

difficult to divorce the word 'still' from its contact with alcohol.

The art has become a science as the result of the application of the phase rule, which enables the prediction of the conditions under which all systems of equilibrium can exist. The authors begin with the phase rule in Chapter i and, proceeding from simple one-component to complex systems, clear the ground for the study of specific problems of technical import best indicated by their chapter headings, namely, ammonia, benzolized wash oil, methyl and ethyl alcohol. So far the text is relatively simple, but we come to real grips with the subject in long chapters on the rectification of binary mixtures and of complex multicomponent mixtures. A lot of mathematics

is introduced with useful phase diagrams and tables, and the treatment is advanced and essentially for the specialist.

The subsequent sections deal with the theory of topping stills and continuous distillation, and give data for the performance of columns and condensers.

The book is essentially one for the specialist, who will undoubtedly find it of great value, but it must be hard reading for the engineers and operators mentioned in the preface. This does give us the opportunity to pay tribute to the skill of the operator of a modern petroleum still; at first sight it seems quite impossible that one man working in front of a complex instrument board can exercise the control he does.

The Cytological Approach to Inheritance

An Introduction to Modern Genetics

By Dr. C. H. Waddington. Pp. 441 + 5 plates. (London: George Allen and Unwin, Ltd., 1939.) 18s. net.

IT is curious and unfortunate that an experimental embryologist should write a genetical book which represents the extreme mechanistic branch of genetical opinion. It would seem that Dr. Waddington has missed a golden opportunity of bridging the gap between genetics and botany and zoology as taught in British universities. Instead he has accentuated the importance of chromosome twists and genic acrobatics at the expense of morphological and physiological genetics. Sufficient accounts of the relationship between genetics and cytology and between genetics and mathematics are now available elsewhere, but there is little text-book writing which combines a knowledgeable appreciation of genetics with physiology, morphology and systematics. There is a large amount of information on these latter subjects in research papers which is comparatively unknown in text-books.

In the encyclopædic survey of genetics and allied subjects, the author has presented a condensed text full of precise and annotated data on many subjects which are of interest to those with cytological and mathematical tendencies. This is done by dividing the book into five sections: formal genetics, genetics and development, genetics and evolution, genetics and human affairs, the nature of the gene. Within these sections space has been found for plant and animal breeding, the ramifications of chiasma formation and the mechanics of the chromosome, the genetics of

man, the genetics of pattern, and many other problems.

It is obvious that an 'introductory' treatment of this vast body of data is not possible in 450 pages. Indeed the book has an unfortunate title, since it is neither introductory in form nor does it contain a balanced statement of modern genetics.

For those who require a book which contains an extended survey of current topics, results and theories of the subjects allied to genetics in the form of an encyclopædic reference book, this volume can be recommended. But no non-geneticist or student should be permitted to visualize genetics as exhibited by this book. The general reader will find that some chapters are rather perplexing in construction and specialists may cavil at the attitude, and phraseology used on their own subject. The reviewer, for example, dislikes the chapters on sex-determination, chromatid segregation and evolution mainly for the essential features which are omitted. This is highly regrettable, since the material which is presented has been carefully described and the author has kept a critical hold on himself when discussing rival cytological theories.

There are a useful index and a bibliography which has been well designed; but the illustrations are poorly reproduced. Further, the acknowledgments to the borrowed figures are vague and unsatisfactory. The author has spent much time and painstaking effort in compiling a heavily packed but readable text ranging in subject from chromosome hysteresis to artificial insemination in man. It is not, however, an introduction to modern genetics as understood by the reviewer.

F. W. SANSOME.