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Landslides: Causes, consequences and environment

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(e.g. Lake Okaro, Lake Rotongaio, Lake Hayes, Lake Johnson) or polymictic (e.g. Lake Rotorua); many New Zealand lakes experience high rates of photosynthesis in winter (e.g. daily primary production rates in winter in Lake Rotorua are often 30% or more of summer values); our species diversity of fish, zooplankton and other fauna is low (e.g. four or five species of crustacean zooplankton in the open waters of Lake Rotorua). By contrast, Lake Mendota is dimictic (mixes twice per year); photosynthesis falls to almost zero in winter because of the attenuation of light by snow and ice cover; and there is a rich faunal diversity (e.g. 18 species of crustacean zooplankton in the open waters). *A Eutrophic Lake* offers a useful, albeit incomplete compendium of data on Lake Mendota for comparative studies, but New Zealand limnologists are likely to find that the behaviour of our eutrophic lakes differs substantially from this well-studied northern hemisphere example.

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Landslides: Causes, consequences and environment, by Michael J. Crozier. Croom Helm, London, 1986.

Michael Crozier has sent out to provide answers to a number of the basic questions which are asked about landslides, and to provide a critical review and synthesis of the present state of knowledge on the topic. The level of treatment and style of writing are appropriate for the understanding of most informed people who need general and specific information about landslides, rather than for the specialist in geomechanics.

The book begins with a discussion of the purposes of classifications in general and then an account of the classes of phenomena and the criteria which have been used in the common classifications of mass movements and their forms. This section concludes with an account of the classifications of Hutchison (1977) and Varnes (1978).

Chapter three, on the causes of slope instability, is the longest of six chapters and a major part of the book. It opens with a useful discussion of basic concepts of stability states and continues with an examination of causative factors. Where it is appropriate, factors are evaluated within the context of stability analyses with particular emphasis upon planar failures. The text, however, is not a manual for either geomechanical testing or for analyses of individual failures; rather, analyses are used as a means of explaining specified conditions or the nature and operation of causative factors.

In Chapter four is developed a philosophy of long term landscape development in which mass wasting is a major influence. The use of many New Zealand examples, inevitably and appropriately, involves discussion of scales of development within a framework of geomorphological changes due to tectonism, fluvial incision, rates of weathering and climatic variations. Shorter term climatic events, at the scale of individual storms and their consequences, are the theme of the following chapter.

The book concludes with a chapter devoted to a review of the economic and social consequences of landslides and of the assessment of hazards and risk.

Throughout the book, the author displays a comprehensive knowledge of the subject and a critical and constructive approach to the development of his synthesis. Examples, viewpoints, theories and attitudes derived from many disciplines are blended into a philosophy of landslide events which has been illuminated by many personal insights and research experiences. As a result the book is not merely a restatement of published material, but a fresh assessment of a field of study which is a significant contribution to both research and teaching.

The text is produced from camera-ready typescript with justified lines, but this is not a major disadvantage as the type is easily read. Many of the diagrams are the author's own work and all are clearly presented. The references are comprehensive and the index good.

Any reviewer can find some faults, and I noticed that the International System of Units is not always used—in one diagram, rainfall amounts are given in fathoms! In some equations the symbols used are not those which are standard in soil mechanics. In spite of these reservations, the book can be used profitably by a wide range of practitioners who are concerned with landslides, and by undergraduate and graduate students in the earth sciences. Michael Crozier is to be congratulated for writing a readable and thoughtful book which provides a framework for further research and for the consideration of practical problems.

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