

## REVIEWS

DREW, D.P. and DALY, D. 1993. Groundwater and Karstification in Mid-Galway, South Mayo and North Clare. *Geological Survey of Ireland Report Series 93/3*. ISSN 0790-0279. (Reviewed by Steve Hobbs)

This eighty six page book is published as a softback at A4 size and is contained within a plastic wallet which also encloses three large (940x720mm) dyeline maps. These are published at a scale of 1: 100,000 and show the bedrock geology, Quaternary geology and hydrogeological data points described in the text. The study area covered by the report includes "much of County Galway east of Lough Corrib, that area of southeastern Mayo between Lough Corrib and Lough Mask and to the east of Lough Mask, Lough Carra. In the south, the area extends from the Burren Plateau of County Clare in the west to the Gort Lowlands and a part of the Slieve Aughty Mountains in the southeast". This area is divided into five lowland and two upland sub-regions. The report contains 36 figures, 7 tables and 10 photographs, two of which are in colour. It is divided into 13 chapters.

Chapter 1 describes the purpose, scope and layout of the report and defines the area of study. Chapter 2, which discusses general groundwater aspects, is very over simplified, confusing and disjointed in places and incorrect in the use of some technical terms, even for what the authors describe as a "non-technical reference". This is followed in Chapter 3 by a useful, if somewhat brief, summary of the geology of the area including two large maps. The summary is limited as there is no mention of geological structure. Furthermore, the practice of using the term "sub-soil" as a synonym for Quaternary geology is one which I dislike. Chapter 4 summarises the hydrology of the area specifically describing effective rainfall and its variations and the main surface water courses.

The seven chapters which follow describe the hydrogeology in each of the sub-regions. They provide a summary of conditions in each sub-region with some useful hydrographs and water table maps. However, the chapters lack a standard approach. For example the introduction to the Lough Mask, Lough Carra, River Robe area only discusses hydrology, whilst that of the next chapter, Lough Mask - Lough Corrib Isthmus, is only concerned with geology. Furthermore, the former chapter only discusses groundwater conditions and groundwater usage whilst the latter only groundwater recharge and flow and groundwater level and discharge. Thus the reader is only presented with facets of the hydrogeology of each area, presumably associated with the main research that has been carried out. Even so, it is not clear whether, for instance, groundwater abstraction points are not detailed in a chapter because there are none, or because no research has been carried out to identify them. Similarly recharge is discussed in some chapters but not others. One further element lacking is, I feel, the tabulation of data such as well locations, depths, aquifer penetrated, specific capacity, abstraction rate etc. Clearly such information will not be available for all sites, but it is very useful for the hydrologist to know where it is. Presumably the level of detail in which each sub-region is discussed reflects the volume of research that has been carried out. The East Galway Bay area and Burren Plateau in particular appear to have been moderately well researched, whilst the Slieve Aughty upland has not.

The first of the "summary" chapters presents an overview of groundwater sources and quality including histograms and scattergrams of borehole yield, depth and specific capacity. The groundwater quality discussion is very brief and consists of a short paragraph or two on each of: water hardness, iron, nitrate, E Coli, chloride, and hydrogen sulphide content. This at least gives the reader an indication of background water quality in lithological units in the area. The summary is however lacking in that the results discussed are, on the whole, spot measurements. The flashy hydrochemical response which is so typical of many karstified spring discharges is almost totally ignored.

The final chapter, which discusses pollution prevention, is an attempt by the authors to apply some of their findings to the problems of pollution in the region. However, the chapter sits relatively awkwardly in the report and in my opinion fails to effectively link pollution problems and karstification. Although an interesting two pages, the chapter is too short to be of major benefit to the intended main readers of the report (i.e. hydrogeologists), and contains no references from which the lay person can obtain greater detail.

In summary, then, Drew and Daly have completed an invaluable task by collecting, collating and summarising a mass of hydrogeological data, much of which is not easily obtainable in its original form. However, due to the variable manner in which each sub-region is treated and the lack of tabulated data, the report does not realise its full potential. Nonetheless it is a useful starting point for anyone interested in the hydrogeology of this part of Ireland.

GUNN, J. (Ed.), 1994. *An Introduction to British Limestone Karst Environments*. British Cave Research Association Cave Studies Series. 5. 40pp. ISBN 0 900265 18 3.  
(Reviewed by P.L. Smart)

This book was produced to mark the joint meeting of the Unesco International Geological Correlation Programme Project 299 (Geology Climate, Hydrology and Karst Formation), the Karst Commission of the International Association of Hydrogeologists and the Commission on Environmental Changes and Conservation in Karst Areas of the International Geographical Union in the UK. The 40 pages of text provide an introduction to the geology, geomorphology and hydrology of British carbonate terranes, with the biogeographical and human elements of the environment only briefly covered. In fact when faced with the chapter heading Jurassic Limestone Environments I can't help feeling the term terrane would rather more reflect the coverage provided. I found it difficult not to think of depositional environments!

The book commences with general overviews of the geomorphology and hydrogeology of Britain. The former is clear and well referenced, but the latter is in places overgeneralised (for instance the section on water quality), and lacks leads into the literature. It also deals with non limestone aquifers such as the Coal Measures and Greensand, although I would agree that this sets the utilisation of the carbonate aquifers within the wider context. The summary of aquifer abstraction figures is useful, and could have been further broken down into areal data, for instance there are major contrasts in usage between Northern England and the Mendips for the Carboniferous Limestone aquifer.