Fundamentals of the Working of Metals. G. Sachs. Interscience, New York; Pergamon Press, London, 1954. vii + 158 pp. Illus. + plates. $4.75.

This interesting little book subdivides conveniently into two parts. Materials aspects of metalworking are treated in the first three chapters, comprising somewhat less than half of the book: "Effect of temperature and speed on forming"; "Relations between chemical composition, phase changes, and forming characteristics"; "Effects of grain structure on forming." The illustrations in this part are largely schematic and there are few data. The remaining three chapters are concerned with simple, qualitative analyses and discussions of metalworking theory and practice: "Some general concepts of metal forming"; "Basic types of forming methods"; "Progressive fabricating." On the whole, the second part is well illustrated, and there is considerable emphasis here on sheet-metal fabricating.

In view of its brevity and elementary aim, the book does not have much depth. The coverage, however, is broad. A consequence is that some parts may not be as clear as an unprepared reader would like. A section on "The general nature of phase changes," for example, covers only four pages. It also would have been helpful to include more precise definitions of such quantities as stress, strain, forming resistance, ductility, and so forth. The book would, therefore, be of somewhat limited value for teaching purposes and in processing research and development work. Perhaps the most valuable features are the organization and classification of phenomena and processes that it contains. Important concepts are set forth by means of many subdivisions in each chapter. The person looking for a 'bird's-eye' view of the large field of metalworking should find this book helpful.

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Compounds with Condensed Thiophene Rings. Howard B. Hartough and S. L. Meisel. Part of "The Chemistry of Heterocyclic Compounds" Series, Arnold Weissberger, Ed. Interscience, New York–London, 1954. xv + 515 pp. Illus. Single copy, $16.50; subscription, $15.

The present volume is a companion of *Thiophene and Its Derivatives* and both belong to the Weissberger series, "The Chemistry of Heterocyclic Compounds." The present book is primarily a reference work rather than a critical review of the current literature. Apparently every attempt was made to be exhaustive up to 15 May 1952, the cut-off date.

The 460-odd pages are divided into eight chapters. The first is devoted mainly to an inconclusive discussion in electronic terms of electrophilic substitution in thiophene thianaphthene, dibenzothiophene, and their oxygen, selenium and tellurium isosters. However, this approach is soon dropped, and the remainder of the book is a straightforward exposition of the chemistry of condensed ring systems containing thiophene. Almost half of the book is devoted to thianaphthenes and the closely related thioindigo dyes. The rest is divided among approximately 200 different ring systems. It is not surprising that in many cases only one or two references are cited for a particular ring system and in several instances the authenticity of the formulation is doubtful.

The value of a compendium such as this will depend to a large extent on the excellence of the index. The bibliography, which is located at the back of the book, starts out alphabetically, but after a few hundred references it degenerates into a helter-skelter list of entries. Following this section is a patent bibliography containing more than 700 entries, most of which are accompanied by the *Chemical Abstracts* reference. There is a ring index and a subject index. For some reason there is a supplementary list of patents pertaining exclusively to thioindigo dyes. This list occupies 10 pages and is of no obvious use to anyone except a specialist in this field.

Organic chemists are grateful to the authors for undertaking this monumental task of collecting and collating all the data on thiophene and its derivatives. This volume and its predecessor will be of invaluable assistance to all those interested in thiophene chemistry.

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The Actinide Elements. Glenn T. Seaborg and Joseph J. Katz, Eds. McGraw-Hill, New York, 1954. 870 pp. Illus. $11.75.

This book, which is composed of sections written by competent workers in the field, summarizes the research on the radioactive elements from actinium to californium. As this volume includes a variety of topics and will be useful primarily for reference, the chapter titles and authors are listed here: "Introduction," Seaborg; "The chemistry of actinium," Hagemann; "Nuclear properties of uranium, protactinium, and thorium isotopes," Katzin; "The chemistry of thorium," Katzin; "The chemistry of protactinium," Elson; "The chemistry of uranium," Hoekstra and Katz; "Nuclear properties of the plutonium isotopes," Seaborg; "Oxidation states, potentials, equilibria, and oxidation-reduction reactions of plutonium," Connick; "Ionic and molecular species of plutonium in solution," Hindman; "Preparation and properties of the compounds of plutonium," Cunningham; "Nuclear properties of the neptunium isotopes," Seaborg; "The chemistry of neptunium," Cunningham and Hindman; "Nuclear properties of the transplutonium nuclides," Seaborg; "The chemistry of the transplutonium elements," Perlman and Street; "Radiochemical separation of the actinide elements," Hyde; "Radiochemical assay by alpha and fission measurements," Jaffey; "Correlation of properties as actinide transition