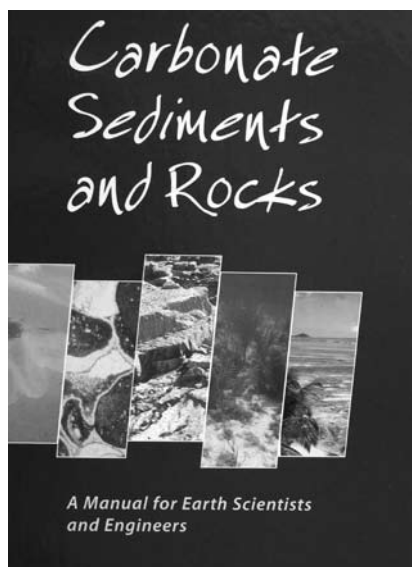


COLIN J. R. BRAITHWAITE:  
 CARBONATE SEDIMENTS AND ROCKS, A MANUAL  
 FOR EARTH SCIENTISTS AND ENGINEERS,  
 WHITTLES PUBLISHING, ORSA PRESS,  
 ISBN 1-870325-39-7, © 2005



The subtitle of the book *Carbonate Sediments and Rocks* is »A Manual for Earth Scientists and Engineers« and it is designed as a manual mostly for engineers. Yet this is a really useful book for others, not only engineers, but also and maybe specially for students of geology and earth sciences. The hardback book 241 x 170 mm includes 196 pages, 37 black and white and 96 colour pictures (20 pp section).

The work is divided into 16 chapters: from mineralogy and composition of carbonate sediments and rocks to their preservation. Some chapters are very short (Evaporites associated with Carbonates); some others are much longer and divided into subchapters (Carbonate Diagenesis: from Sediment to Rock covers 21 pages with 5 subchapters). The first six chapters deal with carbonate sediments from mineral composition to geochemistry, with characteristics of carbonate sediments, marine carbonate environments, evaporites associated with carbonates and continental carbonate environments to classification of carbonate sediments and rocks. The seventh chapter treats diagenesis, a passage from sediment to rock. Special chapters are dedicated to dolomites and calcrete. In the last seven chapters there are more topics directly connected with karst. In the chapter entitled *Limestones, Dolomites and Karst* the author deals with dissolution of carbonate rocks, karst landforms, caves, precipitation of calcite, biogenic facies, karst and sea-level change and paleokarst. Special chapters are dedicated to karst hydrology and (engineering) hazards of karst.

Although the book is relatively thin, the text is concentrated but on many places the topic is treated surprisingly in detail. The classification of carbonate rocks does not mention standard authors only (Dunham and

Folk) but considers relatively archaic Garbau (1904) and also more recent works, such as Choquette & Pray (1970) and Embry & Klovan (1971). Clear sketches and tables illustrate the subject, relatively complicated for a layman. The diagenesis is similarly explained in detail. In general karstologists do not study calcrete, as this

is mostly the domain of pedologists and other specialized branches (for example climatic geomorphologists). Yet, a karstologist must be aware of origin of calcrete, as this is an important process. Although on five pages only a reader gets acquainted not only with the process but also with many professional terms, not much used in karstology, such as globules, nodules, ooids, pisoids, pedotubules, rhizoliths, rhizoconcretions, crystallaria, etc.

The chapters 10 (*Limestones, Dolomites and Karst*) and 11 (*Karst Hydrology*) are the most important for karst. It is not an easy task to explain all the theories of karstification, superficial and underground features, including paleokarst and karst hydrology on 17 pages. It is nicely said from where the name derives and what does it mean. Dealing with dissolution of limestone there are many chemical formulas, but no equations. Does it simplify the understanding or not? Superficial karst features are divided to small-scale features, dissolution pits (including also spitzkarren and shilin), and large-scale features; here dolines and poljes seem to be the most important. Cvijić's explanation of uvala is mentioned also (the author wrongly call it uvula). To the same group belongs also cockpit and tower karst. This chapter ends by precipitation, biogenic facies, karst related to sea-level change and paleokarst.

The chapters from 12 to 15 are dedicated to engineering geology of carbonates; they treat the engineering

properties, methods of extraction, the hazards of karst, and deposits (hydrocarbons and mineral) within carbonates. Maybe there is not much new for engineering geologists but it could be very interesting for researchers treating karst theoretically or from other points of view. A reader learns that, for instance calcrete, of minor importance for us and maybe a disadvantage only for agriculture, is somewhere else the main building material for road construction. Physical properties of single carbonate rocks are presented particularly in detail. Although shortly described the cases of hazards on karst can be very instructive. The methods how to identify the underground cavities are limited to boring and geophysical methods, including »georadar«. Instructive are examples of building collapses, cases of unsuccessful construction of dams on karst, subsiding and collapse of bridges, hazards on roads, railways and airports. The chapter ends by water supply on karst and hazards related to karst in evaporites. All these examples show that engineer geologists and building engineers do not know enough of karst therefore such manuals, as this one of Braithwaite, are without doubt necessary and useful. In the area of »Classical Karst« we do not even think that the carbonate rocks, this means in karst and paleokarst, may hide important stock of oil. The 15<sup>th</sup> chapter gives ore and oil finding places in karst. The cross sections illustrate the ore bodies near Pliberk in Triassic carbonates and structure of one part of famous Elk Point Basin in Alberta (Canada).

The last, 16<sup>th</sup> chapter, speaks of carbonate landscape protection, mostly related to quarries, physiognomy of the landscape, caves and fossils. For the last one the book gives an interesting example from France (Digne). Instead of selling 200 m<sup>2</sup> of exposed Jurassic limestone with more than 500 ammonites to Japan, the elastomer mould was made. In 1991 the casts weighing 24 tonnes were assembled and the replica attracted already two million of visitors in Japan.

The book contains a comprehensive list of 399 references. There are authors of basic karstological and

geomorphological works, from Curl, Cvijić, Ford, Gèze, Hutton and Sweeting. From our point of view is maybe surprising relatively small number of authors from so-called »classical«, Dinaric karst. Beside Cvijić the list contains only Roglić. Every author keeps to his individual choice of literature. But, as this is a book about carbonate rocks and not about karst one must not complain if the selection of literature is anglophone. On the other side this is a manual aimed to students also and it would be good if the literature is slightly more balanced. One can understand that there are no Russian, Polish, Czech or Hungarian authors, but there are no leading French authors either, such as Fénélon or Nicod, not to mention Mangin's contribution to theoretical knowledge of karst hydrology and this is less understandable. As quite a lot of time passes from time when the manuscript is delivered to time when the book is published, one can understand that the most recent literature is hard to be considered. But in this case the gap is considerable. From 399 cited works only 52 were published in 1990 or later, among them only two with year 2000, there are no younger. I regret this mostly because in the last time some very important works were published, such as, for example Encyclopedia of Caves and Karst Science edited by J. Gunn. Some other statements are out-of-date too, for example the list of the deepest caves in the world, which is understandable because of the quick changes in this field.

The last pages contain a well composed and exhaustive index, including more than 600 entries which essentially improve the use of the book as a manual or textbook. For me, being karstologist, it is difficult to judge what such a manual means to engineer geologists but I can say that the book is very useful for our students of geology and geography and also to third degree karstologists.

The book can be ordered by [orders@booksource.net](mailto:orders@booksource.net) for the price of 40 GBP.

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