

SCIENTIFIC BOOKS

DROSOPHILA MUTANTS

The Mutants of Drosophila melanogaster. By CALVIN B. BRIDGES. Completed and edited by Katherine S. Brehme. 257 pp. 128 text figures. 3 plates. Carnegie Institution of Washington. Publication 552. 1944. \$2.50 in paper cover, \$3.00, cloth binding.

Most reviews and text-books of genetics are slightly out of date by the time they are published, seriously out of date five years hence, antiquated in ten and historical curiosities twenty years after publication. At least this used to be so before the war has applied a brake to the development of science. For two good reasons, the book under review will prove to be an exception. First, it embodies the records collected during a lifetime of work of one of the master builders of genetics. Second, it represents a type of research which, though by no means completed (a worth-while research seldom is), will hardly be pursued in the future by so many and so assiduously as it was in the past.

Between thirty and thirty-five years ago, T. H. Morgan pointed the way toward construction of genetic chromosome maps in *Drosophila melanogaster*. The realization of this task fell, however, to the lot, first of a small group of men usually referred to as "Morgan School," and later of an ever widening circle of geneticists the world over. Mutants in *Drosophila melanogaster* were being collected, studied, described, and their positions on chromosome maps determined in laboratories scattered from New York, Austin and Pasadena to Moscow, Peiping and Kyoto. But the undisputed leader in this work was C. B. Bridges. Assuredly more than a half of the multiple mutant stocks without which efficient work on chromosome mapping is impossible were "synthesized" by Bridges and distributed for the asking to all other laboratories. The records of published and unpublished data of all investigators were kept by Bridges on cards filled in by his peculiar shorthand notations. Since 1934 some of these data were from time to time systematized on pages of a mimeographed circular "Drosophila Information Service," issued by C. B. Bridges and M. Demerec at the Department of Genetics of the Carnegie Institution of Washington in Cold Spring Harbor. The issue of this circular which came out in 1938, only a few months before Bridges's death, contains the first draft of the book under review. Thanks to the initiative of M. Demerec, supported by T. H. Morgan for the colleagues of the late C. B. Bridges and by geneticists everywhere, K. S. Brehme was enabled to complete and edit the final work, which will stand as a memorial to a not very long but very useful life.

The first nine pages of the book are taken by intro-

ductory remarks and explanations of the symbols and abbreviations used. The main body of the work (pp. 10-236) contains descriptions of the mutants, arranged in alphabetic order. The balance of the book summarizes the contents by listing the mutants in the form of chromosome maps. For each mutant the following data are given when available: the symbol and the name of the mutant; the name of the discoverer and the date of the first finding; the location in a chromosome; bibliographic references; a very condensed description of the external and sometimes also of the anatomical, physiological, genetic and cytological characteristics; and, finally, an evaluation of the mutant according to the degree of its usefulness in the work of linkage studies. A kind of telegraphic style is resorted to in the presentation of the data, a specimen of which follows: "Hn^{r2}: Henna-recessive² Nordenskiöld, 33b9. DIS 7: 18 (1937) (called hn³). Also referred to as #bu. Eye color darker than Hn^r in young flies. RK2." This can be translated as follows: a second recessive allele of the mutant gene "Henna" was found on February 9 of 1933 by Nordenskiöld; it was referred to under the symbol hn³ on page 18 of the issue No. 7 of the "Drosophila Information Service" published in 1937; an alternative name "brunette" and the symbol "bu" derived from it were also used, and it is now proposed to suppress them; the eye color in this mutant is darker in young flies than in the mutant symbolized Hn^r; Henna-recessive² is a mutant fairly useful for linkage studies, and its locus in the chromosome is accurately known.

The text-figures (line drawings) illustrate the critical characters of some of the mutants; some of these figures have been excessively reduced during reproduction. The three plates show the external structure of the fly and maps of the salivary gland chromosomes (reprinted from the "Drosophila Information Service"). The book certainly can not be profitably read by non-specialists, but it is a veritable mine of information for a specialist. It describes mutants at 98 "most useful" and 43 "less useful" loci in the X-chromosome, 192 "most useful" and 36 "less useful" loci in the second, 114 "most useful" and 42 "less useful" in the third, and 7 "most useful" and 5 "less useful" loci in the fourth chromosome, a total of 537 loci. This is a much greater number of genes than is known in any other organism. It seems probable that this number includes a majority of the genes in *Drosophila melanogaster* which produce externally visible changes with appreciable frequencies, and that in the future the increase in the number of known genes of this sort will not be as fast as it was in Bridges's day.

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