

and (most importantly for Britain attempting to rebuild a post-war economy) business could be dislocated if not shattered, by the re-occurrence of such an event. Another surge of the dimension of 1953, but superimposed onto a spring tide, would for example have put the London Underground Transport system out of action for as long as a year. Hence the massive damages bill estimated in 1966. Chapter 4 reports on the debate surrounding the various options for flood control/defence. The choice of a barrier was not clearcut, nor the definition of the critical flood design height. Chapter 5 examines in some detail one of the earlier suggested barrier sites, at Crayfordness, downstream of the final Woolwich barrier site. This earlier site with its attendant design problems was the alternative chosen by the PLA after the Longreach site (chosen in 1956 by the PLA) was rejected by the same authority in the early 1960s as they had in the intervening period built new ship jetties there! Chapter 6 shows how Herman Bondi's report of 1966 cut across most of this never-ending debate by (1) asserting that the barrier must be built at all speed, and (2) indicating that yet another site, at Woolwich, was the optimum location. It is amusing to read how Bondi, an astronomer, cut the Gordian Knot of PLA, GLC and DOE entanglements in order to push the barrier forward! Chapter 7 ends this first theme by examining the river side flood precautions brought in to contend with the movement of the barrier site upstream to Woolwich.

The bulk of the rest of the book (Chapters 8 to 13) is a chronological account of how the final site and final barrier design were developed. The description of how the barrier was built (started in 1975) including the delays and problems generated by cost and labour during the inflationary spiral of the 1970s, and finally finished by October 1982, will probably be of most interest to engineers. However, I found it a useful exercise to follow this readable account of the construction problems posed by this construction project. Read this section and you can find out why England was scoured for left-handed plumbers during barrier construction!

Chapter 14 relates how the barrier is operated as part of the flood forecast/control scheme for eastern UK and what happens when a decision to close the barrier is taken (only twice since completion). The last two chapters are individually authored by Horner (Chapter 15) and Gilbert (Chapter 16) who both reflect on lessons learnt from this venture. An important suggestion is that a single authority should be considered to be empowered for any future

massive construction projects in order to speed up the development process. More ominously, it is suggested that the power of the statutory UK public inquiry system into the position and design of such structures needs to be drastically curtailed, not a comment to enthuse the anti-nuclear power lobby!

Given such a slim volume it is a pity that the publishers did not consider a reduced option of a paperback version. The available hardback is well-documented and produced, has no obvious errors, and is usefully illustrated with line and plate figures. All in all, this brief and readable book is an asset to its authors, and should be read by coastal zone investigators as an example of how 'big' coastal projects are envisaged and nurtured in the UK.

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An Introduction to Coastal Geomorphology, by John Pethick, 1984, Edward Arnold Ltd., London, 260p. Paper, \$16.00, ISBN 0-7131-6391-7.

John Pethick's *An Introduction to Coastal Geomorphology* is one of the more useful general texts on coastal dynamics since *Beach Processes and Sedimentation* by Paul Komar (1976). Pethick has written for the undergraduate studying coastal processes or landforms in general. His text evolved from a course he teaches in the Geography Department at the University of Hull (UK).

Pethick's objective is to bring coastal geomorphology into the framework of process studies while drawing from the numerous disciplines associated with the coast. His systems approach results in three main sections: the first examining energy inputs into the coastal system, the second dealing with this energy transformation into sediment and water movement, and the third concentrating on landform response in the form of beaches, dunes, mudflats, marshes, estuaries, and cliffs with chronological emphasis on the Quaternary.

While chapter 1 (Introduction) sets the coastal geomorphological stage, chapters 2, 3, and 4 deal with waves, wave-induced currents and tides respectively. Wave theory is covered succinctly, whereas wave-induced currents (chapter 3) although adequate, exhibits an equation definition error (p 41) and an incorrect reference to figure 15 (p. 39). I was somewhat concerned about the discussion on edge waves in that the actual mechanisms involved with

edge wave development are overlooked. Chapter 4 on tides is comprehensive enough and well written, however, there are some omissions in the scientific nomenclature (e.g. Apogee, Perigee, Syzygy). Chapter 5 concentrates on cohesionless sediments providing adequate discussion of their source, size, physical characteristics, movement in water and the process of coastal sediment movement. Chapter 6, entitled Beaches, is much more intricate than the title portends touching on beach types, genesis and maintenance in a three-dimensional manner. Unfortunately, the importance of the barrier island as a geomorphic unit is not emphasized but simply characterized as a "detached beach" undergoing superficial discussion. Chapter 7 on sand dunes is well written and concise, dealing with eolian initiation of sand transport, dune genesis and morphology. However, I was surprised at Pethick's omission of the ongoing work in Texas (Padre Island) by the U.S. Army Corps of Engineers on experimental dunes. Chapters 8 and 9 on tidal landforms (mudflats and salt marshes) and estuaries (processes and morphology) are very informative and concisely written. Similarly, chapter 10 provides good debate on cliffs and shore platforms. The section on cliff erosion and associated mechanisms is largely based on the work of Sunamura whose name, incidentally, is spelled incorrectly throughout the entire text. And finally, the physics of the coast are brought to a close in chapter 11 with a discussion of coastal geomorphology and sea level. Pethick provides what I suspect students will find a stimulating and accurate account of fluctuations (and causal mechanisms) in sea level within the Quaternary. However, I think the efforts of Lorance Dix Lisle and Stacy Hicks on short-term sea-level fluctuations around the US should have been acknowledged. In concluding Pethick utilized the theory of his preceding eleven chapters as a basis for chapter 12 in which he discusses applied coastal geomorphology. His appraisal heightens the reader's awareness of two broad groups in applied coastal geomorphology, i.e. direct anthropogenic influences on natural processes and predictions of coastal development without direct intervention. Undoubtedly this is the most shallow chapter in the text. He mentions the "passive approach" to

solving coastal problems from a "prediction" standpoint but neglects the land-use zoning, coastal construction control line approach which is extensively utilized in the US, and to some extent in the UK. Moreover, the potential dangers associated with shoreline management and natural processes are not really accentuated.

I enjoyed reading Pethick's text; he writes well, makes use of meaningful diagrams and graphs, and supplements each chapter with an informative photograph. Worked examples are provided on waves and tides, however, I think a 'problems' section would have been worthwhile. Suggested further reading at the end of each chapter is exceptionally weak throughout. While the reference section is fairly comprehensive (260 citations) it excludes many of the more recent published works, and is marred by typographical errors.

An Introduction to Coastal Geomorphology is definitely nothing more than the title suggests and for this reason I do not recommend it as a sole text for students. I suggest the coastal student read it for general background, but with caution. John Pethick has written from a modern day process-response philosophy which neglects palaeo-coastal processes and development. Bearing in mind the target reader is a novice to coastal processes, a statement such as "Leaving aside the process by which barrier islands were originally formed, it may be more important to coastal geomorphologists to consider how they are maintained. . ." (p. 125) can be dangerous. An understanding of palaeo-coastal landform genesis (and especially in the case of barrier islands) is of paramount importance in attempts at correctly interpreting present day coastal systems and when considering applied coastal geomorphology, and quantifying future coastal trends. Also, because the majority of field examples are located within the British Isles I do not recommend the text to students outside of Britain — unless of course they have specific interests in the British coast.

In short Pethick's review is incomplete. It's back to Paul Komar for me!

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