

Book news

1. Book review

● *Steels – microstructure and properties*, by R. W. K. Honeycombe. London, Edward Arnold, 1981. 244 pp. R19,90.

(Reviewer: P. T. Wedepohl)

The first four chapters of this book deal with the iron-carbon diagram, the effect of alloying elements in iron, and strengthening mechanisms in iron alloys. These are followed by two chapters on the martensite transformation and the bainite reaction. Then, there are three chapters on hardenability, tempering and thermo-mechanical treatment. Finally, there is a chapter on the embrittlement and fracture of steels, and one on austenitic steels.

It would be easy to indicate several areas and topics that have not been treated in this book. However, there would be no point in doing this – in a book of a little more than two-hundred pages on such a wide field, extensive omissions are inevitable. Furthermore, in a general preface to the series of which this book forms a part, it is stated specifically that the aim is 'to provide the student with a compact treatment as a springboard to further detailed studies'. It is also stated that adequate general references are provided for further study.

The author, who is an eminent metallurgist, has more than succeeded in his aim. The book should be useful, not only to students, but also to practising metallurgists who are interested in the relationship between the microstructure and mechanical properties of steel and in comparatively recent developments such as HSLA steels.

2. New books

● *Decision making in continuous steel casting*, by Mark A. Vonderembse. New York, Bowker Publishing Co., 1981. 118 pp.

Recent steel-making advances promise capital and operating cost savings that will help make American steel competitive. The author has developed a new and realistic mathematical procedure for determining how to schedule production by the new steel-casting method. The computerized procedure can also be used to simulate planning options and derive answers about plant design.

● *Handbook on continuous casting*, by E. Herrmann-Düsseldorf, Aluminium-Verlag GmbH, 1980. 742 pp. Cloth DM 1250, leather DM 1500.

A review of the latest techniques in continuous casting, and international patent documentation of the technologies and installations for the continuous casting of steel and non-ferrous metals.

● *Pore structure analysis from a nitrogen adsorption study of porous materials using a volumetric method. User's guide to the FORTRAN programs: PORES1 and PORES2*, by E. G. K. Woods. Pretoria, CERG—CSIR (P.O. Box 395, Pretoria 0001), May 1981.

The programs *PORES1* and *PORES2* each produce the same pore-size distribution table of results, but different distribution curves, from an experimentally determined adsorption and desorption isotherm of a porous powder.

● *Oil and gas from coal*, by Dick Olliver. London, Financial Times (10 Cannon Street, London EC4P 4BY), 1980. £120.

This book was prepared after extensive research in South Africa, Europe, and the U.S.A. Its purpose is to provide, for the first time, a full record and assessment of current and past activity in coal conversion and a prediction of what this might mean to the world's energy economy. The report first looks at Germany, the cradle of this technology, and then comes the Sasol story: perhaps the most detailed account ever published of how South Africa built its coal-conversion industry so that it is now replacing much of its oil imports with fuels and petrochemical feedstocks from coal. The economics and costings of the Sasol Two and Three projects – described by an international contractor as 'the biggest undertaking since the Apollo space programme, – are examined critically. This is followed by details of the Fluor Corporation's dramatic proposal for twenty 'Sasols' in the U.S.A. and Mobil Oil's methanol-to-gasoline route, Mobil-M. There are then descriptions of the direct liquefaction routes now under trial, and developments in Britain and Japan. All the processes are compared with emphasis on relative cost. Gasification receives equally careful study. All the main processes under development are studied and compared, including the production of methanol from coal.

● *The seventies: a review, the eighties, a preview*, by W. Hibbard (editor). Oxford, Pergamon, 1981. 120 pp. £12.50.

A series of articles on energy issues, minerals issues, and the policy decision process.

● *Computers in materials technology*, by T. Ericsson (editor). Oxford, Pergamon, 1981. 230 pp. £14.50.

This volume gives the proceedings of the Conference held in Linköping, Sweden, in June 1980. It includes articles on the use of computers in materials section of metals and polymers; heat treatment and hardenability of control steel; quantitative metallography; alloy design and composite material design; phase diagram calculations.