

# Depositional Environments as Interpreted from Primary Sedimentary Structures and Stratification Sequences

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Central Atlantic. In each paper the authors point out that the final product of maturation, quartz, contains little evidence of its biogenic origin.

In contrast to the maturation hypothesis, the possibility of host-sediment control on the mineralogy of silica phases is proposed in an abstract by Lancelot, a view that is reminiscent of earlier work by Millot (1960).

Bedded cherts as ocean ridge-derived sediments are discussed by Nisbet and Price using examples of Mesozoic radiolarities from the Orthis Mountains of Greece and Garrison completes the section on cherts with a more general survey of "Radiolarian cherts, pelagic limestones and igneous rocks in eugeosynclinal assemblages".

Of the final three papers in Pelagic Sediments, two concern sedimentary processes related to active ridge systems. Boström in a short abstract outlines the origin of ferromanganous active-ridge sediments pointing out that once formed these are likely to be subducted and metamorphosed and Robertson and Hudson give a very explicit account of "Pelagic sediments in the Cretaceous and Tertiary history of the Troodos massif, Cyprus". Jack Wendte ends it all with an interesting demonstration that sessile arenaceous Foraminifera in Recent manganese nodules and crusts may be used to estimate rates of accretionary growth.

In summary Special Publication Number 1 of the IAS is an attractive, well edited and high quality piece of work which clearly illustrates the important contribution that modern oceanographic investigations have made to our understanding of pelagic sedimentation.

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(SEPM Short Course No. 2, Dallas, 1975)

By J. C. Harms, J. B. Southard,  
D. R. Spearing and R. G. Walker  
*Society of Economic Paleontologists  
and Mineralogists, 161 p., 1975.*  
Soft Cover \$5.00.

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Where can "upper level geology students or geologists interested in interpreting depositional environments" go to obtain good, basic, up to date and cheap information covering the principles of hydrodynamics, primary sedimentary structures, and stratification sequences? One good place to start would be this book. At five dollars, the reader is brought up to date with many of the more critical references, and while it contains little new information, what is presented is an excellent starting place for those new to this specialized branch of the ever enlarging field of geology.

The title of this book may be somewhat misleading. It indicates, at least to me, a very broad field of study. However, the opening statements make the following clarifications: the primary objective is to guide the reader toward "the use of primary sedimentary structures and stratification sequences as tools for interpretation of depositional environments of clastic sediments emphasizing advances in understanding of the past ten years".

There are seven chapters in this work which may be roughly divided into two parts, principles, and application of principles. Chapter 1, Purpose and Scope, clearly sets forth the objectives which include the following areas. Chapter 2, Bed Configurations; Chapter 3, Stratification Produced by Migrating Bed Forms; Chapter 4, From Sedimentary Structures to Facies Models, Examples from Fluvial Environments; Chapter 5, Stratification and Sequence in Prograding Shoreline Deposits; Chapter 6, Shallow Marine

Sands; Chapter 7, Conglomerate: Sedimentary Structures and Facies Models. Despite the limitations of the subject matter, the strength of this book lies in the fact that basic updated information pertinent to the principles of hydrodynamics is applied to resultant bed configurations. These bed configurations are, in turn, related to characteristics of stratification produced by migrating bed forms and (hopefully) preserved in the geologic record.

The book tends to emphasize the identification and interpretation of the smallest units of the stratigraphic sequence (sedimentary structures) as recognized in cores and outcrops. Building from local recognition, stratigraphic sequences and combinations of sequences are then shown to be useful in analyzing depositional processes and depositional environments. The reader is guided through the arrangements of these sequences spatially and concludes with generalized models for fluvial sediments, prograding shorelines, shallow marine sands, and conglomerates deposited in marine and non marine environments. With a bit of imagination and good information gleaned from individual cores or outcrops, and utilizing the basic principles outlined in the first few chapters of this book, the reader should then be able to proceed toward analysis of depositional environments not covered such as lacustrine, eolian, turbidite sedimentation, etc.

For the most part, the graphs, figures and illustrations are clear and well presented, but unfortunately, a few are either much too small, too cluttered or have reproduced very poorly.

When one considers the fact that this book is the result of only a few hours of discussion sponsored by the Society of Economic Paleontologists and Mineralogists in Dallas (April 5, 1975) then it is a surprise that it contains so much good information. For the intended reader, it is an excellent starting place, a fine supplement to existing text books and an extension of many past seminars and short courses. At five dollars, it is a bargain.

MS received July 2, 1975.