

Publications

1. Book review

● *Australasian coal mining practice*, edited by C.H. Martin.

Reviewer: R.B. MacGillivray

This book is an extremely comprehensive coverage of coal-mining practice in Australasia, the countries covered being Australia, New Zealand, and Papua New Guinea. The book is divided into eight parts, each part being written by a different author.

Part A starts off with a history of coal mining in Australasia from the date of the discovery of coal in these countries. It also covers the geological setting of the deposits, their exploration, feasibility studies, industry promotion, environmental management and subsidence legislation, engineering, and management.

The next part (B) handles basic considerations and deals with the breaking of coal and rock, rock mechanics and the stability of the excavations, and the choice between underground and open-cast mining.

Part C deals with surface mining under the following headings: strip mining, open-pit mining, brown-coal mining by use of bucket-wheel excavators, and surface mine rehabilitation.

Underground mining is dealt with in Part D under the following headings: shafts, drifts and tunnels; roadway support; development of a mine working giving labour strengths and costs; bord-and-pillar mining including 'rib pillar' mining and total extraction; longwall and short-wall mining; multi-seam mining; scraper mining of thick coal and hydro-mining of coal; transport and storage; seam gas and seam-gas drainage; mine dust and dust suppression; mine ventilation; drainage and dewatering of coal mines; electricity in coal mining; explosions and fires; and communications monitoring and control.

Part E deals with coal treatment.

Part F includes administrative, statutory, statistical, and general matters under the following headings: management aspects; coal-mine development, organization, administration, and surface management; mine surveying and plans; costs and charges; recruitment, training, and education; accidents, health, and safety; rescue and rescue training; and the use of computers in the coal-mining industry.

Part G deals with promotional aspects, which includes coal-mining research and marketing, and Part H discusses future developments in the coal-mining industry in Australasia.

2. From The Institute of Metals

The following are available from The Institute of Metals, 1 Carlton House Terrace, London SW1Y 5DB.

● *Physical and elastic characterisation*, edited by M. McLean. 1989. 228 pp. £25.00.

With the aim of providing a broad practical overview of modern methods of characterizing high-temperature materials, this volume covers the measurement of elastic constants, dimensional changes determined by dilatometry, thermal analysis and calorimetry, thermal conduc-

tivity, diffusion/mass transport, and surface tension. All these factors can give important indirect information on the structural changes occurring within a complex alloy that can augment more direct observation and can provide measures of important parameters controlling a wide range of metallurgical phenomena.

● *High nitrogen steels*, edited by J. Foct and A. Hendry. 1989. 461 pp. £49.50.

This volume contains the proceedings of the international conference organized by The Institute of Metals and the Société Française de Métallurgie, which was held at Lille in France in May 1988. In acknowledgement of the role of low-alloy steels, these proceedings include papers on low-alloy materials and on the improvement in properties that nitrogen and nitrides can provide when the concentration is low. Similarly, papers are included on surface nitriding where these contribute to the understanding of interstitial nitrogen behaviour and its influence on bulk properties. Such papers are included in the sessions on fundamental studies, which cover bonding, precipitation ordering, and diffusion.

● *Proceedings of the First International Calcium Treatment Symposium*. 1988. 116 pp. £15.

New cored-wire injection techniques, particularly as they concern calcium modification of alumina inclusions, have become increasingly relevant in achieving higher levels of in-ladle treatment efficiency and precise control of additions. Sponsored and organized by Affval and The Institute of Metals, the Proceedings of the First International Calcium Treatment Symposium deal solely with in-ladle calcium treatment practice. Fifteen papers, given by international R & D specialists from major steel companies and metallurgical research institutions, provide state-of-the-art reviews and include such topics as:

- metallurgical consequences of calcium retention in liquid and solid steel
- provisions of inclusions composition in calcium treated steel
- physical and chemical aspects of nozzle blockage during continuous casting
- resulfurized steels for improved machinability with calcium treatment.

The first comprehensive volume of its kind, these proceedings are an invaluable source of information for all steelmakers concerned with increasing the efficiency of calcium in-ladle treatment.

● *Design for recyclability*, by Michael E. Henstock. 1988. 150 pp. £15.

In this book the term 'recyclability' signifies not only the relative technical ease of recovery from products that would otherwise enter the waste stream, but also its economic feasibility, which in turn depends on the market for recovered products, the disposal of residuals, and the cost of the entire operation. Thus, improved recyclability requires that materials recovery and residuals disposal should be considered at the design stage as part of

decisions that influence the choice of materials, their distribution in the product, and the method of product construction. This book examines the economic, environmental, and technological factors that govern whether or not discarded or obsolete goods are processed for the recovery of valuable materials or are remanufactured into serviceable objects. Consideration of the effects of contaminant materials demonstrates the importance of design in facilitating the recovery of materials in a form that is free from such contaminants. By examination of the appliance, automobile, aviation, and electronics industries, this book demonstrates that, although there are considerable differences between them in the potential for design changes to facilitate recovery, there is almost always something that would make the task of the scrap reclaimer easier and more useful to society. Goods that do not lend themselves to profitable reclamation become cases for disposal, where it is equally important for the designer to ensure that artefacts do not contain materials that can be hazardous or toxic in landfills or other disposal sites.

● *Solidification processing*. 1988. 549 pp. £45.

This volume includes the proceedings of the Third International Conference organized by the Department of Metallurgy at the University of Sheffield in September 1987. Embracing both basic and applied aspects of solidification, the twenty-six sessions cover:

- Casting Processes
- Composites
- Continuous Casting
- Dendritic and Diffusionless Growth
- Eutectic Growth and Modification
- Fluidity and Soundness
- Mathematical Modelling
- Segregation
- Strip and Semi-solid Casting
- Welding.

The international scope of these proceedings reflect the now wide-spread recognition of the present and growing importance of solidification in materials processing, and of the notable advances made in both theory and practice over the past decade.

● *Marine engineering with copper-nickel*. 1988. 103 pp. £18.

Co-sponsored by The Institute of Marine Engineers, The Institution of Corrosion Science and Technology, and the National Association of Corrosion Engineers, this volume examines the vital role that the various copper-nickel alloys can and do fulfil in the marine engineering industry. The unique combination of properties possessed by these alloys includes excellent resistance to marine corrosion and biofouling. These proceedings will be of interest to marine engineers and materials specialists interested in the reliability and long-term economic operation of ships and structures in marine environments.

● *Characterisation of High Temperature Materials*.

This series of educational meetings, organized by the Materials Science and Materials Engineering Committees of The Institute of Metals, reviews the wide range of

techniques that are available for the characterisation of high-temperature materials. Providing a broad, practical overview of the techniques, emphasizing their range of applicability, relative precisions and limitations, the proceedings of the seven one-day meetings cover the following specific themes:

- Microstructural Characterisation
- Chemical Characterisation
- Mechanical Testing
- Physical and Elastic Characterisation
- Non-destructive Testing
- Surface Stability
- Numerical Techniques.

Microstructural Characterisation and Chemical Characterisation are now available. Price: UK £25.00. Other Countries US\$52.50 (Institute of Metals members receive a 20% discount). The other five titles will be published during the next twelve months.

3. New journal

FMJ International Publications Ltd have announced a new quarterly publication, *Aluminium Today*.

Aluminium Today is an international journal of aluminium production and processing, specifically aimed at those involved with the manufacture and downstream processing of aluminium and its alloys. It is expected that managers and technicians alike will find that it covers subjects of vital importance to their everyday work, providing news, views, and technical information and enabling them to compare the aluminium industry of other major producing nations with their own. Each issue is to contain international news, feature articles, process technology, updates, quality-control reports, application reports, and international profiles.

Aluminium Today is the latest project from the publishers of *Foundry Trade Journal*, *Foundry Trade Journal International*, *Steel Times*, and *Steel Times International*.

For further information, contact Jonathan Mitchell, Editor, *Aluminium Today*, Queensway House, 2 Queensway, Redhill, Surrey RH1 1QS, England (Telephone: 0737 768611).

4. Other new publications

● *Algorithms in real algebraic geometry*, edited by Denis S. Arnon and Bruno Buchberger. London, Academic Press, 1988. 274 pp. £15.95.

This volume presents the state of research in this field and facilitates access to the field for those who wish to enter it. The material is of interest to researchers in computer science and mathematics, software designers in CAD/CAM, and graduates in symbolic computation, artificial intelligence, complexity, and reasoning.

● *Proceedings, Foundry and Heat Treatment 88*. R150 per set of 5 volumes, or R40 per volume. (Available, cheque with order, from the SAIF Secretary, P.O. Box 77, Wits 2050.)