Dalrymple, R.W.; Boyd, R., and Zaitlin, B.A., 1995. **Incised-Valley Systems: Origin and Sedimentary Sequences,** Tulsa, Oklahoma: SEPM Special Publication No. 51, 391p. SEPM Member Price $61, others $85. Hard Cover.

This information-packed volume presents a broad view of general concepts, stratigraphic and sedimentological principles, and case studies of modern and ancient incised valley fills. Let me state right up front: this is one of the best volumes in the SEPM "red book series" ever. It contains a well-balanced and diverse set of papers and is very timely in its appearance.

The editors start with general concepts papers, which is a reasonable way of organizing a book. In this case, however, those very papers are the ones that contain the least amount of new information, because several papers on the generalized models for the stratigraphic organization of incised-valley fills have been published by the same authors (the editors) during the past few years. The first section of the book also contains two conceptual and quantitative, fluid-mechanics-based papers on valley incision and filling. Both are very provocative papers, and could set the stage for the next generation of much more process-based models for incised valley fills.

The book is organized according to what segments of the incised valley fill that each paper deals with. Segment one of the incised valley is that part that is entirely transgressed, such that the upper bounding surface of the valley fill is a (wave) ravinement surface. Several excellent papers comprise this section, including three papers that examine the many factors that control stacking patterns in the transgressed Late Pleistocene incised valleys on the northern shelf of the Gulf of Mexico and the Gulf of Papua, New Guinea. The dramatic difference in degree of preservation of the Gulf of Mexico estuarine systems only help emphasize that the "one model fits all" syndrome, which has become prevalent since the publication of Dalrymple *et al.*'s seminal 1992 paper, has to be applied with great caution. Peter Harris's paper on the Fly River delta is a "must read" for all followers of the camp that argues that are no tide-dominated deltas. This delta consists of a series of prograding clinoforms that downlap onto buried carbonate shelf reefs, yet contains the classic funnel-shaped river mouth full of longitudinal and sigmoid bars and bifurcating channels.

MacEachern and Pemberton's paper on the ichnological aspects of incised valley fill systems offers great value to sequence stratigraphers by stressing the many different types of incised valley surfaces that commonly are associated with the *Glossifungites* trace fossil suite. Such surfaces include the (wave) ravinement, bay flooding surface, tidal channel diastems, the maximum flooding surface, *and* the erosional sequence boundary. Hopefully, the one-to-one association between the *Glossifungites* suite and the sequence boundary, which has become *modus operandi* in many recent papers, will be discontinued after the publication of this paper. The paper also provides a very useful "catalog" of trace fossil suites in the different estuarine subenvironments.

The several case studies of Cretaceous, Pennsylvanian, and Neoproterozoic incised valley systems contained in this segment of the book provide excellent documentation of tidal structures. Particularly spectacular are the many documented tidal rhythmites from heterolithic central-estuarine strata. This kind of documentation is particularly useful to those working extensively with subsurface core data. The recognition of tidal structures in sedimentary rocks has come a long way since the days when herring-bone cross stratification and reactivation surfaces were the only signatures considered to be diagnostic.

Segment two addresses the "transgressive-limit" estuary, *i.e.* those systems that represent estuarine fill at the time of landward shoreline turn-around. Not surprisingly, most papers in this segment address late Holocene estuarine systems, associated with the change from transgression to early highstand regression that characterizes so much of the world's modern coastline. For that reason, this section of the book is, perhaps, the one of greatest interest to many readers of *JCR*.

Some of the papers in this section revisit well-known locations and concepts, but several new good insights can be gained by careful reading even of those. The paper on the Gironde estuary by Allen and Posamentier is a good example. Their arguments for fluvial bypass within the incised valley during lowstand, rather than aggradation, presents an interesting contrast to the more common sequence stratigraphic view. Perhaps bypass is the rule in the far updip reaches of the incised valleys, whereas aggradation is the norm closer to the lowstand shoreline? Peter Roy's careful documentation of the many diverse patterns of evolution of the Holocene estuaries in southeastern Australia is a gem. The paper by Nichols et al. provides a nice parallel of sorts, with an emphasis on estuarine fill patterns in response to variations in sediment supply and the rates of relative sea level rise.

Finally, three papers address the third incised valley segment: the entirely terrestrial (fluvial) part. Gordon Fraser's paper on the ice-marginal fluvial deposits of Indiana document beautiful fluvial and fluvial to lacustrine sequences, bounded by regional erosional sequence boundaries. He infers that these sequence boundaries formed during periods when glaciers had retreated from the drainage basins. The implications here are profound: fluvial sequences that formed along the North American ice margin in the Late Pleistocene may be the same in duration and number as those along the continent's marine margin, but the sequence timing is out-of-phase.

It would be an injustice to the readers to mention each of the 23 papers in this volume explicitly. My selection of five or so for this review was made to present the general flavor of the book, rather than an attempt to "rank" the contributions. In fact, in contrast to many special publications, this one is first rank throughout. My compliments go both to all the authors and to the editors who clearly wielded a strong hand in selection as well as the editing of the contributions. In summary, this is an SEPM book that belongs on the desk (or nightstand) of every serious clastic sedimentologist and stratigrapher, whether student, teacher, or professional researcher.

The technical editing is good. The papers are well laid out and all figures look nice. There are remarkably few spelling

errors and no misplaced figure captions. As in all SEPM publications the printing is excellent.

Dag Nummedal
Department of Geology and Geophysics
Louisiana State University
Baton Rouge, LA 70803

Davis, R.A., Jr., 1994. **Geology of Holocene Barrier Island Systems,** New York: Springer-Verlag, 464p., ISBN 3-540-56964-2, $149(HC).

This book is a major contribution to the study of barrier island geology within the Holocene, and represents one of the most comprehensive reviews of the topic to date. The book covers all aspects of the Holocene barrier island system in addition to related environments, morphodynamics, sediments, structures and their interactions. Ten chapters comprise the text, each written by some of the world's leading experts on barrier island geology and dynamics. Ninety percent of the text is devoted to barriers in the United States, with a brief chapter at the end incorporating discussion of barriers around the world.

Chapter 1, Barrier Island Systems—a Geologic Overview, written by the editor R.A. Davis, provides a basic framework for the barrier system, emphasizing the predominant processes operative on barriers, in addition to sediments, morphology and stratigraphy. The chapter is well written and a moderate amount of the more pertinent literature is successfully woven together resulting in a most comprehensible review. Chapter 2, The Outer Banks of North Carolina, written by T.F. Moslow and D. Heron, Jr., provides a discussion of the morphology and depositional environments along this suite of barriers, in addition to details of sediment sources and sinks, sequences, stratigraphy and depositional history. Chapter 3, written by R.A. Morton and entitled Texas Barriers, provides an interesting contrast to barriers along the Atlantic. While the author conforms to the framework establish in Chapter 1, sections on progradational and aggradational barriers, which constitute over 50% of the Texas coast, are included making this overview somewhat unique. The author concludes that Texas barriers are entering a new phase of their evolutionary cycle due to an increase in the rate of relative sea-level rise and a diminution in sediment supply. In Chapter 4, Barrier Systems of California, Oregon and Washington, J.R. Dingler and H.E. Clifton make the point up front that the active continental margin has helped create a highly unique suite of barriers, all of which are technically spits and bay barriers. This chapter concentrates more on sediment sources and littoral transport, oceanography and climate, with short sections on depositional facies and stratigraphy. The bias towards oceanography historically evident along the west coast is clearly reflected in the lack of literature available on the geology of late Quaternary deposits. For that reason alone, the authors have provided an important chapter which reiterates that barrier systems exist further west of Texas. Chapter 5 takes the reader to the Gulf Coast and R.A. Davis provides a discussion on Barriers of the Florida Gulf Peninsula. This is a well balanced review of coastal morphodynamics, barrier stratigraphy and depositional history. Davis states that the barrier complex comprising the Gulf peninsula is the most morphologically diverse in the entire world because of the presence of the complete spectrum of barrier and inlet morphologies. The area is characteristically dynamic, although the combined wave and tide-generated processes are skewed to the lower end of the energy spectrum. Chapter 6, New Jersey and Delmarva Barrier Islands, written by G.F. Oertel and J.C. Kraft, is quite probably one of the weakest chapters in the text. This is particularly apparent if one considers the vast amount of literature published on the Holocene geology of this coastal stretch from New Jersey to Virgina. Discussion is largely based on a number of coastal compartments previously established in the literature and includes cuspate spits, eroding headlands, "wave-dominated" and "tide-dominated" spits and barrier islands. Special mention is made of the controlling effects of interfluve headlands on barrier evolution. Chapter 7, The Georgia Bight Barrier System, written by M.O. Hayes, is among the most comprehensive and well written contributions to the book. In some seventy pages, the author intricately reviews the existing literature paying homage to those that have made substantial contributions to our current understanding of this area, many of which were made by Hayes' students. Approximately 50% of this particular coast is characterized by wave-dominated, stratigraphically transgressive barrier islands, and the remainder predominantly short, mixed-energy, regressive barrier islands with downdrift offsets. The author presents the importance of increasing tidal range towards the head of the bight and the corresponding increase in tidal inlets. Chapter 8 is entitled the New England Barriers, written by D.M. FitzGerald, P.S. Rosen and S. van Heteren, and is a beautifully written, comprehensive piece that the authors have obviously spent a significant amount of time preparing. The review heightens the reader's awareness that New England is indeed highly unique when compared with the Eastern Seaboard south of Long Island and the Gulf of Mexico, because of glacial effects. The bedrock fabric is exposed along the rocky coastline, sediment sources tend to be isolated and post glacial adjustment has resulted in complex and highly variable sea-level histories in the region. Nevertheless, the authors suggest that while the geologic setting and longer-term evolution of this region is unique, it suffers similar problems to those readily apparent along the Eastern Seaboard and Gulf of Mexico, namely chronic erosion associated with a reduction in sediment supply and rising relative sea level. Chapter 9, Barriers of Pacific Alaska, written by M.O. Hayes and C.H. Ruby, is yet again, a remarkably comprehensive review of an area where published literature tends to be somewhat scant. The authors discuss three basic depositional models; wet alluvial fan system, prograding beach ridge system comprised of sand to gravel-size sediments, and mixed-energy barrier island system analogous to that of the Georgia Bight. Finally, Chapter 10 of the book, written by R.A. Davis and entitled, Other Barrier Systems of the World, investigates the distribution of barriers around the world, concluding that the distribution is