

Book Reviews

Bärtels, A.: Gehölzvermehrung.

Stuttgart: Ulmer 1978. 328 pp., 160 figs., 20 tabs. Hard bound DM 68,—

Nearly the whole first half of this book, the general part, deals in detail with vegetative and generative propagation of woody plants. With a text supported by figures and tables both old and modern methods are well described. In this way the remarkable progress in the field of technics of propagation has been made evident to the reader. The parts concerning micropropagation of sprout tops, propagation of meristems and tissue cultures are very short in spite of their importance. Plant protection is also only mentioned by way of intimation.

The special part, differentiation in broadleaved woody plants and conifers, including Ephedra and Ginkgo, compiles the types of propagation concerning the listed genera and species into alphabetical order. It is of a highly practical value for interested persons and institutions. In this way one can find more or less detailed treatises of 222 broad-leaved genera and 30 gymnospermous genera.

W. Vent, Berlin

Benirschke, K.; Garner, F.M.; Jones, T.C. (eds.): Pathology of Laboratory Animals.

Berlin-Heidelberg-New York: Springer 1978. 2225 pp., 1101 figs., 1175 plates, 211 tabs. Hard bound DM 565,30

Pathology of Laboratory Animals is the English version of the well known work of Cohrs, Jaffé, Meessen. All the chapters are fully rewritten and updated, so only the general format of the two volumes is quite identical to the German work of the last named editors. In Volume one the pathomorphological abnormalities of different organs in different species are discussed. In Volume two the pathology is based on live and dead pathogens. In addition to a short description of pathological anatomy the characteristics of pathogens, clinical manifestations and diagnostic procedures are described.

Sixty-three specialists — most of them from the USA — give a tremendous quantity of recent information about naturally occurring diseases in laboratory animals. Only spontaneous diseases are described and there is unfortunately little information given about artificially induced disease models in animals.

The work is not only of significance for the pathologist who is working in toxicological or gerontological research but it is also an useful tool for research workers starting with animal experiments and for laboratory animal scientists. The fact that the pathology is discussed in two directions: organ grouped and pathogen grouped, inevitably leads to some overlap.

In reading different chapters it is obvious that the editors have given latitude to the authors of several chapters for a personal approach. Consequently the information about a topic given by several different authors is occasionally not consistent. Of course, in reading this book questions arise about subjects that are not handled.

In the chapters about viral and bacterial diseases hardly any information is given about incubation periods. Under the head developmental disease the incidence of neonatal mortality due to difficulties during delivery is not described.

Nevertheless, the work is an unique source of information about pathomorphology and about all kinds of pathogens both in homoeotherm and poikilotherm vertebrates used as experimental animals.

W.J.I. v.d. Gulden and A.P.M.G. Bertens, Nijmegen

Laver, W.G.; Bachmayer, H.; Weil, R. (eds.): The Influenza Virus Hemagglutinin. Topics in Infectious Diseases, Vol. 3.

Symposium, Baden near Vienna, March 21-23, 1977. Wien-New York: Springer 1978. 259 pp., 88 figs., 49 tabs. Hard bound DM 54,—

Influenza is one of the more major diseases of man causing worldwide epidemics. The infectivity is determined by the two surface antigens of the virus — the hemagglutinin and the neuraminidase. Both antigens of influenza virus undergo antigenic variation — antigen drift and antigen shift. The variation of hemagglutinin is of more importance than the variation in neuraminidase, since hemagglutinin produce infectivity. In 1977 a Sandoz Symposium took place which was concerned with influenza virus hemagglutinin. Major topics were recent developments about the chemical structure of the hemagglutinin molecule and the relationships between structure, antigenicity and biological functions of this viral protein. On the basis of sequence studies of this protein as well as by new methods of identifying and isolating of the hemagglutinin gene, it is possible to characterize the changes in the primary structure responsible for antigenic variations. The results support the conception that antigenic drift is caused by point mutations in the RNA whereas antigenic shift is formed by recombination between well established human influenza A viruses and type A influenza viruses of mammals or birds. Two additional contributions discuss, on the one hand, structural data concerning the fusion factor of Sendai virus and give, on the other hand, a review about the chemistry of antigenic determinants on protein molecules. The contributions of this symposium review in an excellent manner the latest knowledge about the importance of hemagglutinin and are of importance to all specialists in the fight against influenza.

H. Staber, Berlin

Smith, J.M.: The Evolution of Sex.

Cambridge-London-New York-Melbourne: Cambridge University Press 1978. 222 pp., 21 figs., 9 tabs. Soft bound £ 2.95

What selective forces maintain sexual reproduction and genetic recombination in nature? It is the aim of this remarkable and unusual book to elucidate this question.

Although Professor Maynard Smith considers from the population genetics point of view the selective forces responsible for the evolution of sex, recombination rates, breeding systems and mutation rates he makes no attempt to present an exhaustive review. Indeed, he says little about such important aspects of the evolution of genetic systems as the genetics of sex determination, the genetics of self-incompatibility, the significance of haplo-diploid life cycles, the meaning of parasexual processes in prokaryotes and the molecular basis of recombination. Instead of an exhaustive review he prefers to stick to topics about which he has to say something new. In fact, one has always the impression that he is carrying on a debate with himself, presenting the arguments first on one side and then on the other side. In such a manner he raises a lot of such important questions as the relative importance of individual and group selection processes in the following series of well structured chapters: 1. The problem, 2. Some consequences of sex and recombination — I. The rate of evolution, 3. Some consequences of sex and recombination — II. Muller's ratchet, 4. Could sex be maintained by group selection? The comparative data, 5. Recombination — the problem, 6. Short-term advantages for sex and recombination — I. An unpredictable environment. 7.

Short-term advantages for sex and recombination – II. Selection in a finite population, 8. Hermaphroditism, selfing and outcrossing, 9. Anisogamy and the sex ratio, 10. Sexual selection, 11. Mutation.

In the preface of this book Professor Maynard Smith writes: 'If I do no more than encourage experimentalists and field workers to collect the relevant data, I shall be well satisfied'. This book doubtless will influence the further development in the fields of experimental as well as theoretical approaches toward a better understanding of the mechanisms of evolution.

R. Piechocki, Halle/S

Zwölfer, H.; Paulus, H.; Regenfuss, H.; von Wahlert, G.: Co-Evolution

Hamburg-Berlin: P. Parey 1978. 125 pp., 28 figs., 8 tabs. Soft bound DM 28,-

The title of this symposium report does not indicate that the language is German. It parallels a U.S.A. report of 1975 (Gilbert and Raven), to which no reference is made probably because of a delay in publication of three years. The contents are modest (four lectures) and more zoological.

In the U.S.A. book Dodson objected to 'co-evolution' being used too loosely and this may also apply somewhat to the first contribution here by Zwölfer. He compiles relationships between plants and phytophagous insects, even feed-back of entomophagous insects. This mass of data is of special interest to botanists without easy access to zoological literature. Most of the data concerns plant-defense and animal reaction; only rarely are adaptive reproductive structures of plants discussed.

Regenfuss discusses co-evolution, as such, under 'Parallel-Cladogenesis' and does this more causally and theoretically. Mutual selective influences lead to parallel radiation. Here, coevolution of groups of species forms the central theme.

The chapter by Paulus mainly gives a long review of classical, general floral ecology, with even a long excursion into chiropterophily. The concept of co-evolution appears in a critical analysis at the end. Many cases of narrow correlation prove to be a one-sided utilization which has already been termed as short-circuiting or ecological parasitism of flowers on insects. This doesn't seem to be the result of long-lasting co-occurrence with mutual influencing. In addition to orchids one might point to the peripheral radiations and transitions discussed here. Also to *Oenothera* spp. where groups of bees specialized co-evolutionary on their pollen, whereas moths with little specificity are the pollinators. What is the selective co-evolution here?

There is usually accepted a sequence of co-occurrence with correlative bonds developing into co-adaptation, then further to co-evolution of two species, and next (as seen above) to feed-back radiation into groups. It is curious that Paulus gives reasons to refuse the last. He even excludes chiropterophilous groups of flowers as co-evolutionary with groups of bats. Consideration of year-round necessity of food may change this attitude.

It seems natural to extend the range above two groups of species. A butterfly needs separate plant spp. for oviposition and adult feeding. In one bee species the male sex may 'adapt' to one blossom, the female to different blossoms, for nectar and pollen respectively – and rely for nesting material on yet other plants. It may have cuckoo-bees and other predators, etc.

This wider approach is now actually promoted in the last con-

tribution, by von Wahlert, who considers the whole ecosystem as influencing mutualistic coevolution. Here in, for example, the cellulose-digesting symbionts act between herbivores and plants.

Well, if the publication is not a book with one 'Leitfaden' – it is an interesting forum with a 'choc des opinions'. It may 'jaillir' (spatter) drops of 'verité' on many for a moderate price.

L. van der Pijl, Den Haag

Callan, H.G.; Klug, A. (eds.): Structure of Eukaryotic Chromosomes and Chromatin. Philosophical Transactions of the Royal Society of London. Vol. 283, no. 997.

London: The Royal Society 1978. 186 pp., 122 figs., 24 plates. Soft bound £ 16.80

Volume 283 of the 'Philosophical Transactions of the Royal Society of London' compiles articles from 28 lectures given during a discussion organized by H.G. Callan and A. Klug on the 'Structure of eukaryotic chromosomes and chromatin' in February 1977. In accordance with the intentions of the two organizers the majority of articles in this volume deal with questions on the structure, composition and organisation of chromatin, its subdivision into nucleosomes, and on the transcription of eukaryotic chromosomes. About ten articles (presented in section 1 of the volume) are devoted to the elucidation of the structure of nucleosomes. These include such papers as those of P. Oudet et al.: 'Nucleosome structure'; A. Prunell and R.D. Kornberg: 'Relation of nucleosomes to nucleotide sequences in the rat'; B.M. Richards et al.: 'Nucleosome sub-structure during transcription and replication'. In two contributions (W.W. Franke and U. Scheer; J.M. Gottesfeld) the hitherto undecided question of whether or not nucleosomes occur in transcriptional active chromatin is discussed. The articles of section 2 ('Distribution of DNA base sequences') mainly deal with aspects of chromosome structure, e.g. 'Trends in the evolution of very large chromosomes' (H.C. MacGregor), 'The occurrence and transmission of a pattern of DNA methylation in *Xenopus laevis* ribosomal DNA' (A.P. Bird), the 'Sequence organization of the human Y chromosome' (H.J. Cooke) and 'Aspects of the regulation of histone genes' (M.L. Birnstiel et al.).

Apart from the two articles on the relationship between nucleosomes and transcription, cited above, parts 3 ('Transcription') and 4 ('Functional units') are comprised of contributions on gene expression in which some technical approaches and useful systems for studies on transcription are presented. In two papers (J.B. Gurdon et al.; E.M. DeRobertis et al.), the application of *Xenopus* oocytes to investigations on the transcription of injected pure DNA and somatic nuclei, respectively, is discussed. In several articles (J. Sommerville et al.; B. Daneholt et al.; L. Moran et al., R.J. Skaer) some aspects of the transcription of giant (lampbrush and polytene) chromosomes from amphibia and diptera are described.

The contributions of the volume provide a great deal of important information and are carefully prepared for press. A drawback of the issue is the absence of the discussions held during the meeting. The topic of the meeting, moreover, was very similar to that of the Cold Spring Harbor Symposium held in the same year, and the experimental results of numerous papers of the volume referred to here were presented there in a more extended and detailed fashion. It is therefore somewhat doubtful whether this volume will have a widespread distribution even though the quality of many articles is above any doubt.

E. Serfling, Gatersleben