Book Reviews

Successful Commercial Chemical Development. H. M. Corley, Ed. Wiley, New York; Chapman & Hall, London, 1954. xxv + 374 pp. $7.75.

After little more than a decade of formal existence, the Commercial Chemical Development Association has produced a book that is unique in several respects. It is a pioneering effort, the first book on the subject. It is a pooled effort, produced under the guidance of a book committee; each chapter is the work of a chapter committee with as many as 14 members. The book's purpose is

> . . . to document in one volume the most enlightened, present-day knowledge of the important principles of every essential step, as well as the pitfalls to be avoided, in selecting promising new chemicals and rapidly developing them to the stage of economic importance.

Its preparation has undoubtedly entailed more discussion and debate than the authors would care to reckon.

Regardless of whatever merits or defects the book may otherwise have, it marks a milestone of progress toward removing the mysticism and hocus-pocus from the art of discovering and developing important new chemical products and toward creating a systematized or engineered approach. The chapters are written by commercially practicing market developers speaking from the experience gained in putting into practice the methodology that has been evolved bit by bit by the more thoughtful practitioners.

The first three chapters trace the evolution of organized commercial chemical development, touch on the growth of the North American chemical industry, and devote some 20-odd pages to definitions of terms. From this point on, the remaining 18 chapters develop the various aspects of commercial chemical development.

Many of the factors to be considered in detail for the selection of projects that will lead to successful new products are listed, including raw material availability, plant and processing costs, suitability for the market anticipated, competition from other chemicals or chemical processes, patentability, toxicity, handling ease, and others. Obviously, many diverse skills need to be applied if the over-all program of new-product development is to be successful.

The successful marketing of chemical products requires application of many nonchemical skills. Careful attention must be applied to pricing, packaging, labeling, shipping, and any specialized marketing techniques. Several case histories illustrate the breadth of teamwork needed for successful commercial chemical development. The evolution and recent rapid growth of the chemical industry itself is illustration enough of the effectiveness of the practices described in this book.

The ground rules of successful commercial chemical development as presented here should prove useful guides to those whose business it is to translate laboratory findings into salable products. Further than that, the book will be helpful to the management of chemical enterprises, in showing how to establish the function, and to users of chemical products who are desirous of having new materials brought to their attention.

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Arthur D. Little, Inc., Cambridge, Massachusetts

Animal Cytology and Evolution. M. J. D. White. Cambridge Univ. Press, New York, ed. 2, 1954. xiv + 454 pp. Illus. $8.50.

Of the half-dozen books of the past two decades that have gained so much praise for bringing together aspects of evolution, genetics, cytology, systematics, and paleontology, *Animal Cytology and Evolution* is one of the most highly regarded. The publication of its second edition, expanded, reorganized, and very largely rewritten, is as noteworthy an event for the cytologist as for the evolutionist.

As a lucid account and skillful summary of nuclear cycles, especially those with unusual chromosomal behavior, and as a guide to what is known of normal and abnormal chromosomes and chromosomal sets of animals, White's book is excellent and without any peer today. The completeness of coverage of the literature is remarkable, and the insight of the author with regard to his problems has given the whole work an admirable organization and structure. Whether or not personal views are congruent with White's, it is unlikely that any informed biologist will read this monograph without enjoyment, profit, and strong admiration for the author's accomplishment. Unless they are members of the majority group of evolutionists, however, biologists will no doubt expect more in the way of open-minded evaluation on the part of the author.

As *descriptive* cytology, no more could be asked of one whose goal is to discuss the bearing of animal cytology on evolutionary processes. As *interpretative* cytology, however, much more might fairly be expected in the way of balance, accuracy, and unbiased prose. White does not hesitate to ignore or give short shrift to arguments or evidence that are opposed to his own, and he is not always scrupulous in assigning credit where credit is primarily due (as, for example, when he comments on the suppression of crossing-over within and adjacent to heterozygous inversions). Nor is he unwilling to state as probable fact what is still open to serious question. Actually it remains to be shown, for example, that "the dark-staining bands in the salivary chromosomes clearly correspond to the chromomeres of ordinary mitotic [!] and meiotic chromosomes," that "there seems now no serious reason to doubt that each band does represent a single genetic