

More recently, the sequence of this peptide has also been described.<sup>9</sup> In the later paper, the authors changed the composition of the original reported peptide, replacing a threonine residue with a serine residue. Our results favor the composition as described in the earlier publication.<sup>8</sup>

From the present results and from the suggested primary structure of chymotrypsinogen<sup>9</sup> it is interesting to note that the histidine residue directly involved in the catalytic mechanism is linked to a cystine residue and, therefore, is subject to greatly restricted flexibility. The second histidine residue is held in the same general area due to an intrachain disulfide link, and an auxiliary role may exist for this residue in the

(9) B. Keil, Z. Prusik, and F. Sorm, *Biochim. Biophys. Acta*, **78**, 559 (1963).

catalytic mechanism of chymotrypsin, as seems to be the case in ribonuclease.<sup>10</sup> In the tertiary structure of chymotrypsin, the active center serine located in the C-chain must be spatially close to the histidine residue of the newly isolated peptide.

A detailed account of our results will be published later.

**Acknowledgment.**—We are indebted to the National Science Foundation for support of this work.

(10) A. M. Crestfield, W. H. Stein, and S. Moore, *J. Biol. Chem.*, **238**, 2421 (1963).

(11) Data taken from the dissertation to be submitted.

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## BOOK REVIEWS

**Chemical Plant Taxonomy.** Edited by T. SWAIN, Low Temperature Research Station, Cambridge, England. Academic Press, 111 Fifth Avenue, New York 3, N. Y. 1963. ix + 543 pp. 16 × 23.5 cm. Price, 110 s.

Perhaps the oldest method of classifying plants is based upon their chemical constituents even though these constituents could not have been recognized as chemical entities. But as our knowledge of plant constituents became more extensive, it became apparent that there was often more than a fortuitous relation between the chemical constituents of plants and their interrelations.

For well over a century chemists have amused themselves by examining plant material, but it is only during the last three or four decades that this activity has become the major one of an increasing body of chemists. It is little wonder, therefore, that plant chemists and taxonomists have finally cooperated in effective ways. The immediate result is not one book but two appearing in this year. The first has already been reviewed (R. H. Manske, *J. Am. Chem. Soc.*, **85**, 3532 (1963)) and the second is the subject of this review. It should be remarked here that, fortunately for readers and authors, the two volumes are in every sense complementary and both should be within the reach of every taxonomist as well as of every plant chemist.

The present volume is the outcome of a Symposium held in Paris in October, 1962, at which the reviewer was an interested and impressed spectator. The editor properly describes the spirit of the Symposium in the first paragraph of the preface. "Systems of classification do not necessarily embody implications of relationship in their structure, but in fact, all those concerned with plants do employ such concepts to the greatest possible extent compatible with existing knowledge and practical utility. The ultimate natural system would be one based on an infallible knowledge of the genealogy, from one ancestral type, of every member included in it and, despite the impossibility of deriving such knowledge this is the ideal towards which the more natural systems pretend. In this context, chemistry may have more to contribute than any morphological analysis, not only because of the relative evanescence of most plant tissues in geological deposits, but because the biochemistry of evolutionary processes can be deduced from existing forms."

The volume is in 16 chapters each written by an authority in that subject. Space does not permit detailed discussion of these but some comments are in order. The first three chapters (S. M. Walters, J. Heslop-Harrison, and R. D. Gibbs, respectively) concern modern concepts of taxonomy and give a clear account of this subject and how it may be affected by chemical knowledge. H. Erdtman in Chapter 4 discusses the scope and limitations of chemotaxonomy. Chapters 5 and 8 to 16 are devoted to the usefulness of flavonoids (E. C. Bate-Smith), alkanes (G. Eglington and R. J. Hamilton), acetylenes (N. A. Sorensen), fatty acids (F. B. Shorland), polyols and cyclitols (V. Plouvier), glycosides (R. Paris), anthocyanins (J. B. Harborne), alkaloids (R. Hegnauer), alkaloids of Rutaceae (J. R. Price), and sulfur

compounds (A. Kjaer), in determining possible relations in orders, families, genera, and species. Chapter 6 (A. J. Birch) is devoted to "Biosynthetic Pathways" and Chapter 7 (H. Flück) is addressed to the problems of "Intrinsic and Extrinsic Factors" as they affect production of natural products.

The over-all impression of this volume is one of competence, and we are grateful that so much knowledge has been so well correlated. Misprints are negligibly few and the printing and formulas are excellent.

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**Katalyse in der Organischen Chemie.** By B. N. DOLGOV. **Organischepräparative Methoden.** Edited by DR. W. KIRSTEN. Band 1. VEB Deutscher Verlag der Wissenschaften, Berlin. 1963. 782 pp. 16.0 × 23.0 cm. Price, DM 74.

This book which was translated and edited by P. Heitmann and K. Urban from the second Russian edition consists of 14 chapters. The first two chapters (162 pp.) deal with the fundamental behavior of catalysts, properties and preparation of catalyst, and with theory and mechanisms of catalytic reactions. The remaining chapters describe catalytic reactions, namely oxidation, dehydrogenation, cracking, hydrogenation and hydrogenolysis, dehydration, hydration and hydrolysis, isomerization of hydrocarbons, polymerization, alkylation and arylation syntheses with oxygen-containing gases, and halogenation.

Although there is a great need for a one-volume comprehensive treatise on catalysis as applied to organic chemistry, the present book does not meet this need. The book is not written critically, and the author did not make an attempt to show whether the various theories dealing with contact catalysis, and which he described in the second chapter, can be applied to explain the experimental observations. The material is presented in a descriptive rather than in a didactic manner.

The chapters pertaining to ionic types of catalytic reactions such as isomerization, alkylation, polymerization, etc., are handled in an isolated manner. The author did not show the relations between the various reactions catalyzed by strong acids. The author seems to confuse the reader by describing under the same heading the alkylation of alkanes and that of aromatic hydrocarbons. It is well known that these two reactions proceed by different mechanisms.

In the chapter dealing with catalytic hydrogenation, the author failed to indicate the importance of stereoselective hydrogenation and of hydrogen-deuterium exchange studies for the understanding of the mechanism of hydrogenation.

The chapter describing the aromatization of alkanes is outdated although the modern aspects of this reaction were already described in 1956.