examining. Behind all the industry jargon and pay thickness maps, there are concise descriptions of well-documented, three-dimensional, configurations of sedimentary rock bodies which can be used both as classroom illustrations and to illuminate situations where there is less information.

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Geological Studies on the COST No. B-2 Well, U.S. Mid-Atlantic Outer Continental Shelf Area

Edited by P. A. Scholle
United States Geological Survey Circular 750, 71p., 1976.
Free on application to Branch of Distribution, U.S. Geological Survey, 1200 South Eads Street, Arlington, Virginia 22202, U.S.A.

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This excellent summary report provided up-to-date information on the stratigraphy of the Baltimore Canyon Basin on the United States Atlantic continental shelf. It is also a fine example of a frontier wildcat well evaluation report, and it gives readers a good appreciation of many of the approaches and analytical techniques currently used by the oil industry.

The COST No B-2 well was a stratigraphic test, drilled in a syncline, and deliberately intended to avoid hydrocarbon accumulations. It was drilled by the Continental Offshore Stratigraphic Test (COST) Group acting on behalf of thirty one petroleum companies who shared the expenses. COST No. B-2 is located adjacent the Baltimore Canyon exploration permits offered for leasing by the U.S. Federal Government on August 17, 1976. It was drilled to provide information on the area prior to the sale. This report is a preliminary summary of the well results.

COST No. B-2 bottomed 15,655 feet below the seafloor in Lower Cretaceous sediments and was located downdip of a major igneous intrusion-cored uplift that has become popularly known as the 'Great Stone Dome'. Various authors discuss the lithologies encountered, sandstone porosity and petrography, foraminiferal, nannofossil and palynomorph age dating, geothermal gradients, organic geochemistry and geophysics. The geochemical studies are of particular interest. They were aimed at establishing organic richness, hydrocarbon source rock type and degree of organic maturation. There is a good discussion of the types of measurements and analyses used to evaluate how much low grade metamorphism and organic diagenesis the rocks had undergone and whether they were capable of expelling hydrocarbons. A brief chapter on geophysics alludes to seismic stratigraphy as well as outlining of a shallow amplitude anomaly, or 'bright spot', west of the well.

Scholle summarises all this information and concludes that COST No. B-2 encountered good sandstone reservoirs above 10,000 feet, adequate sealing shales and good gas-prone source rocks. The level of organic metamorphism was relatively low, but probably just sufficient for gas generation at the base of the section. The remaining requirement for a hydrocarbon accumulation, namely a viable trap, naturally was not evaluated by this well.

U.S. Geological Survey Circular 750 can be obtained for the cost of a stamp and will enable readers to 'follow the play' as wells are drilled in the Baltimore Canyon basin. It is well worth the extravagance!

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Deserts of the World

By M. P. Petrov
Translated from the 1973 Russian edition by the Israel Program for Scientific Translation
New York, John Wiley and Sons, 447 p., 1976
$57.50

Reviewed by G. V. Middleton
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This volume is a comprehensive review of the geography of deserts. The first part (10 Chapters, 157 pages) gives maps and brief descriptions of the world's deserts, and closes with some comparisons and a new classification, based on climatic type, morphostructural criteria, nature of surficial materials (10 litho-edaphic types), and geomorphology (landscape types). The second part (3 Chapters, 184 pages) deals mainly with sandy deserts and considers what Bagnold called the physics of blown sand, environmental conditions (including the microclimatology and geochemistry of desert sands) and the adaptations of plants and animals to desert conditions. The third part (3 Chapters, 69 pages) gives a brief review of the natural resources of deserts, and the problems and probable future progress of exploitation and development of desert regions.

For the geologist, the main parts of the book likely to be of interest are the description of deserts, particularly those in Asia (2 maps show the main features of the deserts of Central Asia - China Mongolia - and Middle Asia - southeastern USSR), and the general discussion of sand deserts given in Part II. Comparison may be made with the book *Geomorphology in Deserts* by R. U Cooke and A. Warren (London, B. T. Batsford, Ltd., 1973) and *Desert Sedimentary Environments* by K. W. Glennie (Amsterdam, Elsevier Publ. Co., 1970). These two works are more restricted in scope: Glennie's book is about sediments found in deserts, and is based very largely on the author's experience in the Arabian Peninsula;

Cooke and Warren's book is larger in scope than Glennie's but considerably more restricted than Petrov's, and less descriptive in character. For this reason, it is more satisfying than the Russian work as a general introduction to physical processes in deserts. The main value of Petrov's book, apart from the wealth of (often very interesting) descriptive detail would seem to be as a summary of Russian research that, judging from the other two works, has remained largely unknown in the west. Also, Petrov seems to have personal knowledge of deserts on several continents and an encyclopedic familiarity with the world literature, so that his (rather rare) generalizations carry considerable authority.

Petrov stresses that modern deserts have been formed by desiccation since much wetter conditions in the Pleistocene: on the other hand, saline crusts found in many modern deserts are relict from even earlier arid climates. Major accumulations of wind-blown sand are generally located within ancient alluvial (fluviatile, deltaic and lacustrine) plains and derived from fluvial sands: examples include most of the sandy deserts of Middle Asia, as well as most of those in the Sahara, Arabia and Australia. Thickness of wind blown sands is not generally larger than 100 m. The grain size is generally fine to very fine sand, and the sands lack a fine silt to clay fraction. Mineralogy is variable, but tends to be quartzoze. with a lower content of mica and unstable minerals than in the source materials. (Petrov presents several pages of tables of mineralogical and chemical data for sands from several deserts - not all of the data seems compatible with generalizations made in the text). Desert sands take on a yellow or reddish colour from thin surface coating of ferric oxides.

Petrov gives an interesting discussion of earlier attempts to classify eolian bedforms, and presents a new classification (based on an earlier Russian work by Fedorovich) together with a selection of illustrative airphotos. Basically the main desert forms are barchans, "barchan chains" (transverse dunes) of simple and complex types, longitudinal dunes, and complex pyramidal dunes. Petrov recognizes a three tier heirarchy of transverse bedforms: ripples, simple chains (of the order of 10 m high), and complex ridges (up to 100 m high with smaller chains superimposed). For longitudinal dunes, he favours the theory, most thoroughly worked out by Hanna, that they are formed by secondary spiral currents, with dimensions determined by the thickness of the tradewind boundary layer (as this is generally 1 km, the spacing of the ridges is about 2 km). The internal structures of dunes are not treated in any detail, and one has the impression that little Russian work has been done on this topic.

A term that recurs frequently in the text is *solonchak* which means a desert soil with concentrated chloride pore waters, or an area where such soils predominate - it is the Russian equivalent of *sabkha*. The interior drainage of desert basins results in the accumulation in continental lowlands of soluble salts, and substantial deposits of salt and gypsum may result. For example, the largest solonchack in Central Asia has an area of about 1,600 km^2 (a lake, shallower than 2 m, occupies about 20% of this area) and is underlain by almost 60 m of halite and gypsum, with sand and mud interbeds. Similar inland sabkhas are described by Glennie from Arabia. It seems strange that few, if any, comparable non-marine evaporites have yet been described from the geological record.

In summary, Petrov's book may be recommended as a very comprehensive descriptive work on the world's deserts. Its style leans towards "natural history" and differs from the analytical, process-oriented approach fashionable at present among western geomorphologists. It is a valuable supplement to the book by Cooke and Warren. Unfortunately the price is so high as to virtually eliminate personal purchase. For the price, one might also have hoped for a general index, besides the geographical and plant indexes that are provided.

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Plate Tectonics and Crustal Evolution

By Kent C. Condie
Pergamon Press, 288 p., 1976.
$22.50

Reviewed by W. R. A. Baragar
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This is a textbook aimed at the graduate or senior undergraduate level but very little is taken for granted in the way of disciplinarian pre-requisites and I believe almost anyone with a basic grounding in science could read it with understanding. Nearly half the book is devoted to the groundwork of the plate tectonics theory: basic information about the earth, methods of geophysics and geochronology, petrogenic theory, and ancillary geological concepts. These are then utilized in the remainder of the book to develop the theory of plate tectonics, to trace its effect on global geography through time, and to speculate on its role in the development of the earth's crust. The breadth of the treatment is considerable, touching as it must some aspect of nearly all earth science disciplines but the author has generally handled the diverse elements with skill, providing enough information in each case to understand the principal and significance of the evidence and blending them all into a coherent account of plate tectonics and crustal history.

For those of us whose interests are in the distant geological past, the aspects of plate tectonics of primary concern are those which can be recognized in the geological column and interpreted in terms of ancient plate geography and movement. In this regard the chapter on Magma Associations is of special interest. Magma types are reviewed in terms of plate geography; their location at plate margins or in plate interiors. Magma associations at plate margins include those erupted at subduction zones and in oceanic rifts whereas the intraplate magmas are those of marginal seas and oceanic basins and of continental rift zones. Each location is marked by volcanic rocks of distinctive geochemical character which should