

tures, a chapter on the study of sedimentary body shape and orientation, two chapters on regional dispersal patterns and basin analysis, and a closing chapter on methodology. The new edition contains all this in the identical (photocopied?) form including the original fine set of plates. What has been added is a set of complementary chapters bringing each of the original chapters up to date over the 1963-1976 period. By this method the authors made their work of updating much easier, but it does have the disadvantage that a re-appraisal of the earlier material has not been carried out. The literature coverage is worldwide and, in addition to 'conventional' sedimentary rocks, mention is made of the sedimentary structures and paleocurrents of volcanoclastic strata and directional features on Mars.

This is not a textbook on basin analysis, as such, and the techniques of stratigraphic and facies analysis are not dealt with. The focus is on the detection and mapping of directional attributes in sedimentary rocks. A few criticisms could be made; for example, very little mention is made of paleohydraulics, which is becoming an important component of paleocurrent analysis in alluvial rocks. The use of paleocurrent studies in investigating the morphology and sedimentary evolution of tidal channels and of bars in fluvial channels is also an interesting development that receives little attention. Undoubtedly, other reviewers would harp on the lack of a different set of pet topics, but, overall, it is difficult to fault this book. It is well written, copiously illustrated, reasonably priced, and most emphatically recommended for advanced students and working geologists.

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Stratigraphic Atlas of North and Central America

By the Exploration Department of Shell Oil Company
Princeton University Press, 272 p.
Copyright 1975, Publication date 1977.
\$50.00

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About two years ago the Shell Oil Company sent a plastic-bound atlas of stratigraphic maps to Geology departments with the suggestion that the information would be useful in teaching. This atlas has now been issued in a hard-cover edition by the Princeton University Press. These maps are the latest in a distinguished line of stratigraphic compilations that goes back to the paleogeographic maps compiled by Charles Schuchert at the beginning of this century. Notable members of the lineage have been the lithofacies maps of Sloss, Dapples, and Krumbein, the paleotectonic maps of the Permian, Triassic and Jurassic Systems by the U.S. Geological Survey, the Western Canada atlas of the Alberta Society of Petroleum Geologists, and the stratigraphic atlas of the Rocky Mountain Association of Geologists. The Shell Atlas is a valuable contribution to the compilation of recent stratigraphic knowledge and the company is to be congratulated for making the summary, prepared for the orientation of their own geologists, available to the whole geological community.

Each map covers the whole of North America: they are drawn on a common base. They were compiled under the direction of T.D. Cook and A. W. Bally from the unpublished files of the company and from the stratigraphic literature. They were drawn over the period from 1968 to 1974 and each is dated to indicate the state of knowledge that it represents. The oldest maps, those of the Devonian System, are thus now 10 years old. The map coverage is somewhat uneven. Although there are facies maps for the whole of some systems, such as the Permian and Pennsylvanian;

there are none for others, such as the Cambrian and Ordovician. In all the atlas contains 45 lithofacies maps, 18 age of the zero edge maps, one worm's eye map, 12 paleogeological (strata underlying) maps, outcrop maps for all the systems except the Devonian, 47 isopach maps, 32 hydrocarbon maps, 17 maps of radiometric ages, one intrusive outcrops map, and one redbeds map. Simple stratigraphic columns and regional cross sections are keyed to the maps by numbers. In addition the maps are annotated to draw the attention of the reader to uncertainties in the data and are accompanied by lists of references. The information on the maps is largely from the platform areas, coastal plains and continental shelves and facies boundaries are not generally extended into the Cordilleran and Appalachian mountain belts. The maps are printed without colour and there are some that have small areas of similar patterns which would have been improved by the use of at least one colour or by a change in scale of the base map. It is not clear to the reviewer what stratigraphic information is given by the radiometric age maps. A key shows the nature of the rock on which the analysis was made and the method used but logical conclusions cannot be drawn from such dates without further information. As an example, the Triassic map includes a date on volcanic rocks from central Quebec which might, without further knowledge, be interpreted as a record of a tectonic event. In fact, the date is related to the Manicouagan impact structure. Unfortunately also, such ages have a wide range of reliability as well as of significance, and the reader needs to be assured that a critical evaluation of each has been made by the map makers.

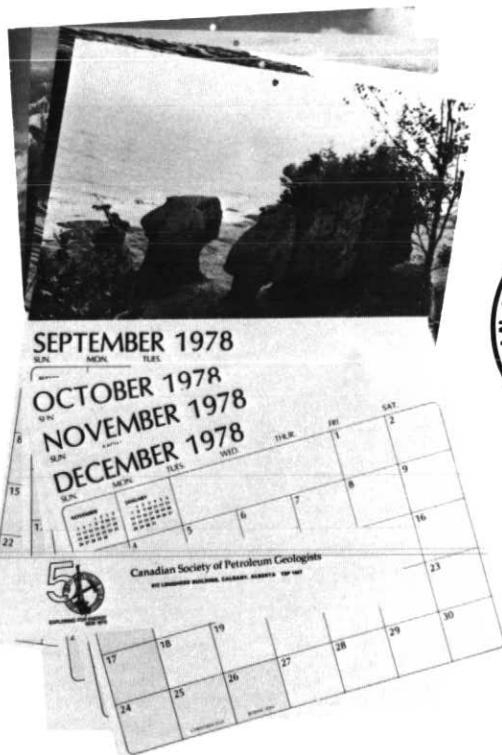
Most of the maps are clearly drawn and printed. In some of the maps at the beginning of the atlas the joining of zipatone patterns is obvious and the inking of the patterns is uneven but these problems seem to have been cleared up by the late Paleozoic. A few anomalies can be noted such as the appearance of the label "Antler Orogenic Belt" on a middle Permian map whereas the stratigraphic effects of this uplift date from the Mississippian Period, the inconsistencies in reference numbers on the radiometric maps, and the spelling of Plegmatites on the first map. I

would hesitate to mention such slips in a company report distributed free but I would expect more careful editing in a book priced at \$50.

An immense amount of stratigraphic data has been assembled for us on these maps. They will supply materials for teaching illustrations and exercises in stratigraphy and historical geology for many years to come. Unlike the regional compilations that have been produced lately by geological societies, these maps cross political and geological boundaries to encompass the whole of Central and North America and even the northwest corner of South America. The book will make a valuable addition to the library of any stratigrapher interested in regional problems. Each geology department should have two copies: one for the library and one to leave in the stratigraphy lab for the use of students working on regional problems.

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THE GEOLOGICAL CALENDAR 1979



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