

GENETICS IN THE GARDEN

The Genetics of Garden Plants

By M. B. Crane and W. J. C. Lawrence. Second edition. Pp. xxi+287. (London: Macmillan and Co., Ltd., 1938.) 12s. 6d. net.

THAT a second edition of this work should have been called for within four years of the appearance of the first shows that it has met a definite need. Nor is this surprising; for the dimensions to which the study of scientific plant breeding has attained offer one of the most spectacular examples of the rapid rise of an applied science based upon a simple initial discovery.

It is not much more than thirty years ago that Biffen declared plant breeding to be a game of chance with the odds on the plant. To-day, thousands of plant breeders all over the world are in a position to define their aim and to pursue it with every prospect of success. The majority of these are, of course, dealing with farm crops of fundamental importance to mankind—with cereals, grasses, cotton and the like—crops where even a very small improvement in quality or quantity is enormously magnified by the vast acreages involved. With this aspect the authors are not concerned. They have confined themselves to the products of the flower and vegetable garden, with the inclusion of fruit trees.

A brief and clear introduction to the principles of genetics and cytology involved is followed by three interesting chapters on flowers and vegetables. Special attention has been paid to such species as have been more intensively studied—to the sweet pea, the stock, the dahlia and the primula, and among vegetables to the tomato, the potato and the garden pea. The matter is presented in a form which allows the reader to obtain an idea of the

successive changes that have occurred under continuous cultivation, while at the same time he is given an insight into the chemistry of flower colour and brought to realize the importance of polyploidy as a factor in connexion with 'improvement'.

A considerable part of the book is devoted to fruit trees and bush fruit, and is largely based upon the well-known experimental work carried out at the John Innes Horticultural Institution by the senior author. The genetical analyses of the more important cultivated forms are followed by illuminating discussions on bud sports, sterility and incompatibility—topics all important for the grower of fruit. The final chapter, on the origin of new and improved varieties, should prove of deep interest alike to the student of evolution and to the practical grower. The recently discovered colchicine treatment for the induction of polyploidy is alluded to, perhaps too briefly in view of its extraordinary promise. Doubtless the authors will tell us more about it in their next edition when more data are available. It is suggested also that they might give some account of the work with X-rays and radium which is leading to the production of interesting novelties in various plants to-day.

Altogether this is a most interesting and valuable book, excellently produced and illustrated. To the practical grower its value is obvious, and nowhere else will he find so clear an exposition of the principles underlying his craft. It should make an even wider appeal to the amateur horticulturist who is not merely content to admire the beauty of the plants he grows, but wishes to learn something of their nature and of the causes that have brought them into being.

THEORIES OF VISION AND HEARING

Theories of Sensation

By Dr. A. F. Rawdon-Smith. (Cambridge Biological Studies.) Pp. xiii+137. (Cambridge: At the University Press, 1938.) 10s. 6d. net.

THIS excellent book deals with sight and hearing and does not include any reference to touch, taste and smell. Dr. Rawdon-Smith gives the reason for this in his introduction. He writes, "It would be safe to say that no theory of general sensibility has yet been proposed which is able to describe the available data. . . . We may note

in the fields of olfaction and gustation not that the theoretical position is insecure, but simply that no theoretical position exists."

The four chapters on vision refer to the following subjects: Chapter i to the formation of the retinal image; Helmholtz's theory of accommodation and the pupil reflexes. Chapter ii alludes to the duplicity theory of von Kries, the Purkinje phenomenon, the photochemical properties of visual purple, dark adaptation and night-blindness. Chapter iii refers to the discrimination of intensity, the critical fusion frequency, the acuity of the eye at different