The genetics of garden plants. (3rd ed.) M. B. Crane and W. J. C. Lawrence. Cambridge, Engl.: at the Univ. Press; New York: Macmillan, 1947. Pp. xvii + 299. (Illustrated.) $3.50.

The first edition of *The genetics of garden plants* was issued in 1934 and the second in 1938. This new edition has 11 additional pages of text and one new chapter which assembles the discussion of zenia and metazenia. Otherwise, the scope and the topics treated are the same as in the second edition. There is some revision to include information obtained in the extensive researches of the years since 1938.

In the words of the authors, "The aim of this book is twofold: first, to give an introduction to the essential principles of genetics and cytology; and secondly, to give an account of recent results in relation to horticulture" and "to describe principles as simply as the technicalities of our subject will allow." The authors have been highly successful in doing all this. They present information of both scientific and practical value in a manner that will interest a wide circle of persons who grow plants, such as gardeners, orchardists, and seedsmen, as well as the more technically trained horticulturists and plant breeders. Many of the plants that are discussed are commonly grown as ornamentals or as vegetable and fruit crops. Many of the features of their status and behavior may be observed. The authors correlate these features of character and behavior with the physical structures of the mechanism of heredity as these are revealed by the microscope and by experimental studies. The information given has a basis in facts that are of interest and often of practical value. Of the topics treated, mention may be made of the following: the basis and mechanisms of heredity as revealed by the behavior of chromosomes and genes; the origin, nature, and value of polyploidy; the chemical and genetical basis of flower color; the explanation of bud sports and chimeras, which have always been puzzling to the amateur gardener; the types of sterility in plants and their relations to the production of fruits; the histories of such commonly cultivated plants as potato, tomato, strawberry, sweet-pea and dahlia; and a survey of the means by which new and improved forms of plants are obtained.

In its particular scope and method of treatment this volume has no counterpart.

A. B. STOUT

The New York Botanical Garden

Experimental embryology in the Netherlands, 1940-1945. M. W. Woerdeman and Chr. P. Raven. New York-Amsterdam: Elsevier, 1946. Pp. xi + 132. (Illustrated.) $2.50.

This volume is one of a series of monographs on the progress of research in Holland during the war. It is a survey of the investigations of Woerdeman and his associates, Van Deth, Hampe, Trampusch, Ten Cate, Damstra, and Miss Huybers, at Amsterdam, and of Raven and his associates, Bretschneider, Nieuwkoop, Van de Kamer, Miss Exalto, Kloek, Klomp, Kloos, Lever, and Van Nieuwenhoven, at Utrecht. As the authors explain, their two laboratories were the only ones in Holland in which any systematic work in experimental embryology was done during the war years.

The investigations reported here cover many topics. They include experiments, with amphibian eggs, on: determination of lens, urogenital organs, neural crest, pineal body, lateral plate, germ cells, genital ridge, and polarity of epidermal and neural ectoderm; heterotransplantation of mouth ectoderm; induction of dorsal fin, ear, and limb; specificity of induction by different parts of chordamesoderm; effect of X-rays, trivalent arsenic, and carcinogenic hydrocarbons; respiration in relation to temperature and developmental stage; decapsulation of eggs with trypsin. A few experiments with chick embryos relate to the development of the germ cells, gonads, and their ducts. The pond snail, *Limnaea stagnalis,* is the subject of a rather comprehensive investigation, including studies on egg-laying; physical and cytochemical changes during oogenesis, cleavage, and early development; effects of centrifugation and of treatment with LiCl and with NaSCN. Some of the work has been published in detail in various journals.

Brief mention is made of the difficulties involved in attempting research during the war. Despite these difficulties, it is quite evident from this survey that the high caliber of work for which these laboratories are noted was maintained and that the experiments were performed in many cases with the usual thoroughness.

To illustrate further the nature of the problems under investigation, mention may be made here of a few of the general conclusions that are presented. From his studies on polarity Woerdeman concludes that determination is a gradual process and that the various manifestations of polarity in a particular tissue (e.g. direction of ciliary beat, axes of ear vesicle, direction of outgrowth of axon, etc.) are determined independently by the operation of different causative agents. The results of experiments on inductive capacity of medial and lateral parts of the archenteric roof are considered by Raven to support the view of a single "evocator" substance, present in high concentration medially and decreasing laterally. For neural plate induction a high concentration would be required, while neural crest would be induced by lower concentrations.

ALBERT TYLER

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The epithelia of woman's reproductive organs: a correlative study of cyclic changes. George N. Papanicolaou, Herbert F. Traut, and Andrew A. Marchetti. New York: Commonwealth Fund, 1948. Pp. vi + 53. (Illustrated.) $10.00.

In 1917 Stockard and Papanicolaou published their observations on the sex cycle of the guinea pig. Throughout the intervening 30 years, Papanicolaou has continued to devote his talent to amplifying the innumerable connotations which can be developed from this basis. The human vaginal smear has become a method of obtaining an insight to the ovarian function. In 1928 he pointed out that desquamated cancer cells can be recognized in the

vaginal fluid. In 1943 Papanicolaou and Traut published a monograph on *Diagnosis of uterine cancer by the vaginal smear*, based on the study of over 3,000 women.

The present monograph, written with Traut and Marchetti and published with the aid of the Commonwealth Fund, chronologically really should antedate the others, as it represents the fundamental cytology of the epithelia of the female generative tract with particular attention to the cyclical changes produced by the ovarian cycle. The text is largely a commentary on the 22 admirable colored plates which show the follicle, corpus luteum, tubal, endometrial, endocervical, and vaginal epithelia.

It is rather confusing that in Chapter III, day one for the human menstrual cycle corresponds to the day of ovulation, while on the final colored plate it is assigned to the first day of menstruation. Based on cytologic criteria, the corpus luteum begins to regress by the 9th–11th day and corpus luteum of pregnancy, by the 120th day: The maxima of development of tubal, endometrial, and vaginal epithelia are described.

This monograph is an atlas and source book which should prove of utmost help to gynecological pathologists. It contains material which previously had to be searched for in the widely scattered literature.

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The brain of the tiger salamander (Ambystoma tigrinum). C. Judson Herrick. Chicago: Univ. Chicago Press, 1948. Pp. vi + 409. (Illustrated.) $5.00.

This monumental work represents the culmination of 50 years of labor on the nervous systems of vertebrates. The author has not only amassed an enormous amount of data on the details of neurological structure in the salamander, but he has also laid a broad foundation for the comprehensive understanding of all vertebrate brains, with special emphasis on the origins of structural features and functional capacities of the human brain, and the general principles of their evolutionary development.

Because of its typical generalized, primitive, vertebrate brain, the salamander has lent itself admirably to this study, and the fruitfulness of Herrick's concentration on this form, as testified by the present volume, is ample evidence of the wisdom of his choice.

The book has 300 pages of description and discussion and is divided into two parts which can be read independently of each other. Part I (120 pp.) is devoted to a general description of the brain of the salamander, together with several chapters on physiological analyses and interpretations, and a final chapter on general principles of embryologic and phylogenetic morphogenesis. This section is designed to give biologists, clinicians, and psychologists an outline of the plan of organization of a generalized vertebrate brain and some insight into the physiological principles exemplified in its action.

The second section (180 pp.) deals with the intricate structure of the salamander brain and presents the detailed evidence upon which the first part is based. It is drawn from the author's many previous papers as well as from considerable new material. Altogether, it is an invaluable reference for specialists interested in either comparative neurology or experimental neurophysiology.

The descriptive material is followed by 11 pages of bibliography and 70 pages of illustrations, the latter consisting of surface views and diagrams showing the internal architecture of the salamander brain, together with complete explanatory notes.

Dr. Herrick's lucid style, obvious enthusiasm, and broad perception give this specialized text, particularly Part I, the rare quality of being both interesting and intriguing reading. The author has performed a signal service in so ably presenting the results of his life-long quest.

WALTER A. STULTZ

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The neocortex of Macaca mulatta. Gerhardt von Bonin and Percival Bailey. (Illinois Monographs in the Medical Sciences, Vol. V, No. 4.) Urbana: Univ. Illinois Press, 1947. Pp. xi + 163. (Illustrated.) $3.00.

This monograph presents a greatly needed study of the cytoarchitectonic structure of the neocortex of *Macaca mulatta*. The authors describe the fissural pattern of the brain, the cortical architectural types, and their surface distribution; they survey the fields by serial sections and discuss the interrelations of cortical areas. Von Economo and Koskinas' nomenclature is used. A brain map in color, numerous drawings, and excellent photomicrographs illustrate the work.

The main chapters of the book are devoted to description of cortical fields and to critical discussion of the work of earlier authors. The criticism makes stimulating reading, but it does not always appear quite fair, since a number of apparent discrepancies, e.g. in the frontal region, seem to result from differences of interpretation rather than from essentially different findings. As regards whole cortical regions, the divisions suggested by the authors actually are similar to those of Brodmann, but the more detailed characterizations are frequently materially different.

Although it is emphasized that cortical fields often fade inconspicuously into one another, the morphological characteristics as a rule are described rather rigidly as if the fields were uniform. Variability within a cortical sector, if discussed at all, usually is mentioned casually in relation to some specific point the authors wish to make. This treatment of the material may cause some difficulty in understanding the significance of variants which are considered constant and even more difficulty in understanding why the authors hesitate to grant clear status to a number of variants which they describe and discuss. In addition, it is sometimes hard to appreciate in photomicrographs the structural differences in different sectors of the same variant, since it is not always sufficiently clear which variations are considered random and which constant. The problem of distinguishing random and constant variability, however, is of great importance. The authors reject the approach of the Vogts and numerous other workers who recognize as separate fields cortical sectors which show constant, though slight,