

Book news

1. New books 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 conductivity, 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 Affival 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
- resulphurized 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.

● *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.

● *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.

● *Sir Henry Bessemer: An autobiography*. 1989. 380 pp. £16.95.

The name of Sir Henry Bessemer is known throughout the world, among steelmakers and laypeople alike, for

his invention of the converter process for making steel. He was also a prolific inventor in many other fields, and this autobiography, originally published in 1905, traces the life of the inventor and steelmaker. Bessemer was clearly self-confident, industrious, energetic, infinitely inquisitive, and essentially intuitive. He was by no means modest, was capable of pique, and, it has been said, sometimes ruthless in his treatment of others. The autobiography of such a man makes for intriguing and entertaining reading and will be of interest to both engineers and laypeople alike.

2. Other publishers

● Occupational safety and accident prevention. Behavioural strategies and methods, by C.G. Hoyos and B.M. Zimolong. Amsterdam, Elsevier, 1988. 218 pp. Dfl. 180.00.

This book provides a comprehensive overview of occupational safety, with special emphasis on the human element. The text will be useful to students of psychology and human-factors engineering. Additionally, it holds great utility for persons with an engineering background, such as industrial engineers, quality-control engineers, system and design engineers, and safety practitioners. Examples of empirical studies, as well as suggestions for practical measures, are included to help in the understanding and application of the contents of the text. Although the prime objective of the book is to cover occupational safety from a human-factors point of view, some of the related areas are also discussed. Among others, they include problem solving in complex systems, judgmental and heuristic biases in decision-making, and characteristics of decision-support systems in high-risk industry. The inclusion of these topics clearly indicates the shift in attention of occupational safety from work activities on the shop floor to tasks of operators and supervisors in automated and semi-automated systems.

● *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.