such as hormones, that are external to the differentiated cells in which the enzyme changes occur. Even so, he ends his interesting chapter by suggesting that homeotic mutants in *Drosophila*, which appear to be cell-autonomous, code for hormone receptors. The chapter by Ho on the hormonal control of gene expression does deal with a topic that is central to physiological genetics. It is restricted to a description of the effects on nucleic acid and protein synthesis of several steroid hormones and gibberellic acid. Apart from a paragraph on dwarf cereals the chapter totally lacks consideration of genetic variants affecting responsiveness to steroid, catecholamine and peptide hormones. Such variants range from those affecting the relative affinity of receptors for peptides differing by a single aminoacid to mutations that remove the receptor molecules entirely. In addition, the effects on gene expression in target organs of quantitative and qualitative variation in the hormonal signals were completely ignored. For example, the polymorphism found amongst hippopotami for antidiuretic hormones of differing potency must have considerable consequences for the water-relations and physiology of these amphibious mammals.

The chapter I found most rewarding was the one by Levings and Pring on the mitochondrial basis of male sterility in maize and its relation to susceptibility to southern corn leaf blight. Fascinating, but not something I had expected to find in a book on physiological genetics. Perhaps I should have been less disappointed had the volume not had the same title as Richard Goldschmidt's classic. A title like "Some Aspects of Biochemical and Developmental Genetics of Eukaryotes" might have conveyed a better ideal of the contents to potential readers.

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INBRED AND GENETICALLY DEFINED STRAINS OF LABORATORY ANIMALS. Parts 1 and 2. P. L. Altman and Dorothy D. Katz (Eds.). No. III in Biological Handbooks, Federation of American Societies for Experimental Biology, Bethesda, 1979. Pp. 418+319. Price: not stated.

This handbook is a mine of information about laboratory rodents, rabbits and chickens. As well as the lists of inbred strains, their origins, characteristics and current holders, that the title leads one to expect, there are data of interest to geneticists on many other aspects of these animals. There are descriptions of mutants, classified by mechanism of action and by linkage group, for all of the species and linkage maps for several of them. The genetic map for the mouse requires two full pages. The karyotypes of the species are described, with photographs of the banding patterns in most cases. Chromosomal variants are listed together with the strains carrying them. Details of the immunological and immunogenetic characteristics of each species are given, which takes 50 pages for the mouse. There are also useful sections giving details of reproduction and of the pre- and post-natal stages of development. The various types of spontaneous and transplantable tumours are listed for each species and their incidence in different genotypes catalogued.

Part one of the handbook covers the laboratory mouse and rat and part two deals with hamsters, guinea pigs, domestic rabbits and chickens. Almost

all of the material is presented in tables, each accompanied by a few introductory paragraphs and a comprehensive bibliography. The lengths of the sections correspond to the amount known about each species. 230 pages are devoted to the mouse, 130 to the rat and between 40 and 80 to each of the other kinds of animals. However, of the 80 pages on hamsters, 76 are on the Syrian hamster and only four on the Chinese hamster, despite its importance as a source of many of the cell lines used in somatic cell genetics. A comprehensive and well-organised index occupies 108 pages; almost one seventh of the text. This index, together with the tables of data and their bibliographies, ensures that this handbook will be a useful, and usable, source of reference on laboratory animals for several years to come.

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THE PLANT GENOME (Fourth John Innes Symposium and Second International Haploid Conference). D. R. Davies and D. A. Hopwood (Eds.). The John Innes Charity, Norwich 1980. Pp. xi+273. Price: £7.00 (hardback).

This book became available very quickly after the meeting which was held in September 1979. The contents are divided into two sections, corresponding to the two symposia. Most of the work presented concerns angiosperms. Speakers were well-chosen, and the addition of some review papers gives the book a wide coverage, despite its small size. The interesting opening lecture "The Ninth Bateson Memorial Lecture" on angiosperm gametophytes did not fit in with the following papers on the plant genome, but made a suitable introduction for haploid work presented in the second half of the book.

Papers in the first half of the book were logically divided into sections on chromosome organization, genetic instabilities, and organelle genomes. Unfortunately the manuscript for the review paper on genes and spacers, coding and non-coding DNA in animals was not received; this would have provided a comparison with animal work, and perhaps would have stimulated some thought. Many plant workers are not aware of the progress made in animal systems, making the absence of this paper more regrettable.

DNA reassociation kinetics show that closely related species differ enormously in their repeated DNA content and organization (Thompson and Murray, Flavell *et al.*), indicating that although this non-coding DNA is of interest for evolutionary studies, it is unlikely that it is important in the control of gene action. The best understood mitochrondrial genome is that of yeast (Linnane *et al.*), but the importance of male-sterility in maize has prompted research which will increase our knowledge of mitochondrial genomes and proteins in general (Pring *et al.*, Forde and Leaver). Although quite a lot is known about transposable elements in bacteria (Saedler *et al.*) very little is known at the molecular level about genetic instabilities in plants, and we should see some interesting developments in this field in the next few years. Isolation and cloning of plant transposable elements may eventually allow identification and study of coding genes, and this is certainly an exciting possibility. Döring *et al.* present a paper on this subject but no results are included; there are probably other laboratories working along the same lines.