BOOK REVIEWS

Title: **"Earthquake Protection"**

Authors: Andrew Coburn and Robin Spence

Publisher: John Wiley and Sons, Chichester, UK, 1992, 355pp

Price: $200 approx.

ISBN: 0 471 91833 4

The authors of this book have had considerable experience in dealing with the various aspects of earthquake protection. Andrew Coburn is an architect and international consultant who has worked on earthquake protection projects in over thirteen countries. He has written numerous articles, technical reports and conference papers on the subject of earthquake vulnerability and damage investigations. Robin Spence is a structural engineer with extensive experience in developing countries where he carried out research on construction materials, appropriate technology and disaster mitigation methods. Both authors are also Directors of Cambridge Architectural Research Ltd in the United Kingdom.

The book has been written to provide an overview of the ways to reduce the impact of earthquakes worldwide on people, buildings and human settlements. It also describes the manner of dealing with the consequences of earthquakes when they occur. In both these ways, the book makes a useful, and detailed, contribution to the International Decade for Natural Hazard Reduction that is currently being observed.

The book begins with an introductory chapter discussing the global incidence of earthquakes, their causes and effects followed by various chapters that each deal with a separate aspect of earthquake protection. The progression of the chapter topics is:

1. **Earthquakes, Disasters and Protection.**
   The trembling globe, earthquake disasters, earthquakes, earthquake protection.
2. **Preparedness for Earthquakes.**
   Earthquake prediction, long-term prediction (years), short-term prediction (days/hours), instantaneous warning (seconds), practicalities of prediction and evacuation, getting the general public prepared.
3. **The Earthquake Emergency.**
   Emergency management, search and rescue, rescue techniques, medical aspects of earthquake disaster, follow-on disasters, shelter, food and essential services, re-establishing public confidence.
4. **Recovering from Earthquakes.**
   Opportunities and challenges, sectorial recovery plan, repairing economic damage, physical reconstruction, housing and shelter policy, reconstruction and the construction industry, turning reconstruction into future protection.
5. **Strategies for earthquake Protection.**
   Creating a safe society, national and local government authorities, urban and regional planners, private companies and organisations, design professions, development organisations, community groups, individuals.
6. **Site Selection and Seismic Hazard Assessment.**
   Choice of siting, site-related earthquake hazards, estimating ground motion hazard, microzoning.
7. **Improving Earthquake Resistance of Buildings.**
   Strong and weak building types, building response to earthquakes, how buildings resist earthquakes, structural form and earthquake resistance, choice of structural materials, codes of practice for engineered buildings, improving the resistance of non-engineered buildings, strengthening existing buildings, repair and strengthening of buildings of historical interest.
8. **Loss Estimation, Risk and Vulnerability Analysis.**
   Loss estimation, definition of terms, vulnerability assessment, vulnerability assessment using PSI scale of intensity, human casualty estimation, other losses, application of loss estimation, uncertainty in loss estimation.
9. **Evaluating Alternative Protection Strategies.**
   Using loss estimation in decision-making, cost-benefit analysis, alternative procedures, applications, social aspects of choice of protection strategy, formulating public policies for earthquake protection.
10. **Reducing Earthquake Disasters.**
    Progress in earthquake protection worldwide, disaster mitigation in the 1990s - the IDNDR, 2000 and beyond.

Each chapter finishes with suggestions for further reading in addition to the many references listed at the end of the book. The material is well presented and includes many charts, diagrams, illustrations, photographs and tables. Throughout the book, there are references to the effects of particular earthquakes that have occurred in different parts of the world and the lessons that can be learnt from them. For instance, in Chapter Four, when discussing the issue of turning reconstruction into future protection, the authors present case studies relating to the 18th century reconstruction of Noto in Sicily, the 19th century reconstruction of Bursa in western Turkey, and the 20th century reconstruction of Quetta in Pakistan and more recently, Mexico City.

A wide range of situations having different economic and social conditions are covered in the book. It looks at protection strategies in Europe, U.S.A. and Japan, as well as those for rural and urban communities in developing countries. A considerable amount of material included comes from the authors' experience in over thirteen years of earthquake damage investigation and reconstruction planning arising out of their work at the Martin Centre for Architectural and Urban Studies at the University of Cambridge, U.K. and Cambridge Architectural Research Ltd.

The book is intended for a general readership of all those concerned with earthquake protection, but especially for

building designers, urban and regional planners, and officials in government and municipal departments concerned with building and disaster mitigation. It deals with technical matters, but does so in a way that should allow general readers without an engineering background to understand the concepts and ideas incorporated in the material.

With the considerable detail and spread of ideas presented in the book, readers may find that it best to read parts of the book in detail and browse through the rest rather than attempt to read from cover to cover in a short time. Nevertheless, it is a book that merits reading and there should be at least several parts of the book to set every reader thinking about the situation in their own region and locality. The book can be recommended to anyone with an interest in the subject or who needs to know more about the topics discussed in it.

Title: **"Simplicity and Confidence in Seismic Design"**

Author: T. Paulay

Publisher: John Wiley and Sons, Chichester, UK, 1993, 68pp

Price: $90 approx.

ISBN: 0 471 94310 X

This publication presents the text of the fourth Mallet-Milne lecture given at the Institution of Civil Engineers, London, in May 1993. The biennial Mallet-Milne lecture was inaugurated by the Society for Earthquakes and Civil Engineering Dynamics to commemorate the life of two British pioneers in the fields of earthquake engineering and seismology: Robert Mallet (1810-1881) and John Milne (1850-1913). Previous lecturers have been Professor Nick Ambraseys on Engineering Seismology, Professor George Housner on Coping with Natural Disasters, and Professor Geoff Warburton on Reduction of Vibrations. In this fourth lecture, Professor Tom Paulay presented his views on simple and reliable seismic design procedures.

Those who are familiar with the work of Tom Paulay - whether they be academic colleagues, past students, or anyone who has listened to a presentation of one of his many papers - will find much of the material in this publication looks familiar, as it should, since it is a summary of his intense interest in the behaviour of structures. As the "originator" of the concept of "capacity design", it is not surprising to find that Professor Paulay used the concept as a framework for the treatment of the subject, dealing as it does with material, section, member and structural characteristics for optimum failure mode control of buildings subjected to earthquake loading. Since modern codes of practice for earthquake resistance are increasingly making use of the concept of capacity design, this fourth Mallet-Milne lecture provides a compact and comprehensive reference to the work of one of the pioneers in the field of design for earthquake resistance of structures.

The book follows a logical progression in its coverage of seismic design with the chapter topics covering:

1. **Introduction**
2. **Basic Aims in Seismic Design**
3. **Limits Imposed by Material Properties**
4. **A Deterministic Limit State Design Strategy**
5. **Fundamental Strength Relationships**
6. **Ductility Demand and Capacity**
7. **Structural Seismic Performance Criteria**
8. **Reinforced Concrete Ductile Frames**
9. **Structural Walls**
10. **Dual Structural Systems**
11. **Detailing of Ductility**
12. **Structures with Restricted Ductility**
13. **Conclusions**

In addition, the book also contains a useful list of references.

This book can be recommended as a very useful summary of the subject matter and it is a worthy contribution to the lecture series established in memory of Robert Mallet and John Milne.