

## REVIEW

DICTIONARY OF GENETICS. By R. L. Knight. Waltham, Mass. : Chronica Botanica Co., and London : Dawson, 1948. Pp. xi+183. \$4.50.

During its short life genetics has brought into being a great body of terminology which the newcomer to the science must seek to understand. These terms were invented to meet the needs of a specialised branch of biology, but one with which all biologists must now have some acquaintance. Though sufficiently unusual for it often to have been dubbed a jargon, genetical terminology should from this point of view present little difficulty to those accustomed, for example, to the complexities of nomenclature in Thallophtyan reproductive systems or vertebrate anatomy. There is, however, a clear need for a compilation in which the meaning of genetical terms can be looked up when they are encountered for the first time.

Nor does the potential value of a genetical glossary stop at this point. The rapid growth and wide development of genetics have outstripped the codification of its terminology, at which indeed little attempt has been made. Geneticists do not always use the same terms to describe a given phenomenon, nor do they always imply the same thing by a given term. And there is little hope that any terminology could be devised which would prove acceptable to all. Indeed a case could be made out for always requiring the author of a genetical paper to include in it a selected glossary of the special terms he uses. In this way both present disparity and future evolution would be laid openly before us, instead of remaining concealed as a source of bewilderment and misunderstanding.

While, however, such a reform remains, to say the least of it, as unlikely as is general agreement on all definitions, individual attempts at compilation and codification can do much to help. Many of the terms will arouse little disagreement, and a bold attempt to provide a consistent and useful set of definitions for the remainder must aid in bringing to the surface the causes of divergent views. For these reasons the publication of a dictionary of genetical terms cannot fail to be an event of interest.

Admitting that full agreement on any set of definitions is not to be expected, by what standards can we judge of Dr Knight's success? Clearly the criteria of content, consistency and convenience must be applied, and we might expect at the same time that the author would give some indication of variation in usage where this exists.

Dr Knight's dictionary contains some 2500 terms or more. By no means all of these are, however, to be regarded as essentially genetical. Many are purely anatomical, developmental or biochemical. There may be a case for defining, for example, *vagina* and *blastomere* in a zoological text, or *anther* and *perianth* in a botanical one; but surely the biologist interested in genetics should already be familiar with them from his earlier education. Other terms are less likely to have been encountered earlier. *Breptic* and *teleianthus*, *dystokia* and *dystrophy*, *siphonogamy* and *prometatrophy* (to take a sample) will be new to many of us. But when we learn that *teleianthus* (of a flower) means hermaphrodite, that *prometatrophy* means obligatory cross-pollination and that *dystokia* means abnormally painful and difficult parturition, we may feel that as geneticists we could well have been spared the encounter even now. There seems to be little to be gained by cluttering the book with a

mass of words which were doubtless the product of dystokia, which have never commanded wide use, at least in genetics, and which are better forgotten by geneticists. Indeed their inclusion may do active harm where the reader is a new-comer to genetics and so is in no position to recognise its legitimate terminology.

At the same time there are a few serious omissions. We have *nucleochylema* but not *nucleic acid*, *hypermorphosis* but not *hypermorph*, and *neoteinia* but not *neomorph*. Surely both the molecule which acts as midwife to all protein reproduction, and the only existing classification of mutant allelomorphs by their action deserve a better fate.

In general the definitions given are cautious : on the whole the empirical is preferred to the theoretical. Some of them can, however, hardly escape criticism. For example, in defining an *inbred line*, it is considered "as a result of inbreeding and selection." *Recombination* is related exclusively to crossing-over between linked genes, and its original use in relation to genes which we should now recognise as lying on different chromosomes is omitted. In defining a *gene* as a unit of inheritance no mention is made of the various means which have been used to distinguish such units one from another, the implication of the omission presumably being that the distinction can be, and is, always made by reference to recombination. We may note too that the gene is regarded as governing, affecting or controlling the transmission and development of a hereditary character, which might well suggest to the mind of the student the false rule of one gene one character. A similar lack of clear differentiation between the character and its difference is to be seen elsewhere in the book. The definition of *heterochromatin* explicitly brings in the alleged genetical property of inertness equally with the primary cytological property of stainability (which, though not so stated, is another way of saying nucleic acid charge). This term is a cytological one, and in our present state of knowledge it can be defined by reference to genetical properties only at the sacrifice of consistency as well as of authority.

From the point of view of convenience, the main criticism must be that the collection of related terms is not always carried as far as it might usefully be. Thus the definition of *chimæra* gives cross-references to seventeen other terms, nine of them being sub-classes of *chimæra* itself. It would be much more convenient to collect all of these nine together under sub-headings of the key word, so that the reader could compare them and see their range at a glance, rather than to leave him to turn them up one after another in widely separated parts of the book.

That Dr Knight's book will have a wide sale can hardly be doubted : the need, to meet which it was written, is too great and the market unsaturated. The nine useful appendices, including formulæ and tables, the distances recommended for avoiding contamination in seed production, and the proposed rules for gene symbolisation, must also add to the book's attraction. The author may, however, consider serious revision before any second edition, such as seems to be envisaged in the preface. In our view it would be made more compact and more useful if many of the non-genetical, out-of-the-way and obsolete terms were removed. The definitions of the remainder could then be reconsidered with a view to removing inconsistencies, achieving greater rigour and expanding them with explanatory notes where desirable.

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(Reviewer's italics throughout.)