

trace analysis and development of new methods. Several approaches to trace analysis by electrochemical methods are discussed: (a) increase of the rate of mass transfer by convection and use of the rotated dropping mercury electrode (Kolthoff, Tanaka); (b) anodic stripping methods for mercury electrodes (Delahay, Kemula); and (c) square wave polarography (Barker). Development and application of new methods are covered in several papers: chromopotentiometry in fused salts (Laitinen), current scanning polarography (Ishibashi), current-potential curves for ion exchangers (Coursier). Less recent developments are covered in reviews and original papers: constant current potentiometry (Gauguin), dead-stop titrations (Kies), coulometry (Cuta), oscillographic polarography (Kalvoda, Pleticha), adsorption processes (Delahay), high frequency methods (Oehme, Conseiller), etc. Discussions—often quite stimulating and interesting—are included.

This volume gives a good idea of some recent trends in electroanalytical chemistry and is recommended to electrochemists and analytical chemists. Professor Charlot is to be congratulated for the organization of this meeting and the rapid publication of its proceedings.

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paper chromatograms. A useful section on alkaloids has been added, and a section of porphyrins deleted. The current edition no longer contains a separate complete bibliography for the whole work, but citations appear at the foot of each page with an author index to the work. While the author clearly attempts to cite original papers for recent advances made by the use of paper chromatography, the results may be very misleading. Although the richest returns from this technique in new amino acids identified come from the study of plants, this field is represented by a very few casual citations and brief references. Most of the new substances and many of the prominent works never appear. Reference to one or more of the several authoritative reviews would have been much more informative. Making due allowance for the obvious emphasis on technique, and upon tables of information of known compounds, it is still true to say that often the best way to show the usefulness of the chromatographic methods is to show how they have been used successfully to extend the range of our knowledge.

In short, Dr. Cramer's book still covers material largely available in other sources in English, some of which will be found to be more convenient and more complete.

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F. C. STEWARD

**Korrosionstabellen metallischer Werkstoffe geordnet nach angreifenden Stoffen.** Vierte, erweiterte Auflage. By DR. TECHN. FRANZ RITTER, Leoben-Linz. Springer-Verlag, Molkerbastei 5, Wien I, Austria. 1958. 290 pp. 17 × 24.5 cm. Ganzleinen, \$11.65.

This is the fourth edition since this compilation was first put out about twenty years ago. There has, of course, been a considerable amount of new information obtained in the course of that time and the author has done a reasonably good job in bringing the tabulated material generally up to date. Since much of this information lies scattered throughout journal literature, books, pamphlets, periodicals and the like, a reasonably critical compilation is helpful. Dr. Ritter has done a satisfactory job in this regard.

After a brief introductory section on how to use the tables, there is a section of about twenty pages listing 867 different metals and alloys with their compositions. This brings together in one place available metals from a number of countries. The next section describes the corrosion behavior of these metals in tables and graphs in a variety of media. The tables are arranged in alphabetical order of the corrosive agents. In so far as possible, quantitative information is given and where none is available qualitative descriptions of the effects are provided.

Since tables of data of this sort are quickly out of date, and because it is almost always necessary to have full detail, books of this sort cannot be an extremely valuable source of information. However, within these limits, this is a worthwhile book.

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**Papierchromatographie.** Vierte, stark erweiterte Auflage. By DR. FRIEDRICH CRAMER. Verlag Chemie, G.m.b.H., Weinheim/Bergstr., Germany. 1958. 215 pp. 17 × 24 cm. DM 21.

This book, now in its 4th edition, appears to be the standard reference source available in the German language and, as such, it is convenient for reference to some of the more obscure continental works. In English speaking countries, however, other sources usually will be more convenient and certainly as authoritative.

Since the English translation of the 2nd German edition was reviewed (*THIS JOURNAL*, 77, 1078 (1955)) the book has approximately doubled in size, while bringing virtually the same range of material up to date. The sections on experimental technique have been expanded. There is a notable but, in the reviewer's opinion, not particularly helpful inclusion of eight pages of illustrations in color, depicting

**Colloques Internationaux du Centre National de la Recherche Scientifique.** LXIV. Les Hétérocycles Oxygénés. Lyon, 5-10 Septembre, 1955. Organized by C. MENTZER. Centre National de la Recherche Scientifique, Service des Publications, 13 Quai Anatole France, Paris 7, France. 1957. 390 pp. 16.5 × 24.5 cm. Price, 2,500 Francs.

This volume records the papers and discussions which formed the substance of a symposium held at Lyon in 1955, on the general subject of oxygen heterocycles. The participants were distinguished organic chemists from many countries, and the topics discussed cover a wide range; some papers deal with the chemistry of the simpler oxygen heterocycles, such as epoxides, furans and pyrans, a considerable number are devoted to the organic or physical chemistry of flavones and other plant constituents, some papers describe studies on the distribution of various types of oxygen heterocycles in various species of plants or in different parts of the same plant with discussion of the biogenetic implications, and some contributions describe synthetic procedures in the oxygen heterocycle field.

The papers vary widely in character. A considerable number describe in detail a relatively limited piece of experimental work by the authors, in some cases with complete experimental details, so that they are in effect journal articles. Other papers present a scholarly and valuable review of a field, with extensive references; in this group should be mentioned the review of furan and pyran chemistry by Paul, the discussion of rearrangements in the flavone series by Wheeler and Philbin, Erdtman's discussion of flavone distribution in conifers, Schmid's review on unsaturated lactones derived from higher plants, and Molho's review of methods of degradation in the pyrone field. The application of ultraviolet "difference curves" to flavone chemistry is discussed by Mme. Aulin-Erdtman, and Henry and Molho describe infrared studies on hydroxylated flavones. A number of the contributions, in particular those by King, Whalley, Geissman, Schmid, and Mme. Polonsky, describe elegant structural work on various natural products containing oxygen heterocycles.

Other papers discuss methods of isolation and separation of flavones and related compounds from natural sources.

The book as a whole will be of particular value to workers in the flavone field. It also will be useful reading for research workers in any branch of the oxygen heterocycle field.

The organization of the original symposium and the publication of this volume indicate the active research interest in organic chemistry in France; the reviewer hopes that the Centre National de la Recherche Scientifique will be encouraged to hold similar international symposia in the future, and to publish the proceedings in equally useful fashion.

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