

BOOK REVIEWS

DECAYING LAKES: THE ORIGINS AND CONTROL OF CULTURAL EUTROPHICATION, by B. Henderson-Sellers and H. R. Markland. John Wiley and Sons, Chichester, 254p. (£Stg. 29.50).

It is good to see such a comprehensive account of eutrophication in one volume, written in such an easy-to-read form. This serious worldwide water quality problem has been with us now for at least two decades and it is certainly time for the processes and controls to be presented in one book for the non-specialist. Scientific terms are explained when first used making it ideal as a basic text for readers from a variety of scientific disciplines.

Part I covers the eutrophication process and the physical and chemical characteristics of a eutrophic lake. This is followed by preventative and curative methods of lake restoration. Part II describes the conflict between the natural system, discussed in biological and chemical terms, and man's influence on it through agricultural practices and urban wastes. Part III contains a discussion of empirical methods for assessing the trophic state and the need for more detailed mathematical models in planning new developments and comparing control strategies. Each chapter ends with a useful summary.

Examples are taken mainly from lakes in North America, Western Europe and South Africa, where much of the data on eutrophication originates. There is no mention of specific lakes in Asia or Australasia, except for one in Japan, although general reference is made to Australian lakes. This is unfortunate since some interesting examples exist in these areas which would have illustrated the global nature of the problem.

The comprehensiveness of the text is illustrated by the section on curative methods which includes diversion, dilution/flushing, deepening, dredging, draw-down, manipulation, destratification and reaeration, biomass harvesting and biological controls. Each method is well described, often including several available techniques and examples of lakes where it has been used.

Many figures and tables have been taken from fairly recent articles and texts. These have been carefully chosen and augmented by simple and effective illustrations by the authors. Unfortunately most of the few photographs included are of poor quality and do little to enhance the otherwise well presented illustrations.

The bibliography is short for the broad range of topics covered. It includes citations from basic limnological texts and some more recent papers, with a list of recent review papers and books for further study each containing its own extensive list of references. However, sometimes the deliberate policy of minimal citations in the text leaves the reader wondering where the data originated from.

These minor criticisms aside, the book presents a clear readable account of cultural eutrophication which should appeal to a wide audience.

Jonet Ward

SEDIMENT TRANSPORT IN GRAVEL-BED RIVERS, edited by C. R. Thorne, J. C. Bathurst and R. D. Hey; published by John Wiley and Sons, Chichester, England, 1987, 995p. (£Stg 79.95).

In 1980, the first international workshop on gravel-bed rivers was held in Gregynog, Wales, with the objective of clarifying understandings of physical processes in gravel-bed rivers, promoting improved design and modelling methods and establishing better management guidelines. Contributed papers were published as a book (Hey *et al.*, 1982). A second international workshop was held at Pingree Park, Colorado State University in 1985 with the aims of synthesising current knowledge on sediment transport in gravel-bed rivers, concentrating particularly on knowledge gained since the 1980 workshop. This second book by the same editors (with a permutation on name order) is a compilation of the 32 papers presented at Pingree together with discussions and replies. The pot pourri of material is deftly organised, with a list of contents and a good index. Type style is uniform on good quality paper and the whole is stoutly bound in hard cover. All up, it's an attractively presented volume.

There are 16 chapters: one is introductory, nine deal with fundamental problems including: sampling and analysis of gravel; sediment supply; large scale sediment processes; armouring; modelling sediment transport; tests of bed load equations; suspended load; river regime; and bar and bed load interaction. The remaining six chapters are case studies concerning: channel design; mountain rivers; observation of bed load movement; design problems; fisheries and habitats; and lastly, gravel mining.

Nowadays sediment transport is a large subject ranging, for example, from the movement of desert sand by air to the transport of beach gravel by oscillatory waves. Against this background of gravel-bed rivers is a small, but important, subtopic and yet it has many facets for all that. Between the 1982 and 1987 volumes most of these are addressed, creating a work by specialists for specialists. Antipodean readers, perhaps in northwestern Canada and New Zealand, will notice the comparative lack of material on braided type rivers which traverse their countryside. The obvious but nevertheless satisfactory remedy is for them to contribute to what must now be, judging by past success, almost mandatory future workshops and future volumes.

Inevitably in a book of this kind with diverse authorship there is unevenness in the quality of the contributions. No paper struck me as being in a class of one: most of them did however read as high standard, good solid stuff. Much of the material is available elsewhere and a number of familiar hobbyhorses have been trundled out. Again, that is to be expected and does not detract from the work at all.

The editors have done a fine job gaining, in my view, a mark of 8 out of 10. The book provides a timely change of emphasis from sand to gravel beds: it allows the reader to familiarise himself with the cutting edge of the subject; and its very production contributes to the identification and promotion of gravel-bed river research as a scientifically respectable activity and one which is likely to provide a good return on funding.

G. A Griffiths
Christchurch

REFERENCE

Hey, R. D.; Bathurst, J. C. and Thorne, C. R. 1982: Gravel-Bed Rivers: fluvial processes, engineering and management. John Wiley and Sons, England, 875p.