. Twelve differentials were intercrossed and their F_1 and F_2 tested with most of the strains for genetical analysis of resistance in bean. Seven genes were distinguished. Four strain-specific genes had a gene-for-gene relationship with 4 pathogenicity genes likely to be present in the virus strains. Two bean genotypes were developed with resistance to all known strains.

The author contributes a great deal to a better understanding of the pathogenicity genes of the virus. This book will promote international standardization in BCMV research tremendously and is very important for anyone involved in resistance breeding.
D.H. Wieringa-Brants, Baarn

Cutter, E.G.: Plant Anatomy. Part 1. Cells and Tissues. 2. ed.
London: E. Arnold Publishers 1978. 315 pp., 148 figs., 1 tab.
Hard bound DM 25,– Soft bound DM 15,–
Plant anatomy is today still of basic importance to botany. Progress in this field is greatly dependent upon the knowledge which comes into sight through the applications of the transmission and scanning electron microscope and furthermore by the experimental approach to plant anatomy. This the author takes into account. In addition new scientific findings are clearly arranged with many good illustrations. The book shows connections between structure and function in cells and tissues and makes the dynamic actions in the plants at this level of organization available to students. Phylogenetic aspects, respectively genetic and evolutionary aspects, although only slightly represented in some chapters, are very well discussed. W. Vent, Berlin