

Fe^{III} , expressed in moles of H_2O_2 decomposed per min. per mole of (TETA)- Fe^{III} , were computed from the initial rates of decompositions of H_2O_2 , and are summarized in Table I. In order to correct for traces of Fe^{III} present in the system as an impurity (from reagents and glassware), a blank

TABLE I

CATALYTIC DECOMPOSITION OF H_2O_2 BY (TETA)- Fe^{III}				
Concn. of Total TETA, mole/l.	Concn. of Total Fe^{III} , mole/l.	pH	Temp., °C.	Turnover number min. ⁻¹
2.9×10^{-3}	3.8×10^{-7}	9.5	25.2	11000
2.9×10^{-3}	5.7×10^{-7}	9.6	25.2	11000
2.9×10^{-3}	7.6×10^{-7}	9.6	25.3	11000
2.9×10^{-3}	3.8×10^{-7}	9.5	1.8	4400
2.9×10^{-3}	3.8×10^{-7}	9.5	13	6700
2.9×10^{-3}	3.8×10^{-7}	9.5	41.5	21000

measurement with TETA and H_2O_2 but without added Fe^{III} was made at each temperature. These blank rates were subtracted from the corresponding measured rates before the computations for turnover numbers were made. The activation energy for the reaction computed from Table I is 6.6 kcal./mole. Results of a detailed study on the subject will be reported in a later publication.

Although (TETA)- Fe^{III} is not as efficient as natural catalases, these data show that it is possible to construct small molecules with turnover numbers in the enzymic range.

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BOOK REVIEWS

Einschlussverbindungen. By FRIEDRICH CRAMER, Dozent am Chemischen Institute der Universität Heidelberg. Springer-Verlag, Reichpietschufer 20, Berlin W 35, West Berlin, Germany. 1954. iv + 115 pp. 14 × 21 cm. Price, DM 14.80.

This ably written and documented monograph (167 references) brings together the present available information on a relatively new and remarkable type of compound to which Schlenk in 1949 gave the name "Einschlussverbindungen" or *inclusion compounds*. These are the compounds which involve purely a spatial combination between partners, involving no principal or secondary valences. One kind of molecule is simply trapped within open spaces created by the other and cannot escape. Inclusion compounds are classified as formed by crystal lattices, by molecules and by macromolecular materials. Examples of the first are the adducts of urea with *n*-paraffin derivatives (canal "hohlraum"), thiourea with cyclic hydrocarbons (canal), desoxycholic acid with paraffins, fatty acids and aromatics (canal), dinitrodiphenyl with diphenyl derivatives (canal), hydroquinone with HCl, SO₂, C₂H₂, rare gases (cage), gas hydrates (halogens, rare gases, CH₄, etc.) (cage), *o*-trithymotide with cyclohexane, benzol, chloroform, (cage), oxyflavane with organic bases (cage), dicyanoaminobenzolnickel with benzol, thiophene, furane, pyrrol, aniline (cage), and substances which form blue iodine adducts (canals). The only example of a fairly low molecular weight compound which provides an inclusion space in a single molecule is cyclodextrin. The space is a canal, or in solution a cage, enclosing hydrocarbons, iodine, alcohols, halogenated paraffins, aromatic compounds and dyestuffs. Macromolecular materials forming inclusion compounds are minerals such as zeolites and clay minerals, graphite, cellulose, starch and proteins (inclusion of dyestuffs, lipoids, etc.). For most of these cases X-ray crystal structure data are summarized, together with absorption spectra data directed to the question whether the included molecules are completely unchanged in the canals or cages. Trapping and trapped molecules cannot be separated, hence inclusion compounds are especially stable when the system possesses high electron density. Hence the "hohlraum" may serve as an electron donor and as a base in the Brönsted-Lewis sense. Also negative and positive catalysis by inclusion compounds might be expected, and examples are cited; and these also serve as models for ferment reactions (especially cyclodextrin). The criteria for the building of inclusion compounds are summarized as a means of prediction of new systems. The author has clearly demonstrated his mastery of the synthesis and theory and properties of these curious compounds in which one kind of molecule imprisons another

tightly but is not chemically combined with it. Incidentally, the term "clathrate" for this type of compound is not mentioned.

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An Introduction to Electronic Absorption Spectroscopy in Organic Chemistry. By A. E. GILLAM, D.Sc. (Liverpool), F.R.I.C., Late Senior Lecturer in Chemistry, and Special Lecturer in Chemical Spectroscopy, The University, Manchester and E. S. STERN, Ph.D. (London), A.R.C.S., Chief Research Chemist, J. F. Macfarlan and Co., Ltd., Edinburgh. St. Martin's Press, Inc., 103 Park Avenue, New York 17, N. Y. 1954. vii + 283 pp. 15 × 22.5 cm. Price, \$8.00.

The organic student who nowadays must have a working knowledge of ultraviolet spectroscopy in relation to organic structural problems will find in this book a relatively easy and painless means of achieving this objective. And since the book was presumably intentionally limited to this specific objective we shall not carp about the rather inadequate theoretical discussion nor about the failure to review fully developments of the last three or four years.

Beyond a passing mention of valence-bond theory and molecular orbital theory, the treatment is descriptive, factual and frankly empirical. The index contains not a single entry under either "Selection Rules" or "Symmetry Characters." Absorption bands are K, R or B, each characterized by its own set of rules or generalizations as to the effects of solvents, substituents, conjugation, etc. This characterization serves the purpose of convenience, if not understanding, in cataloging the relationships between structure and absorption spectra for a considerable variety of organic compounds. The text is well-supported by tabular data, figures and literature references.

The style is free and easy, occasionally to the point of absurdity, as, to quote a particularly glaring example (p. 67), "The generalization that two chromophores separated by a carbon atom interact but little does not necessarily apply when the atom separating the two groups is not carbon: thus. . ."

The authors are at their best in describing the applications of spectroscopic methods in specific situations as, for example, in the chapter (Chapter 12) dealing with the spectrophotometric determination of organic compounds, and again in the chapter (Chapter 14) containing the data and the arguments actually applied in representative struc-